RAPID EVIDENCE ASSESSMENT: QUANTIFYING THE EXTENT OF ONLINE-FACILITATED CHILD SEXUAL ABUSE:
Report for the Independent Inquiry into Child Sexual Abuse

Disclaimer
This rapid evidence assessment is prepared at IICSA's request. The views expressed are those of the authors alone.
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List of acronyms

CEOP  Child Exploitation and Online Protection Command, a National Crime Agency command
CSA  child sexual abuse
CSE  child sexual exploitation
HMIC  Her Majesty’s Inspectorate of Constabulary
IWF  Internet Watch Foundation
NCA  National Crime Agency
NSPCC  National Society for the Prevention of Cruelty to Children
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### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Cohort</td>
<td>A group of people who share a common characteristic or experience within a defined period.</td>
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<tr>
<td>Consensual age-appropriate peer interactions or intimacy-related behaviours</td>
<td>Mutual flirting or intimacy behaviours between young people when both are over age 16 and neither is significantly older than the other.</td>
</tr>
<tr>
<td>Cross-sectional</td>
<td>Diverse groups of people who differ in the variable of interest but share other central features.</td>
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<tr>
<td>Harmful sexual behaviours</td>
<td>Sexually explicit words and phrases and inappropriate touching by using sexual violence or threats.</td>
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<tr>
<td>Hebephile</td>
<td>Someone who experiences a sexual attraction to pubescent children typically aged 11–14.</td>
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<tr>
<td>Image hash list</td>
<td>An Internet Watch Foundation (IWF) tool, which turns images of child sexual abuse (CSA) into a unique code (rather like a digital fingerprint) using Microsoft Photo DNA, which allows automatic matching of images.</td>
</tr>
<tr>
<td>Images of CSA</td>
<td>All sexualised images or images of naked or semi-naked children real or computer generated. In previous literature they were referred to as child erotica, indecent images of children, inappropriate images of children or child pornography.</td>
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<tr>
<td>Incidence</td>
<td>The occurrence, number or frequency of a specific behaviour.</td>
</tr>
<tr>
<td>Meta-analyses</td>
<td>A statistical analysis that combines the results of multiple scientific studies.</td>
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<tr>
<td>Offline meeting</td>
<td>Meeting in person with someone who was originally only known online.</td>
</tr>
<tr>
<td>Online contact</td>
<td>Someone who an individual initially meets online.</td>
</tr>
<tr>
<td>Paedophile</td>
<td>Someone who is sexually attracted to prepubescent children.</td>
</tr>
<tr>
<td>Paraphilias</td>
<td>Abnormal sexual behaviours characterised by intense reoccurring sexual fantasies. They may involve unusual objects, activities or situations not sexually arousing to</td>
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<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>Parasitic website</td>
<td>Internet domains that search for and acquire images or videos on social media sites that contain sexually explicit material. Such domains feed on the sexting trend among young people in order to create websites dedicated to images of CSA.</td>
</tr>
<tr>
<td>Prevalence studies</td>
<td>Studies that quantify the number of individuals directly affected by a specific issue.</td>
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<tr>
<td>Quantification</td>
<td>The expression or measurement of the quantity or amount of something.</td>
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<tr>
<td>Quasi-experimental</td>
<td>When a treatment or stimulus is administered to only one of two groups whose members were randomly assigned.</td>
</tr>
<tr>
<td>Self-reported surveys</td>
<td>A survey in which participants read the questions and respond by themselves without researcher interference or assistance.</td>
</tr>
<tr>
<td>Sexting</td>
<td>The sending, receiving or forwarding of sexual texts or images to another party electronically.</td>
</tr>
<tr>
<td>Sextortion</td>
<td>Coercion through blackmail to acquire sexual content or through the threat of the distribution of sexual content previously acquired for the purpose of other material gain.</td>
</tr>
<tr>
<td>URL</td>
<td>The address of a website.</td>
</tr>
<tr>
<td>Validated</td>
<td>The process of confirming that an existing programme of study or instrument of measurement is accurate in its design.</td>
</tr>
<tr>
<td>WebCrawler</td>
<td>A metasearch engine that blends the top search results from the world wide web.</td>
</tr>
<tr>
<td>Young person</td>
<td>Someone under age 18, unless otherwise specified.</td>
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Executive summary

Introduction

1 This rapid evidence assessment (REA) examines what is known about the scale of online-facilitated child sexual abuse (CSA). It was commissioned by the Independent Inquiry into Child Sexual Abuse (IICSA), which is investigating whether public bodies and other non-state institutions have taken seriously their duties to care for and protect children and young people from child sexual abuse and exploitation. This research informs IICSA’s investigation into institutional responses to child sexual abuse and exploitation facilitated by the internet (referred to as the internet investigation).

2 The specific objectives were:
   
   • to identify and appraise the measures currently available in England and Wales, and internationally, that could contribute to quantifying the scale of online CSA
   • to consider what each of these measures say about the scale of online CSA
   • to identify and appraise the range of data sources that are available for quantifying the scale of online CSA
   • to identify gaps in the existing literature.

3 A rapid evidence assessment is a structured way of searching for, assessing the appropriateness of, and synthesising a large body of evidence in a very short time frame. It is less rigorous than a full systematic review and therefore does not provide a fully comprehensive summary of the evidence base. This should be borne in mind when considering the findings. Additional challenges taken into account during the review of the 99 articles and reports covered were dealing with the breadth of definitions used, and the constant changes in technology.

Definitions

4 Online-facilitated CSA includes online grooming and receiving sexual requests, being exposed to pornography, some sexting activities, online-facilitated child sexual exploitation (CSE) (e.g. offering of gifts, money or affection in return for sexual activities taking place or orchestrated online, but enacted during an offline meeting with the perpetrator or others) and engaging with online images of CSA (including searching, viewing downloading, exchanging, producing and commissioning of images).

5 The range of behaviours that fall under the definition of online-facilitated CSA is very diverse and growing continuously. Perpetrators’ behaviours have evolved in response to the advances in communication technologies, which have enabled new forms of sexual abuse, and new media through which existing forms of sexual abuse can be perpetrated.
Measures of online CSA

6 There are essentially four ways in which online-facilitated CSA can be measured: by counting the number of offences committed, the number of perpetrators, the number of victims and the number of images that have been viewed, downloaded and exchanged.

7 Quantification based on each of these four measures inevitably produces very different figures, partly because they are attempting to count different aspects of online-facilitated CSA.

8 The figures can be calculated as rates of either incidence or prevalence. Incidence refers to the number of reported or officially recognised victims or suspected offenders apprehended, within a fixed time frame. Typically, such sources considerably underestimate the extent of the problem because of underreporting by victims, and hence low rates of perpetrator apprehension.

9 Surveys that estimate the proportion of a population affected by a particular crime, within a specified time, produce figures related to prevalence. These estimates are expressed as percentages.

10 Prevalence rates are calculated across different time periods (e.g. within the past year or within individuals’ lifetimes) and are represented as a proportionate rate (e.g. 25% of the population).

11 While there are limitations of self-reported data, the advantage of these estimates is that they allow for the inclusion of experiences and behaviours of people who do not come to the attention of official agencies (victims who do not report crimes and perpetrators not known to the police). Therefore, they often provide a better estimate of the scale of the issue under investigation.

The number of offences committed

12 The number of offences committed can be examined through police recorded crimes or the number of concerns reported to organisations such as the National Society for the Prevention of Cruelty to Children (NSPCC). These measures record the incidence of online-facilitated CSA.

13 The propensity to report crimes varies by neighbourhood characteristics, levels of public awareness and consciousness, and the community’s tendency to stigmatise victims.

14 As with any recorded crime statistics, the number of incidents recorded by the police rarely matches the number of crimes that were reported. This is because the official crime figures are the end result of a social, administrative, legal and political process affected by, not
least, police practices and discretion, the application of legal definitions and focus on the most serious aspect of the crime, and the influence of prevailing operational targets.

The number of perpetrators

Self-report perpetration studies have been conducted with young people and adults. They have typically assessed accessing, viewing and downloading of images of CSA and the sending of sexual requests. A few surveys have asked about holding sexualised conversations with young people and arranging to meet a young person offline who was originally met online.

There is a lack of survey data examining self-reported online commercial sexual exploitation, online grooming for sexual exploitation or the production and distribution of images of CSA.

The number of victims

Self-report studies that ask people about their experiences of online forms of CSA are likely to produce figures that most closely represent the true extent of this type of abuse. They also tend to produce figures that significantly exceed those generated from official records or reported incidents. However, so far, these surveys have only assessed young people’s experiences of a limited range of crimes that fall under the heading of online-facilitated CSA.

Surveys have focused mostly on young people’s exposure to sexually explicit material, online sexualised conversations (‘sexting’) and receiving sexual requests, and to a limited extent on online grooming. However, they have rarely asked respondents about sexualised images being taken of them (other self-generated images of CSA through ‘sexting’), or experiences of commercial sexual exploitation or sextortion.

Several factors have been identified that affect the validity of the estimates produced by self-report victimisation and perpetration studies; some are associated with design, ethical and contextual issues.

The number of images viewed, downloaded and exchanged

The scale of online CSA can also be measured by quantifying the number of images of CSA available online, the size and geographical reach of networks distributing and sharing images and the length of time each image is likely to remain in circulation. This type of information can aid understanding of the scale of demand for and supply of images of CSA involving the abuse and exploitation of children and young people.
Each of these ways of quantifying supply and demand has limitations, so the accuracy of the figures to reflect the true extent of the problem is difficult to ascertain. One limitation is the inability of researchers outside specialist police departments to verify the content of internet files suspected of containing images of CSA since this would be classified as an offence. Even in contexts where the images can be viewed and their content verified, there is also difficulty in determining the age of young people in the images. It may be that while a person looks relatively young they are older than 18 and have fully consented to the images being taken. Both of these limitations might lead to an over-estimate of the supply and demand of CSA images.

Issues to consider when measuring the extent of online-facilitated CSA

The nature of technology has changed rapidly. It is embraced at different rates in different countries and there are changing social norms and expectations in relation to friendships and maintaining intimate relationships, so it is difficult to make meaningful cross-cultural comparisons over time using existing data sources.

The methods most likely to capture the full scale of online-facilitated CSA and the changing trends over time are self-report victimisation and perpetration surveys that are repeated over time.

Technology-based communication is becoming a more commonplace part of intimacy behaviour for some young people (for example sending and receiving sexually explicit messages and images). If this is not acknowledged by researchers there is a risk that intimacy behaviours between consenting peers may be conflated with online-facilitated CSA.

The scale of online CSA

A summary of the key estimates of the scale of varying types of online-facilitated CSA identified by this review is provided below.

The number of reported offences

The NSPCC (2016) reported that police forces in England and Wales recorded 5,653 incidents in 2016/17 of sexual crimes against children and young people in the UK in which there was an online element to the crime (up 44% from 3,903 in 2015/16).

Childline (Bentley et al., 2017), the UK based telephone support service for young people, reported providing 3,716 counselling sessions in 2016/17, on issues related to online-facilitated CSA.
The number of perpetrators

28 Between 1 in 10 (Bergen et al., 2015) and 1 in 5 (Schulz et al., 2016) adults in studies conducted in Finland, Germany and Sweden self-reported having engaged in online sexualised conversations with young people under the age of 18 in the previous year. The proportion was below 1 in 20 for those having sexualised conversations with young people aged 13 years and younger (Bergen et al., 2015).

29 Although no study identified in this REA examined the proportion of adults holding online sexualised conversations with young people in England and Wales, it is unlikely that figures would be below the lowest estimate of 1 in 10 adults.

30 Self-report victimisation and perpetration surveys show that between a quarter and a third of perpetrators who send unwanted sexual requests or who engage in grooming are female (Mitchell, Finkelhor and Wolak, 2003; Schulz et al., 2016).

31 Self-report perpetration surveys conducted in Australia, Canada, Sweden, the UK and the US show that between 4% (Seto et al., 2014) and 12% of men and 3% of women in the general population engage with images of CSA (Seigfried-Spellar, 2014).

32 Although Seigfried-Spellar’s (2014) study drew on a UK sample, the results in the report were not broken down by country and thus there are no specific figures for the UK. Again, it is unlikely that the proportion of adults in England and Wales who engage with images of CSA would fall below Seto’s (2014) more conservative estimate of 4%.

The number of victims

33 Self-reported victimisation surveys from Cyprus, Denmark, Germany, the Netherlands, Spain, Switzerland and the US suggest that between 16% (Helweg-Larsen, Schütt and Larsen, 2012) and 28% (Mohler-Kuo et al., 2014) of women and 5% (Helweg-Larsen, Schütt and Larsen, 2012) and 25% (Kerstens and Stol, 2014) of men have received wanted or unwanted online sexual requests.

34 Although no study included in this REA has included samples from England and Wales, it would be fair to assume that no less than 5% of young men and 16% of young women receive unwanted sexual requests each year.

35 Young women are between two and three times more likely than young men to receive unwanted online sexual requests and to be targeted by online groomers (Helweg-Larsen, Schütt and Larsen, 2012; Montiel, Carbonell and Pereda, 2016).

36 Children under 11 years rarely received online sexual requests (Karayianni et al., 2017). However, prevalence was found to increase consistently from early to late adolescence before declining in early adulthood (post-18) (Baumgartner, Valkenburg and Peter, 2010;
Karayianni et al., 2017; the Growing Up with Media study and the Youth Internet Safety Surveys).

Some research suggested the age-related increase in prevalence is more evident in the experiences of young women (Baumgartner, Valkenburg and Peter, 2010).

Research from the US found 1–6% of sexual requests received online involved an invitation to an offline meeting (Mitchell, Finkelhor and Wolak, 2003). The prevalence of requests for online meetings increases slightly with age of the young person.

There are no figures to quantify the number of young people who are abused and exploited through the production, distribution and sale of images of CSA, but there are some data that describe the age and gender and the likely abuse that the young people experience.

In 2016, over half the images reported by the Internet Watch Foundation (IWF) depicted children under the age of 10. There has been a relatively recent increase in abuse images of prepubescent females. This is partly attributed to self-produced images that are appropriated by parasitic websites and then distributed through third-party websites.

Crossover between image-related and contact CSA offending

Only one study on the rate of crossover between image-related and contact CSA was identified in this REA to have been conducted in the UK (Howard, Barnett and Mann, 2014). It was based on retrospective and prospective analyses of conviction data. Howard, Barnett and Mann (2014) found crossover rates of 0.5% when examining previous criminal histories and of 4% when examining subsequent offending over a period of three years.

Studies based on self-report data have found considerably higher rates of crossover offending patterns: 13.7% of Bailey, Bernhard and Hsu’s (2016) participants reported crossover offending in relation to adjudicated offences (arrest and/or conviction). Help-seeking individuals from the German Dunkelfeld project reported detected rates of crossover offending of between 5.8% and 13.7% and, more importantly, undetected crossover of 42% (Beier et al., 2015; Neutze et al., 2012).

The number of images viewed, downloaded and exchanged

In 2016 the IWF identified 57,335 web pages containing images of CSA. Just under 1 in 10 were recognised as commercial websites, which profit financially from the sexual exploitation of young people.

Around 1% of online images of CSA available globally are produced by people living in the UK (Hurley et al., 2013) and 6.5% of the demand for images of CSA comes from people living in the UK (Steel, 2009).
Bissias et al. (2015) estimated that 3 in 10,000 internet users worldwide were sharing images of CSA in any given month.

In 2016 the UK based Child Exploitation and Online Protection (CEOP) command announced that 1 in 5 of the images of CSA reported to them are self-produced images. Research from outside the UK suggests the rate of this sexting behaviour has been consistently found to increase throughout adolescence.

Although self-produced images may sound more akin to risky behaviour than online abuse per se, the findings from the Youth Internet Survey (Wolak et al., 2012) in the US indicate that in half of the cases of self-produced images that came to the attention of the police, there were aggravating circumstances that led to the image being taken. And in just over a quarter of the cases, an adult was connected in some way to the image being produced.

**Conclusion**

The review found that the online world is safe for most young people. This can partly be attributed to the efforts of organisations such as CEOP, the IWF, the NSPCC and Barnardo’s to enhance the safety of the online spaces that young people frequent. Also, there is an increased familiarity with online risks and how to manage them among parents and young people.

However there are gaps in the current understanding of the scale of online-facilitated CSA. There is a particular lack of evidence in relation to England and Wales, which restricts the accurate assessment of the scale of online-facilitated CSA in this country.

Data collected by Childline, CEOP and the NSPCC in response to freedom of information requests made to the 43 police forces in England and Wales about sexual offences against children that involve an online aspect provide useful insight into the incidence of online-facilitated CSA. However, these figures are all likely to be biased by changes in public awareness, police performance targets and the willingness of people to report incidents or seek help. Consequently, they may not allow for reliable comparison of change in incidence across different years of data collection.

Much of the evidence considered as part of this review focused on quantifying the number of people engaging with images of CSA, although some of these crimes are not related to direct victims (albeit still capturing illegal activity). For example, almost a quarter of images of CSA are produced through covert means without the victim’s awareness, and a growing proportion of images are computer-generated pseudo-images.

There has been considerable focus on generating prevalence figures for online sexual requests, but far less emphasis placed on producing prevalence figures for online sexual
grooming, particularly in a way that differentiates the potential risks from the harms encountered.

53 Examination of the official crime statistics that give the gender profile of perpetrators of online-facilitated CSA offences would lead to the assumption that the overwhelming majority of perpetrators are male. However, the findings from self-report studies examining online sexual requests and grooming show that a sizeable minority of perpetrators, between a quarter and a third, are female. While the self-report surveys that have identified this gender composition have not been conducted in the UK, if applied to the UK these findings have significant implications for interventions and treatment of perpetrators.

54 The findings from the self-report perpetration studies, particularly those that ask about undetected offending, highlight that the rate of crossover between image-related and contact offending is considerably higher than is estimated from studies focusing on adjudicated offences. This has implications for both risk assessment and management of individuals identified as perpetrating image-related offences and for safeguarding considerations for children and young people.
1 Introduction

Aims and objectives

This rapid evidence assessment (REA) aimed to ascertain what is known about the scale of online-facilitated CSA. The objectives were:

1 to determine what measures are currently available in England, Wales and internationally that could contribute to quantifying the scale of online CSA, including those that attempt to estimate incidence and prevalence, and measures that count the number of:
   - identified perpetrators, suspects and young people engaged in inappropriate online behaviours (e.g. people identified as viewing images of CSA, sharing data with others, directing the abuse of children via online streaming or video conferencing, grooming children online for the purposes of sex, or inciting and conspiring to commit CSA and unwanted sexting)
   - victims (e.g. the number of children who experience online grooming, receive sexual requests or are encouraged to share inappropriate images of themselves – nude, semi-nude or sexualised – or who experience unwanted exposure to online pornography etc.)
   - offences reported
   - CSA images and videos

2 to critically appraise the strengths and weaknesses of these measures to fully capture the different manifestations of online-facilitated CSA, and to identify the direction of skewness and possible scale of any bias they are likely to possess

3 to consider what each of these measures tells us about the scale of online CSA, in England and Wales currently, and to identify trends over time

4 to identify the full range of data sources available to quantify the scale of online CSA, including police recorded crime statistics, other data held by law enforcement and partner agencies (e.g. the IWF and online service providers) and academic research such as large- and small-scale survey data

5 to critically appraise the strengths and limitations of each of the data sources and to identify the direction of skewness and possible scale of any bias they are likely to possess

6 to highlight and discuss the gaps in the existing literature.

The REA consisted of a systematic search and review of the available reports, articles and sources that contribute to the quantification of online CSA. This final report is based on an analysis of 99 international sources.
This report examines three key ways of quantifying online-facilitated CSA: through prevalence studies, incidence reports and assessment of the scale and reach of online images of CSA.

The search generated a far greater number of self-report victimisation studies than any other sources or studies that would allow quantification of online CSA. Additionally, since self-report victimisation surveys were assessed in this REA as being the source most able to capture an approximation of the true extent of online-facilitated CSA, the greatest weight is given to these studies in this report.

Chapter 2 presents an overview of the context and issues inherent in the quest to quantify online-facilitated CSA. This is followed by a summary of the REA methodology in Chapter 3. Details of the REA strategy are presented in the appendices.

The substantive chapters discuss the various groups of sources of information that endeavour to quantify different aspects of the problem. Thus, the prevalence chapter (Chapter 4) covers self-report victimisation, sexting and perpetration surveys. Chapter 5 looks at the rate of crossover between image-related and contact CSA. The incidence chapter (Chapter 6) discusses incidents reported to agencies that monitor statements from the public, help-seeking from victims and survivors and their guardians, and police data on the number of crimes reported and detected. Chapter 7 assesses the supply and demand of online CSA. The report ends with a conclusion (Chapter 8) and some final thoughts (Chapter 9), which draw the findings together.

Each of these chapters begins with an overview of the REA findings. Key information relating to each study or source is presented in a table, followed by consideration of the extent to which the sources address each of the research questions. A synopsis and critique of each study or source is included in the appendices in the Annex.

Each study or source has been categorised for its ability to reliably inform the calculation of the extent of online-facilitated CSA. The decisions made about studies were based on issues such as the representativeness of the sample employed, the scientific rigour of the study, and the ability of the methods used to capture prevalence of online-facilitated CSA. The decisions made about databases that might inform estimates of incidence were based on how the data were gathered.

In the Annex appendices 1–5 provide details of the bibliographic databases, data search strategies and data extraction tools used when undertaking the REA. Appendices 6–12 provide a synopsis and critical appraisal of each study included in the REA, describing the scientific rigour of the studies and looking at their strengths and limitations when quantifying the scale of online-facilitated CSA.

We have used a colour coding scheme – ‘red’, ‘amber’ and ‘green’: green is used for sources or studies that have the fewest methodological weaknesses, amber for those that have some methodological weaknesses but still have potential to inform estimations, and red for those that have significant methodological weaknesses.
2 Background

The rationale for this REA stems from the difficulty inherent in attempts to estimate the true extent of online-facilitated CSA, which has resulted in a wide variance between different estimates. For example, established estimates of the number of people engaging with images of CSA in the UK range from 50,000 to 590,000: 50,000 (CEOP, 2013), 100,000 (Gallagher, 2016) and 450,000–590,000 (NSPCC, 2016).

Such lack of clarity over the scale of the problem is unhelpful when assessing how to allocate resources to tackle the issue (e.g. through preventative efforts, identifying and removing images from circulation, or prosecuting and intervening for perpetrators), or when planning how to provide services for children and young people who have been victimised. It is increasingly necessary to understand young people’s risk of CSA from using internet-enabled devices in light of their routine use of such technology.

Trends in internet use among children and young people and adults.

The rise in internet use over the last 20 years has been most marked for younger generations. Indeed, according to the authors of the European Online Grooming Project (Webster et al., 2012), younger internet users are more skilled and confident in using the internet than their older counterparts. However, it is likely that this knowledge gap will become less evident over the coming years as the future parents of young internet users will themselves be more familiar and competent in using the internet and other forms of social media (Hasebrink, 2014), and therefore more aware of the risks and how to manage them.

Three surveys, including samples from the UK, have noted several important trends in children’s use of the internet between 2005 and 2016, which potentially increase young people’s risk of experiencing online-facilitated CSA. The surveys are Ofcom’s (2016) report on the media literacy tracker study, which has been investigating young people’s use of the internet annually since 2009, and two multi-wave, pan-European studies (EU Kids Online and Net Children Go Mobile).

Two trends identified by comparing the EU Kids Online and the Net Children Go Mobile studies between 2005 and 2013 are the increasing use of the internet by primary-school-aged children (average age of first accessing the internet is age 8 in the UK – Livingstone et al., 2014a) and the increasing use of the internet at home, including accessing the internet unsupervised in the privacy of bedrooms (Livingstone and Haddon, 2009; Livingstone et al., 2014a; Mascheroni and Ólafsson, 2014) or through personal mobile devices (Livingstone and Haddon, 2009).

Portable means of accessing the internet (laptops and smart phones) superseded the use of personal and desktop computers by 2013/14 in the seven countries included in the Net Children Go Mobile study (Hasebrink, 2014). In the UK, by 2013/14 smart phone use for accessing the internet exceeded both desktop computers and laptops (Livingstone et al., 2014b). In the UK,
the proportion of children and young people accessing the internet on the move has increased from 21% in 2010 to 47% in 2013/14 and is likely to have increased further in the past three years.

The UK had the second highest rate (70%) of young people with internet access in their bedrooms among seven European countries in 2014 (Livingstone et al., 2014b). This was a considerable increase from the proportion found in the 2010 survey (52%). Young people in Denmark were the most likely to access the internet in their bedrooms (74% in 2010 and 85% in 2013/14).

The UK findings from the 2010 EU Kids Online survey show that young males and females were equally likely to access the internet from their bedrooms (52% males and 53% females). Only slightly more young males than females accessed the internet on mobile devices (27% vs 24%).

Young males were found to be nearly twice as likely to communicate with people they only know online as females (24% vs 13%). Livingstone et al. (2010) proposed that this figure was related to young males’ greater use of the internet for online gaming, partly supported by Ofcom’s (2016) findings that young males are more likely to report that they would most miss their games consoles than were young females. Young females were more likely to report that they would miss their mobile phone than were young men (60% vs 38% respectively).

Unsupervised internet access increases with the age of the young people surveyed in the UK and relating to their socioeconomic class. Thus, young people who are most likely to have unsupervised access to the internet are those aged 15–16 years and those who are from higher socioeconomic backgrounds (Livingstone et al., 2010).

The more recent Ofcom (2016) report found that the age at which children begin accessing the internet has significantly decreased since the Net Children Go Mobile study, suggesting that 15% of 3–4-year-olds own their own tablet and 21% access the internet using either a tablet or a mobile phone.

Tablet ownership exceeds mobile phone ownership up until age 10, when they become owned equally, before the domination of smart phones over tablets by age 12. In 2016, 79% of 12–15-year-olds reported smartphone ownership, a rise from 69% in 2015; 91% reported using a mobile phone in 2016, compared with 86% in 2015. These figures show that 12–15-year-olds are more likely to have potentially unsupervised internet access than they were three years ago.

**Definitions of online-facilitated CSA**

Definitions of what constitutes online-facilitated CSA are varied and dynamic, and those used in research often differ from those used for legally defined crimes, and the legally defined crimes differ between and sometimes within countries. Definitions tend to evolve in response to the ways in which advances in communication technologies have enabled new forms of abuse or
new media through which existing forms of abuse can be perpetuated. For example, while mobile phones are not technically internet-based, the ability to send photographic images in text communications has allowed the definition of ‘online’ to be extended by some to include what has come to be commonly referred to as ‘sexting’ and other forms of communication through mobile phones. Other researchers refer to the use of mobile phones and texting as ‘offline contact’ (e.g. Shannon, 2008).

Over the past 20 years there have been not only technological advances, but also significant changes in the way in which young people engage in and initiate their own age-appropriate romantic or intimate relationships. There is a small but significant trend showing that technology-based communication is becoming a more commonplace part of intimacy behaviour for some young people (Quayle and Cooper, 2015). This raises the potential for grouping risky intimacy behaviours between consenting peers with online-facilitated CSA, when these behaviours may not be abusive. Hasebrink (2014) contends that young people’s internet behaviour of today needs to be interpreted differently from the way it was viewed a decade or more ago because it occurs against a backdrop of very different societal practices and meanings.

There appears to be little agreement between researchers over whether online-facilitated CSA should only include contact between strangers, rather than the use of online technology for the grooming and/or exploitation of children and young people already known to the perpetrator offline. The exclusion of instances of online CSA involving known perpetrators is problematic on two counts:

- The legal definitions of online grooming in England and Wales and the US make no distinction between whether or not the perpetrator has an existing offline connection with the person they target (see Lewis, Miller and Buchalter, 2009).
- To exclude cases where there is an established offline connection would lead to an under-estimation of prevalence since there is evidence that a proportion of online sexual requests and grooming are perpetrated by individuals known to the victims and survivors (e.g. Mitchell et al., 2011).

Such variety and fluidity in the definitions of online-facilitated CSA used by researchers, practitioners and policy-makers has complicated the comparison of findings and estimates of prevalence between different studies and data sources. However, the development of guidelines by End Child Prostitution, Child Pornography and Trafficking of Children for Sexual Purposes in The terminology guidelines for the protection of children from sexual exploitation and abuse (Greijer and Doek, 2016), which were adopted by the Interagency Working Group in Luxembourg in January 2016, should encourage greater consistency in the use of definitions in the future.

While strictly speaking this review is concerned with quantifying online CSE and CSA, for the sake of brevity this review refers to both types of experience as online-facilitated CSA.
Definitions of different aspects of online-facilitated CSA are presented in Table 1, beginning with the legal definitions and then those evident in the empirical research.

**Table 1 Offences in England and Wales relating to online-facilitated CSA**

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Act</th>
<th>Offences captured</th>
</tr>
</thead>
<tbody>
<tr>
<td>England and Wales</td>
<td>Obscene Publications Act 1857</td>
<td>The sale or distribution of obscene publications was established as a crime. Criminal obscenity is defined the tendency to ‘deprave and corrupt’.</td>
</tr>
<tr>
<td>England and Wales</td>
<td>Obscene Publications Act 1959</td>
<td>Created a new offence for publishing obscene material.</td>
</tr>
<tr>
<td>England and Wales</td>
<td>Obscene Publications Act 1964</td>
<td>Strengthened the law around production of obscene material.</td>
</tr>
<tr>
<td>England and Wales</td>
<td>The Protection of Children Act 1978 c.37</td>
<td>The creation, possession, distribution and publication of indecent photographs of children under age 16.</td>
</tr>
</tbody>
</table>
| England and Wales | Malicious Communications Act 1988        | Made it illegal in England and Wales to ‘send or deliver letters or other articles for the purpose of causing distress or anxiety’.  
The act was problematic because it stipulated that the behaviour must cause distress or anxiety since this would exclude the sharing and distributing of images of CSA between individuals with a common sexual interest in children and young people. |
| England and Wales | Communications Act 2003 s. 127            | Made it an offence to send a message by means of a public electronic communications network (including the internet) if its content is grossly offensive, indecent, obscene or menacing, thus capturing sharing and distributing images of CSA.  
However, this also criminalises young people who ‘sext’ in the context of a romantic relationship. |
<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Act</th>
<th>Offences captured</th>
</tr>
</thead>
<tbody>
<tr>
<td>England and Wales</td>
<td>Sexual Offences Act 2003 s. 45, amendment to the Protection of Children Act 1978</td>
<td>Captured online grooming, but only in instances where it could be proved that an adult intended to meet a child offline for the purposes of sexual activity on that occasion or at a later time. The act excluded cases where grooming is perpetrated by a similar aged peer, which may or may not have been conducted under the control of or after persuasion by an adult, and instances where the perpetrator requests the child to perform sexual acts online. Increased the age limit under which it is illegal to take, possess, distribute and publish images of CSA to 18 years (except where the young person consented or where defendants could prove they were in a relationship with the young person).</td>
</tr>
<tr>
<td>England and Wales</td>
<td>The Police and Justice Act 2008 s. 39, amended s. 11 of the Protection of Children Act 1978</td>
<td>Gave the police powers to remove and retain ‘indecent’ photographs of children under age 18.</td>
</tr>
<tr>
<td>England and Wales</td>
<td>Coroners and Justice Act 2009</td>
<td>Criminalised computer-generated images (moving and still) that depict CSA. This is likely to be a victimless crime in itself.</td>
</tr>
<tr>
<td>England and Wales</td>
<td>Serious Crime Act 2015 s. 67</td>
<td>Like the Scottish Sexual Offences Act 2009, this criminalised sexual requests or communication between an adult aged 18 or over and a young person under age 16. Again, the act eliminated the requirement that it must be demonstrated that the perpetrator intended to meet the young person offline.</td>
</tr>
</tbody>
</table>
Definitions researchers have used

Online grooming and sexual requests

According to Wolak et al. (2007), ‘online sexual solicitation’ generally refers to online (internet or instant messaging) requests made to young people, which encourage them to engage in talking about sex, to answer personal questions about their bodies or sexual experiences, or to do something of a sexual nature. Some, but not all, sexual requests have the intention of luring the young person into a sexual encounter online or offline, others are fleeting, inappropriate questions asked without persistence or repetition. Such requests may come from other young people or adults, be wanted or unwanted, and experienced as threatening or banal.

When such requests are made by an adult (someone over age 18) to a young person under age 16 these would be deemed criminal under the new provision in section 15 of the Sexual Offences Act 2003, which was established by the Serious Crimes Act 2015. Where the sender is under 18, these actions are not technically illegal, but may be erroneously counted as such in some research studies. The Youth Internet Safety Surveys (conducted by Finkelhor and his colleagues) also refer to ‘aggressive online solicitations’ in which there is an attempt to meet the contact offline, often for the purpose of engaging in a sexual encounter. This category of behaviour would fall under the legal definition of online grooming as contained within the original Sexual Offences Act 2003.

Webster (2012, S5) defined online grooming as a ‘process by which a person befriends a young person online to facilitate online sexual contact and/or a physical meeting with them, with the goal of committing sexual abuse’. The key limitation of this definition is that it excludes the experiences of young people who are groomed online to engage in online sexual acts, which may be live-streamed or recorded by the perpetrator. In some instances, the images may be distributed or used for commercial purposes thus amounting to online CSE rather than CSA per se.

According to Whittle et al. (2013), the manifest behaviours of online groomers include making unwanted sexual requests, online harassment and/or using flattery, force, threats or bribery to gain the compliance of the individuals they target. Wachs et al. (2012) proposed that online grooming can be distinguished from single incidents of making online sexual requests on the basis of the repetitive nature of the communication, the perpetrator’s abuse of the target’s trust and the relationship that has been constructed between the victim and perpetrator. However, the legal distinction in the UK is based on the perpetrator’s intention to meet offline with the intention of engaging in a sexual act with the young person, rather than the number of requests the perpetrator makes.

Livingstone et al. (2014b) warn that it would be unwise to conflate risk with actual harm since many young people who are familiar with online interactions are unlikely to be troubled by or
act on online sexual requests. Thus, to differentiate between prevalence rates of young people’s risk and the likelihood of harm from online grooming, it is important to measure the following key elements:

- the proportion of young people who receive online sexual requests
- the proportion of young people who comply with requests that require an online response
- the proportion of sexual requests that include elements of grooming and requests to meet offline
- the proportion of young people who comply by meeting the online contact offline
- the proportion of offline meetings with an online contact that result in an attempted or completed sexual assault.

Images of CSA

According to the law in England and Wales, images of CSA include all sexualised depictions of children whether photographic or video images of actual children, or computer-generated representations. Images of real people may be:

- produced explicitly or covertly (e.g. using hidden cameras) by the perpetrator
- produced by the young people themselves (youth-produced) who:
  - are groomed into sharing these with the perpetrator
  - are then blackmailed into producing more images or engaging in other sexual activity, using the threat of showing these images to others (known as sextortion)
  - share them with age-appropriate intimate partners (e.g. couples aged 16–17 years)
  - where the intended recipient then shares the image with others
  - in the process of storing or sharing these images enable them to be accessed by parasitic websites, which then host the images for unknown others who are actively searching for images of CSA.

The images can be measured by the nature and scale of perpetration or the number of victims and scale of repeat victimisation.

From the perspective of offending behaviours, within this research area it would be prudent to assess all degrees of engagement with images of CSA, including searching for, viewing, downloading, exchanging, sharing, distributing, producing and commissioning.

The production of images (where related to images of real as opposed to computer-generated young people) offers a direct measure of victimisation, whereas the rate and reach of distribution, and the longevity of images within the pool of searchable images, offer measures of
indirect repeat victimisation. So, the young person is indirectly exploited each time images being shared with someone new.

**Youth-produced images and sexting**

Sexting is young people’s sexual self-exposure in front of a webcam or making and sending someone else sexualised images of themselves or others. Often both are referred to as ‘sexting’, although in some instances the term ‘sexting’ has been used to refer to the sending of sexualised textual messages with or without the accompaniment of naked or semi-naked images.

Some researchers have attempted to distinguish between instances where these images have been voluntarily produced and those produced under pressure or coercion, by asking whether this was ‘wanted’ or ‘unwanted’. Qualitative exploration of young people’s experiences of this suggest that this distinction is too simplistic to capture the different contexts under which the images were produced (Ringrose et al., 2012). Ringrose et al. (2012) report that many young people feel a range of different pressures that often blur this distinction.

**Exposure to pornography**

Under the law in England and Wales, young people under age 18 should be protected from images and video that would be certified R18 by the British Board of Film Classification, which includes sexually explicit material. Under the Sexual Offences Act 2003 it is illegal for a person over age 18 to cause a young person under age 16 to look at an image depicting sexual activity where this has been done to achieve sexual gratification. In the research literature, exposure to pornography has been conceptualised in several different ways, including intended exposure (seeking out), unintended exposure (unwanted) and forced exposure. Unintended exposure might result from a failure of distributors to protect young people, or a lack of parental controls that place restrictions on young people’s internet access. Conversely, forced exposure is more likely to be an offence under the Sexual Offences Act 2003. The research evidence demonstrates that unwanted exposure most often occurs when browsing the web or opening links in emails and instant messages.

**Measures to quantify the extent of the problem**

There are essentially three broad measures to quantify online-facilitated CSA and exploitation: incidence, prevalence, and volume and reach of inappropriate images of children.

**Incidence**

Incidence can refer to either the number of reported or officially recognised instances of victimisation occurring, or the number of suspected offenders apprehended within a fixed time frame. Official statistics (e.g. child protection data or police records) are usually based on
incidents and thus inform incidence rates. Typically, such sources considerably under-estimate the extent of the problem.

**Prevalence**

Prevalence studies are generally based on self-report victimisation or perpetration studies; they quantify the number of individuals directly affected by the issue in question. Prevalence rates are calculated across different time periods (e.g. within the past year or within the individuals’ lifetimes) and are represented as a proportionate rate (e.g. 25% of the population). Notwithstanding the limitations of self-report data, the advantage of estimates quantifying the scale of a problem using prevalence rates is that they have the potential to illuminate the ‘hidden figure’ of victimisation or offending behaviour. They allow the experiences and behaviours of people who do not come to the attention of official agencies to be included; these would otherwise be neglected when generating incidence figures.

While prevalence estimates of online-facilitated CSA appear far higher than those of incidence they are still likely to under-estimate the true scale of the problem. Such under-estimation can be a consequence of the way in which the questions are posed to survey respondents. For example, if a question refers to *unwanted* online sexual requests, a victimised young person who has been sexually groomed by a perpetrator is unlikely to respond affirmatively to it. Additionally, questions can be framed in such a way to omit offences committed by particular groups of offenders. For example, in the studies by Wachs, Wolf and Pan (2012) and Wachs et al. (2016), the respondents were presented with a definition of online grooming that stipulated that the perpetrator had to be seven or more years older than themselves. This disallowed respondents to report victimisation perpetrated by someone they believed to be closer in age to themselves.

However, where survey questions on sexting do not exclude consensual age-appropriate sexting between young people in a romantic relationship, they might inflate estimates beyond the true extent of exploitative and sexually abusive experiences.

**The quantification of images of CSA**

The third way in which the scale of online-initiated CSA can be measured is by quantifying the number of images of CSA, and measuring the scale and reach of the networks distributing and sharing images. Potential figures include the number of images searched for, accessed, viewed, downloaded or shared with others. There are also some data on the number of times individual pictures are shared or downloaded, the geographical reach of shared images and the mean longevity of online images (how long they stay in circulation). Typically, these either represent findings from the automated surveillance of specific peer-to-peer networks for short periods of time (e.g. several days or weeks) or intelligence gathered from police investigations of identified perpetrators.
However, the sheer volume of online trafficking of images of CSA precludes even automated searches from being able to identify all the available images. Additionally, the extent to which these methods can inform estimates of the scale of the problem are compromised by the inability of researchers to verify the content of the files identified as potentially containing images of CSA. This is because if the researchers open the suspected files they would be breaking the law. Furthermore, where the victims in the images remain formally unidentified by the police, it is difficult to ascertain whether the images identified are of young persons under age 18.

The different ways of quantifying online-facilitated CSA typically assess different offences and experiences

The different ways of quantifying the online-facilitated CSA have complexities that impact on the estimates calculated.

Quantifying perpetrators and offences

When counting reported offences, the range of behaviours deemed to fall under the definition of online-facilitated CSA is very diverse and appears to be growing continuously. Examples of offences include:

- accessing, viewing, downloading, distributing and creating images of CSA
- enticing others, including children and young people, to view, produce and/or share images of CSA
- enticing children and young people to create and share naked, semi-naked or sexualised images of themselves
- using online technology for the solicitation and/or grooming of children and young people for sexual purposes
- using online technology to incite the sexual abuse of children and young people by others.

Quantifying victims of online-facilitated CSA

There are also many ways of counting rates of victimisation, for example basing calculations on:

- self-reports of recent sexual abuse (within the past six months or a year)
- retrospective self-reported sexual abuse within the individual’s childhood and adolescence
- the number of victims identified through the investigation of perpetrators, including victims whose identities are known and those whose name and location are unidentified
• the number of victims within this country, irrespective of the geographical location of the perpetrators
• the number of young people sexually abused globally, by perpetrators from this country
• the number of victims (or their guardians or parents) who have sought help or advice relating to CSA
• the number of victims whose cases are reported to, recorded by or investigated by the police.
3 Methodology

The research team included seven researchers who reviewed the papers and two researchers who reviewed the plans for and outputs from the study, and assessed the quality assurance processes. Their expertise spanned a range of disciplines that were pertinent to this study, including forensic psychology, criminology, computer science and social work and child protection.

Ethical considerations

The proposal and work plan for this review were submitted to and approved by the School of Human and Health Sciences Ethics Committee at the University of Huddersfield and the IICSA Research Ethics Committee. Since this project was based on the analysis of secondary data and did not involve collecting primary data from research participants, the key ethical consideration was to ensure the well-being of the research team. Additionally, the IICSA critical appraisal tool required that each of the full-text articles screened (and hence those studies included in this REA) adhered to appropriate ethical standards.

Review methodology

This review was conducted as a REA. This is a structured, rigorous, replicable and transparent approach to conducting reviews. REAs are similar to systematic reviews, albeit they are conducted within much tighter time constraints. The brevity of the time scale necessitated that several constraints were placed on the review’s depth and comprehensiveness. In this instance, the search of the grey literature was limited to publicly available sources (e.g. dissertations and theses), responses to a call made to the 1,500 Twitter followers of the UK Register of Child Protection Research for unpublished, in print or in process material, and individual requests to identified individuals and organisations likely to be working on material that could contribute to this REA.

Minimising reviewer bias

In a systematic review, it is preferable to have more than one reviewer to select which sources to include and to critically appraise each of those included to prevent reviewer bias. However, in this REA, as with other REAs, each researcher was responsible for searching different databases and initially selecting sources on the basis of their title, their abstract or the content of the data source.

There were inter-reviewer reliability checks on 40 abstracts to assess consistency of decisions made across the research team. They were conducted to assess equivalence between the way in which reviewers applied the inclusion and exclusion criteria to the title, abstract and keywords.
associated with each source. The reviewers were divided into pairs and the principal investigator formed a second pair with the seventh reviewer. In conducting the inter-reviewer reliability checks half of the assessed sources (n = 20) were deemed to have met the criteria for inclusion and the other half had been excluded.

Overall, there was disagreement on just three (7.5%) of the sources and all disagreements related to included sources. Thus, there was 100% agreement over which sources to exclude and 85% agreement over which sources to include. This indicated that there was a slight bias towards including sources that did not quite fulfil all the criteria, although it was recognised they would enable the critique of some of the selected sources.

The 180 reports or articles identified for initial inclusion in the review were then allocated between six of the reviewers, initially according to the specific research questions, with each reviewer taking one of the question areas. However, with the exception of the articles discussing the calculation of the volume and extent of sharing images of CSA online, in many instances it was difficult to ascertain to which area to allocate the particular sources. Consequently, reviewers were allocated on average 30 sources each from the total reference list, excluding those identified as needing to be reviewed by the team’s computing expert (e.g. those about calculating the volume of online images of CSA and the extent of file sharing). All the reviewers decided which sources to include in the final REA after reading the whole papers. Their decisions and associated reasons were recorded on the IICSA critical appraisal tool. A second inter-rater reliability was conducted at this stage. Again, a sample of 28 papers (14 included and 14 excluded) were blind-reviewed by a second paired reviewer.

There was an 89% rate of agreement between the two reviewers, and the principal investigator reviewed all abstracts and reasons given for exclusion on each of the reviewers’ IICSA’s critical appraisal tool spreadsheet. There was disagreement between the reviewers and the principal investigator in 10 of the 79 papers, indicating concordance in decisions in 87.4% of cases. Nine of the ten disagreements related to articles originally selected for exclusion, where the principal investigator believed they should be included. The principal investigator made the final decision. Six of the articles on which there was disagreement were prevalence studies of sexting. Consequently, the articles reviewed here have undergone a process of extensive evaluation and critique to the point where the reviewers are confident that the process of reviewing has been rigorous and thorough.

**Quality assessment of the literature screened as suitable for inclusion.**

Although there are fewer tools available to assess the scientific merit of prevalence and incidence studies than there are for other study designs (Dijkers, 2016) and few systematic reviews of prevalence studies use any measure of assessment quality (Shamliyan, Kane and
Dickinson, 2010), here the research team employed the IICSA critical appraisal tool, which is based on the Joanna Briggs Institute’s critical appraisal checklists (2016).

The judgements reached on the critical appraisal tool were used in conjunction with judgements on the ability of the study or source to meet the research objectives. Decisions made on the basis of these judgements have been highlighted against each of the included sources throughout this report using a ‘traffic light’ approach: studies considered scientifically robust and whose methodology allowed appropriate estimates of prevalence to be ascertain were highlighted as green, those that made a significant contribution despite a few more limitations were assigned amber, and those that had more substantive limitations were assigned red. The reason for including sources flagged red was that learning could be gleaned from the mistakes made by others and fed forward into plans for future studies.

The search protocol

Following consultation with subject specialists and the University of Huddersfield’s subject librarian, the 17 databases (see Appendix 1) were initially searched using Boolean strings related to the different types of offence (see Appendix 3). Figure 1 shows an example of one of the Boolean strings.

**Figure 1 Example of a Boolean string**

<table>
<thead>
<tr>
<th>Specific question</th>
<th>Boolean strings</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of identified perpetrators</td>
<td>‘child molesters’ or ‘paedophiles’ or ‘perpetrators’ or ‘offenders’ or ‘self-reported’ or ‘peer-on-peer’ AND ‘child sexual abuse’ or ‘child sexual exploitation’ or ‘child sexual extortion’ or ‘child pornography’ or ‘child erotica’ or ‘indecent images of children’ or ‘inappropriate images of children’ AND ‘smart-phone’ or Snapchat or ‘WhatsApp’ or ‘online’ or ‘web-based’ or ‘internet’ or ‘chat-room’ or ‘digital’ or ‘live-streaming’ AND ‘prevalence’ or ‘amount’ or ‘frequency’ or ‘number’ or ‘proportion’ or ‘incidents’ or ‘self-reports’ or ‘arrests’ or ‘convictions’</td>
</tr>
</tbody>
</table>

Alternative search terms were used in databases where Boolean strings were not applicable (Appendix 3). The inclusion and exclusion criteria applied in the searches are presented in Table 2.

The call for grey literature (see strategy set out in Appendix 2) resulted in a further 23 sources being considered for inclusion. The principal investigator initially reviewed the inclusion criteria of each one before sending them to the reviewer working on the relevant section. The reviewers then completed the data extraction form and the critical appraisal tool for each of these new sources. Three of the sources were excluded from the REA for failing to match the inclusion criteria.
<table>
<thead>
<tr>
<th>Description</th>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language</td>
<td>English</td>
<td>Not English</td>
</tr>
<tr>
<td>Publication format</td>
<td>Governmental and law enforcement reports; reports and empirical articles presenting national and international victimisation and self-report perpetration surveys Academic articles discussing studies exploring the scale of images of CSA and the extent and reach of file sharing between perpetrators</td>
<td></td>
</tr>
<tr>
<td>Publication date</td>
<td>1999–2017</td>
<td>Pre-1999</td>
</tr>
<tr>
<td>Type of sexual offence or form of victimisation</td>
<td>Includes online-facilitated offending and/or victimisation</td>
<td>Exclusively contact offences</td>
</tr>
<tr>
<td>Study or data type</td>
<td>Study of prevalence or data that indicates the number of known cases</td>
<td>Other types of quantitative and qualitative studies</td>
</tr>
</tbody>
</table>

The date range selected includes the year of the start of Operation Ore (1999), which at the time was deemed to be the UK’s largest investigation of computer-based crime (Wilson and Hopkins, 2003).

**Flow chart of the data search returns**

Figure 2 shows the flow chart of the combined searches from the 17 databases named in the search strategy.
Figure 2 Flow chart of data search returns

- Identification
  - Records identified through database searching (n=5,762)
  - Additional records identified through other sources (n=23)

- Screening
  - Sources matching the inclusion criteria (n=371)

- Eligibility
  - Sources after removing duplicates (n=203)
  - Duplicates excluded (n=174)

- Included
  - Sources remaining after reading full text (n=99)
  - Full-text articles excluded, with reasons (n=104)
  - Sources included in the REA (n=99)
4 Prevalence studies

Self-report victimisation surveys

Introduction

This section of the REA included 21 self-report victimisation surveys, from countries across the European Union (with specific studies in Belgium, Cyprus, Denmark, Germany, Spain, the Netherlands and Spain), Malaysia, Switzerland, Taiwan, Thailand and the US, and a global study (including Argentina, the Philippines, Serbia and South Africa).

Data were collected and reported separately for the UK in two of the pan-European studies (EU Kids Online and the Net Children Go Mobile studies). All these studies report on data captured between 2000 and 2014 and are presented in tables 3 and 4. Where the source refers to multi-wave studies (which repeated the survey in subsequent years with new cohorts of young people) or studies that resulted in multiple publications, they are referred to by their study name, whereas single publication studies are referred to by the surnames of the authors and date of publication, with full details listed in the references.

The prevalence findings are presented for each type of online-facilitated CSA measured in the studies:

- online grooming and sexual requests
- meeting offline someone met online
- a contact sexual offence taking place at an offline meeting
- someone taking pictures or recordings of victims when they were undressing or naked
- unwanted exposure to online pornography.

There is an assessment of whether the prevalence figures represent an over- or an under-estimation of the true extent of online-facilitated CSA based on an analysis of each study (see Appendix 6).

The three main forms of online CSA explored in the self-report victimisation literature are receiving online sexual requests, online grooming and exposure to adult pornography, which will be discussed in more detail.

Additionally, with the introduction of smart phones and tablets and the ever-increasing ability of young people to access the internet unsupervised there has been a growing prevalence of images of CSA that are created by young people themselves. The studies exploring the prevalence of sexting are examined separately towards the end of this chapter.

The most significant observation regarding these studies is the lack of uniformity in their research designs, the samples employed, the duration of the reporting periods, the way in which
online CSA is conceptualised and measured, and the age parameters used to define childhood. All these factors influence the prevalence estimates generated.

The lack of heterogeneity among these studies makes it often difficult to draw meaningful comparisons between them and to identify trends or patterns, for example, over time, or between countries, age groups or genders. Nonetheless, an attempt is made here to draw together some of the key findings.

Each of the factors that influence the prevalence figures generated is discussed in turn, before addressing the remaining research objectives: considering the extent to which prevalence in the UK can be ascertained from the studies included here and highlighting the gaps in the literature.
<table>
<thead>
<tr>
<th>Source</th>
<th>Country</th>
<th>Year(s) of data capture</th>
<th>Methodology</th>
<th>Age range and size of sample</th>
<th>Types of experience or abuse captured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth Internet Safety Survey</td>
<td>US</td>
<td>2000 2005 2010</td>
<td>Three waves of cross-sectional household, telephone surveys</td>
<td>10–17 years</td>
<td>Online solicitation, Aggressive solicitation, Exposure to online pornography</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reported experiences from the preceding 12 months</td>
<td>n1 = 1,500 n2 = 1,501 n3 = 1,560</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growing Up with Media study</td>
<td>US</td>
<td>2006 2007 2008</td>
<td>Three-year longitudinal, online study</td>
<td>10–15 years at baseline n1 = 1,018</td>
<td>Unwanted sexual solicitation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reported experiences from the preceding 12 months</td>
<td>n2 = 76% of original sample n3 = 73% of original sample</td>
<td></td>
</tr>
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<tr>
<td>Noll et al. (2013)</td>
<td>US</td>
<td>2008–2009</td>
<td>Quasi-experimental study exploring maltreatment as a predictor of high risk</td>
<td>14–17 years</td>
<td>Unwanted exposure to online pornography, Online sexual solicitation, Meetings</td>
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<td>encounters with those met online</td>
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<td>in person with people met online</td>
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<td>Assumed lifetime experiences although not explicitly discussed in the report</td>
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<tr>
<td>Sabina, Wolak and Finkelhor (2008)</td>
<td>US</td>
<td>2006</td>
<td>Retrospective, cross-sectional, online survey</td>
<td>Undergraduate students N=563</td>
<td>Exposure to online pornography</td>
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<td>Respondents asked to report on their lifetime prevalence before age 18</td>
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<td>Baumgartner, Valkenburg and Peter (2010)</td>
<td>the Netherlands</td>
<td>2008</td>
<td>Cross-sectional study with a randomly selected sample drawn from a nationally</td>
<td>12–17 years</td>
<td>Sexual solicitation</td>
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<td>representative population</td>
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<td>Reported experiences from the preceding 6-month period</td>
<td>1,765 youths and 1,026 adults</td>
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<td>Source</td>
<td>Country</td>
<td>Year(s) of data capture</td>
<td>Methodology</td>
<td>Age range and size of sample</td>
<td>Types of experience or abuse captured</td>
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</tbody>
</table>
Asked about lifetime prevalence under age 18 | 18–25 years  
3,426 young adults recruited from vocational schools and universities of applied science | Forced to view pornography  
Had pictures taken of them while undressing or naked |
| Kerstens and Stol (2014) | Netherlands | 2011 | Cross-sectional, online survey  
One-year prevalence of producing images  
Assumed lifetime prevalence of receiving sexual requests (although this is not stated) | 11–18 years  
N = 4,453 | Receiving online sexual requests  
Producing online sexual images |
Reported experiences from the preceding 12 months | 14–17 years  
N= 4,093 | Online sexual solicitation  
Sexual solicitation during an offline meeting  
Forced sexual act during an offline meeting  
Receiving money or gifts or money for sex  
Inappropriate images of self-shared by others |
| Mohler-Kuo et al. (2014) | Switzerland | Sept 2009 to May 2010 | Epidemiological study employing a nationally representative sample  
Reported on prevalence over lifetime (under 18) and in the preceding 12 months | 14–20 years  
N = 6,787  
9th grade students | Sexual harassment on the internet |
<table>
<thead>
<tr>
<th>Source</th>
<th>Country</th>
<th>Year(s) of data capture</th>
<th>Methodology</th>
<th>Age range and size of sample</th>
<th>Types of experience or abuse captured</th>
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<tr>
<td>Karayianni et al. (2017)</td>
<td>Cyprus</td>
<td>2014</td>
<td>Retrospective online survey</td>
<td>15–18 years, n = 1,080</td>
<td>Online sexual solicitation</td>
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<td>Lifetime and prevalence in the preceding 12 months</td>
<td>19–25 years, n = 772</td>
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<td>Gámez-Guadix, De Santisteban and Alcazar (2017)</td>
<td>Spain</td>
<td>Not stated (requested from authors)</td>
<td>Cross-sectional survey</td>
<td>12–15 years</td>
<td>Online sexual solicitation by adults (aged 18+)</td>
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<td>Reported on prevalence and frequency of experiences with someone 18 or older in the preceding 12 months</td>
<td>2,731 pupils from 11 schools in the community of Madrid</td>
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<td>Reported experiences from the preceding 12 months</td>
<td>3,897 pupils from 39 schools in the east of Spain</td>
<td>Unwanted exposure to pornography</td>
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<td>Pressure to obtain personal information</td>
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<td>Online grooming by an adult</td>
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<td>Chang et al. (2016)</td>
<td>Taiwan</td>
<td>2010</td>
<td>One-year longitudinal study</td>
<td>16–17 years</td>
<td>Sexual solicitation</td>
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<td>Reported experiences from the preceding 12 months</td>
<td>2,325 school students drawn from 10th grades</td>
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<td>Unwanted exposure to pornography</td>
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<td>Marret and Choo (2016)</td>
<td>Malaysia</td>
<td>2010</td>
<td>Cross-sectional survey</td>
<td>12–18 years</td>
<td>Forced intercourse at a meeting in person with someone met online</td>
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<td>Reporting lifetime experiences</td>
<td>3,349 internet or mobile phone using youth</td>
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<td>Teimouri et al. (2014)</td>
<td>Malaysia</td>
<td>2013</td>
<td>Cross-sectional survey</td>
<td>Ages 9–11, 12–13 and 16 years</td>
<td>Unwanted exposure to pornography</td>
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<td>Not reported, but assumed lifetime prevalence</td>
<td>N = 420</td>
<td>Online sexual solicitation</td>
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<td>Source</td>
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<td>Year(s) of data capture</td>
<td>Methodology</td>
<td>Age range and size of sample</td>
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<td>Michelet (2003)</td>
<td>Thailand</td>
<td>2002</td>
<td>Online cross-sectional survey</td>
<td>7–25 years</td>
<td>Exposure to pornography</td>
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<td>Participants recruited through media advertising</td>
<td>N = 557</td>
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<td>Not reported but assumed lifetime prevalence</td>
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<tr>
<td>Protecting Children in Cyberspace Survey</td>
<td>Nepal</td>
<td>Not reported</td>
<td>Cross-sectional survey</td>
<td>N = 1,430</td>
<td>Online sexual solicitation</td>
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<td>Self-exposure via webcam</td>
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<td>Offline meeting with someone met online</td>
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<td>Wachs et al. (2016)</td>
<td>Germany, Netherlands, Thailand, US</td>
<td>2013</td>
<td>Cross-sectional survey</td>
<td>11–19 years</td>
<td>Experiences of online grooming by adults</td>
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<td></td>
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<td>Germany and the Netherlands used an online survey; US and Thailand used pen and paper surveys</td>
<td>N = 2,162</td>
<td>Defined ‘cyber-groomers’ as 7 years older than their target and someone the target has known for a ‘long period’ through online communication exclusively</td>
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<td>Reported on experiences in the previous 12 months</td>
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<td>EU Kids Online Study</td>
<td>25 European countries including UK</td>
<td>2010</td>
<td>Cross-cultural survey</td>
<td>9–16 years</td>
<td>Exposure to pornography</td>
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<td>Reported on experiences in the previous 12 months</td>
<td>N = 25,142</td>
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<td>UK sample n = 1,032</td>
<td>Meeting online contacts offline</td>
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<td>Year(s) of data capture</td>
<td>Methodology</td>
<td>Age range and size of sample</td>
<td>Types of experience or abuse captured</td>
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<td>Net Children Go Mobile</td>
<td>7 European countries including UK</td>
<td>2013/14</td>
<td>International survey</td>
<td>9–16 years</td>
<td>Exposure to pornography</td>
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<td>Reported on experiences in the preceding 12 months</td>
<td>Internet users</td>
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<td>n = 3,500</td>
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<td>UK sample, n = 516</td>
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<td>Global Kids Online Survey 2015–16</td>
<td>Argentina, Philippines, Serbia, South Africa</td>
<td>2015–16</td>
<td>Cross-sectional survey</td>
<td>9–17 years (12–17 years in South Africa)</td>
<td>Online sexual requests</td>
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<td>Different context for data collection and sampling in each country</td>
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<td>Reported on experiences in the preceding 12 months</td>
<td>N = 2,437</td>
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<td>Study and country</td>
<td>Year of data capture</td>
<td>Age range of sample</td>
<td>Context of data collection</td>
<td>Restrictions on definition (according to the original authors’ terminology)</td>
<td>Length of reporting period</td>
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<tr>
<td>Baumgartner, Valkenburg and Peter (2010)</td>
<td>2008</td>
<td>12–17</td>
<td>Household survey</td>
<td>Unwanted solicitations</td>
<td>6 months</td>
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<td>The Netherlands</td>
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<tr>
<td>Growing Up with Media study US</td>
<td>2006, 2007, 2008</td>
<td>10–15 at baseline</td>
<td>Household survey online</td>
<td>Unwanted solicitations</td>
<td>12 months</td>
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<td>Study and country</td>
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<td>Youth Internet Safety Survey US</td>
<td>2000, 2005, 2010</td>
<td>10–17</td>
<td>Household survey by telephone</td>
<td>Unwanted (includes any solicitation by an adult)</td>
<td>12 months</td>
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<td>Chang et al. (2016) Taiwan</td>
<td>2010</td>
<td>16–17</td>
<td>Classroom</td>
<td>Unwanted solicitations</td>
<td>12 months</td>
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<td>Helweg-Larsen, Schütt and Larsen (2012)</td>
<td>2008</td>
<td>14–17</td>
<td>Classroom</td>
<td>All solicitations Perpetrator previously unknown to the victim and 5 years older</td>
<td>12 months</td>
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<tr>
<td>Noll et al. (2013) US</td>
<td>2008–2009</td>
<td>14–17 females only</td>
<td>Classroom</td>
<td>All online solicitations 50% of sample from child protection services</td>
<td>12 months</td>
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<tr>
<td>Gámez-Guadix, De Santisteban and Alcazar (2017) Spain</td>
<td>Not stated</td>
<td>12–15</td>
<td>Classroom</td>
<td>Solicitations by an adult</td>
<td>12 months</td>
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<td>Study and country</td>
<td>Year of data capture</td>
<td>Age range of sample</td>
<td>Context of data collection</td>
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<td>Length of reporting period</td>
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<td>Montiel, Carbonell and Pereda (2016) Spain</td>
<td>2011</td>
<td>12–17</td>
<td>Classroom</td>
<td>Sexual coercion, Sexual pressure, Being groomed by an adult</td>
<td>12 months</td>
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<td>Wachs et al. (2016) Germany, Netherlands, Thailand, US</td>
<td>Not stated</td>
<td>11–19</td>
<td>Classroom</td>
<td>Online grooming by an adult at least 7 years older than the respondent; perpetrator known exclusively online</td>
<td>12 months</td>
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<tr>
<td>Mohler-Kuo et al. (2014) Switzerland</td>
<td>2009–2010</td>
<td>13–20</td>
<td>Classroom</td>
<td>Unwanted sexual harassment via the internet</td>
<td>Lifetime and 12 months</td>
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<tr>
<td>Karayianni et al. (2017) Cyprus</td>
<td>2014</td>
<td>15–18</td>
<td>All solicitations</td>
<td>Lifetime</td>
<td>24%</td>
</tr>
<tr>
<td>Kerstens and Stol (2014) Netherlands</td>
<td>2011</td>
<td>11–18</td>
<td>Classroom</td>
<td>All sexual solicitations via the internet</td>
<td>Lifetime</td>
</tr>
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</table>
The nature of sexual requests

Karayianni et al.’s (2017) survey exploring lifetime prevalence of all forms of CSA in Cyprus found that of those who indicated experiencing online sexual requests:

- 12.9% reported having spoken to someone in a sexual way online or on a mobile phone
- 5.2% were asked to send naked photos or photos with sexual content.

Similarly, findings from the second Youth Internet Survey (Mitchell, Wolak and Finkelhor, 2008) found that:

- 4% of the respondents received requests to send sexualised pictures of themselves in the previous year
- 2% of the respondents reported receiving multiple requests
- only one of the 65 respondents who reported receiving such a request had complied by sending an image.

Kersten and Stol’s (2014) analysis of the Dutch survey data gathered in 2011 found that:

- 22% of their respondents received questions about sex (23.3% males and 20.6% females)
- 16% received requests for sexual intercourse (15.9% males and 16.1% females)
- 12.1% were asked questions about their breasts and/or genitals (10.3% males and 14.1% females).

Teimouri et al.’s (2014) survey conducted in 2013 of online risks among Malaysian young people found that:

- 17.9% reported that they had been ‘asked to talk about inappropriate acts’
- 8.8% said that ‘someone asked to do inappropriate acts’.

The wording of the questions in this study were very ambiguous and thus it is unclear if the respondents were referring to acts of online-facilitated CSA.

Sexual exploitation

The first US-based Youth Internet Safety in 2000 found that 1% of the sample received gifts of money from the contact. Similarly, Helweg-Larsen, Schütt and Larsen’s (2012) Danish survey conducted in 2008 found that 1% of males and 0.8% of females received money or gifts for sex from a person they believed to be an adult they met online. Some 2.2% of males and 7.7% of females had been offered money or gifts for sex via the internet by an unknown person whom they believed was at least five years older than they were, suggesting that young males were more vulnerable to online grooming when the perpetrator offered money or gifts.
Being photographed or recorded when getting undressed and/or naked.

One study conducted in the Netherlands (Okur, van der Knaap and Bogaerts, 2015) found that 2.3% of respondents had experienced having sexualised images taken of them by someone else when they were under age 18. It is unclear from the survey question whether these images were produced online or were later posted on the internet. Consequently, the figure may overestimate the number of young people who know that sexualised images have been taken or recorded of them.

Being asked to undress or do something sexual live over a webcam

Almost 6% of Karayanni et al.’s (2017) survey respondents in Cyrus reported that they had been asked to do something sexual live over the internet, and 9.1% of Kerstens and Stol (2014) respondents reported being asked to undress in front of a webcam. Young females reported receiving such a request at a higher rate than the young males (10.7% vs 7.5%).

Risky online forums

The Growing Up with Media study in the US found that the most risky forums for online grooming and sexual requests in rank order were instant messaging, chatrooms, social networking sites, email, gaming and blogging. The finding that blogging was the least risky online activity from this list corresponds with the findings from the Youth Internet Survey.

Perpetrators of online-facilitated CSA

It is difficult to ascertain the true characteristics of perpetrators of online-facilitated CSA who are unknown to the young person or only known online. However, some studies have asked about the relationship with the perpetrator and/or for perceptions of the age and gender of the perpetrator.

Relationship to victim

The findings from the first Youth Internet Safety Survey in 2000 suggested that 3% of respondents received online sexual requests from people already known to them offline. Similarly, Mohler-Kuo et al.‘s (2014) survey in Switzerland, exploring the prevalence of ‘online sexual harassment’, found that just under 3% of reported incidents were perpetrated by family members.

Gámez-Guadix, De Santisteban and Alcazar’s (2017) Spanish survey of 12–15-year-olds found that 12.6% of them reported having received online sexual requests from adults, and 28% of adult perpetrated online grooming or sexual communications were perpetrated by someone already known to the young person.
Gender

Of Gámez-Guadix, De Santisteban and Alcazar’s (2017) respondents who reported experiencing online sexual grooming, 73.7% believed the perpetrator to be male. Similarly, Mitchell, Finkelhor and Wolak (2003) reported from the first US Youth Internet Safety Survey that it was believed that a third of online sexual requests and a quarter of aggressive sexual requests were made by a female.

Age

Of Gámez-Guadix, De Santisteban and Alcazar’s (2017) Spanish respondents who reported experiencing online sexual grooming, almost 60% believed the perpetrator was aged between 18 and 20 years.

Helweg-Larsen, Schütt and Larsen’s (2012) Danish survey findings suggest that there might be a gender difference in the perceived age of the individuals sending online sexual requests. They found that two-thirds of young males believed the request had been sent by a similar aged peer. Whereas less than a third of young females believed likewise. Thus, indicating that young females might be more likely to be targeted by adults.

The findings from the first Youth Internet Safety Survey (Mitchell, Finkelhor and Wolak, 2003) suggest that a considerable number of those making online sexual requests to young people are, or at least present to be, aged 18–25 years. About one-quarter (24%) of the survey respondents who had received online sexual requests believed them to have come from someone aged 18–25 years. Aggressive online sexual requests (e.g. demands to meet offline) were believed to be made mostly by this age group (34%).

The distress caused by online sexual requests

The three Youth Internet Safety Surveys in the US (Jones, Mitchell and Finkelhor, 2012) found there was a reduction between 2000 and 2010 in the number of young adolescents (10–12-year-olds) who reported receiving distressing online sexual requests in the previous year (5% in 2000 down to 3% in 2005 and 1% in 2010). However, the rate increased slightly for the older age groups between the 2000 and 2005 surveys (4–5% for 13–15-year-olds and 5–6% for the 16–17-year-olds) and then declined again for both groups in the 2010 survey (3% for each group).

Kersten and Stol’s (2014) analysis of the Dutch survey data gathered in 2011, which explored lifetime prevalence rates, found that 7.2% of the sample (3.1% males and 11.5% of females) reported receiving ‘bothersome’ sexual requests. This was almost a third (28.2%) of those who reported receiving sexual requests. The young people aged 15–16 years were those most likely to receive ‘bothersome’ online sexual requests (8.7% of this age group), followed by the 7.4% of the 13–14-year-olds, 5.4% of the 11–12-year-olds and 5.1% of the 17–18-year-olds.
Trends in prevalence rates of online sexual requests and grooming

*Online sexual requests*

The prevalence figures have been variously reported for experiences over a 6-month, 12-month or lifetime period. As would be expected, lifetime prevalence rates of receiving online sexual requests were slightly higher than the 12 and six-month rates.

Additionally, some studies reported on all online sexual requests where as others only reported on unwanted online sexual requests and/or when the sexual requests were made by an adult. As would be expected, rates of unwanted sexual requests were slightly lower than the rate of all sexual requests.

Whereas previous research has suggested that studies that involve survey completion in the classroom result in lower prevalence rates (e.g. Gámez-Guadix, De Santisteban and Alcazar, 2017), this trend was not evident in the studies included in this REA.

Gender and age-related differences were found relating to prevalence of online sexual requests. These are outlined below.

*Online sexual requests and gender*

The prevalence ranges for online sexual requests by gender and reporting period are presented in Table 5.

Young females were slightly more likely than young males to report receiving online sexual requests when no distinction was made between ‘wanted’ and ‘wanted’ (or adult perpetrated) requests. However, when the distinction is made between ‘wanted’ and ‘unwanted’ requests the prevalence rate for young females becomes two to three times that of young males:

- 1 in 3 young women reported a lifetime prevalence of receiving an unwanted (or adult perpetrated) online sexual request.
- 1 in 10 young man reported likewise.
- Up to 1 in 5 young women reported receiving an unwanted (or adult perpetrated) online sexual request in the preceding 12 months.
- Less than 1 in 10 young men reported likewise.
Table 5 The prevalence of receiving online sexual requests, by gender of receiver and how survey question is framed

<table>
<thead>
<tr>
<th>Framing of the questions</th>
<th>Prevalence for males and females combined</th>
<th>Range of prevalence figures for females</th>
<th>Range of prevalence figures for males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifetime prevalence and all online sexual requests</td>
<td>Not reported</td>
<td>16.2–28.2%</td>
<td>5.4–25.4%</td>
</tr>
<tr>
<td>12 months prevalence and all online sexual requests</td>
<td>12.6–19.9%</td>
<td>10.2–20%</td>
<td>8–15.9%</td>
</tr>
<tr>
<td>Lifetime prevalence and unwanted (and adult perpetrated) online sexual requests</td>
<td>Not reported</td>
<td>28.2%</td>
<td>9.8%</td>
</tr>
<tr>
<td>12 months prevalence and unwanted (and adult perpetrated) sexual requests</td>
<td>Not reported</td>
<td>15.3–18.7%</td>
<td>5.4–8%</td>
</tr>
</tbody>
</table>

Online sexual requests and age

Karayianni et al.’s (2017) survey exploring lifetime prevalence of all forms of CSA in Cyprus found respondents started to receive online sexual requests at 8 years old. The rate of online sexual requests remained relatively low between ages eight and 11 years (2% of all CSA reports), but increased between ages 12 and 16 years (37% of all CSA reports) and then declined between ages 17 and 18 (11% of all CSA reports). Between ages 12 and 16, online sexual requests were the most reported form of CSA.

The same increase in prevalence as young people progress through adolescence identified by Karayianni et al. (2017) has been consistently found in samples from different countries and when using different research designs.

The US longitudinal study (Growing Up with Media), the multi-wave study (Youth Internet Safety Survey) and Baumgartner, Valkenburg and Peter’s (2010) survey in the Netherlands all demonstrate that the prevalence of receiving online sexual requests increases from early to late adolescence, before it begins to decline in early adulthood.

Only Baumgartner, Valkenburg and Peter (2010) report on the prevalence across adolescence for young men and women separately. They present prevalence rates for both ‘being asked to talk about sex’ and ‘being asked to do something sexual’ online. They found that risk increased for males very slightly as they move from early (12–13 years), through middle (14–15 years) to late adolescence (16–17 years) for both these forms of online CSA (see prevalence rates in Table 5).
Conversely, young women reported a dramatic increase in prevalence of being asked to talk about sex from age 14 until they reach adulthood. Although there is a considerable increase in the prevalence of young women being asked to do something sexual online between early and middle adulthood, the rate then remains stable rather than increasing further in late adolescence.

Thus, it appears that the increase in prevalence of young people receiving online sexual requests may be accounted for mainly by the rise in prevalence for young females, which is less evident among young men.

**Online sexual requests and trends over time**

Findings from the Youth Internet Safety Survey in the US demonstrated that across all three age groups there was a decline in the proportion of young people reporting online grooming and sexual requests between each of the successive waves of the survey (19% in 2000, 13% in 2005 and 9% in 2010).

However, it is noted that there appears to have been a change in research procedure between surveys 1 and 2, which might partly account for the decrease in reported solicitations. In survey 1 the participants were guaranteed complete confidentiality, but by survey 2 it was reported that any respondents who disclosed they had experienced online solicitation were to be contacted by a counsellor to talk through what had happened and consider next steps. It is thought that participants would have been told about this change in policy before agreeing to participate, which might have affected disclosure rates.

**Online grooming**

Four studies included in this section of the REA asked specifically about online grooming or sexual requests made by adults: an international study examining prevalence in Thailand, the Netherlands, Germany and the US (Wachs et al., 2016); two conducted in Spain (Gámez-Guadix, De Santisteban and Alcazar, 2017; Montiel and Carbonell, 2012); and one conducted in Denmark (Helweg-Larsen, Schütt and Larsen, 2012).

**Online grooming and gender**

Wachs et al.’s (2016) international study reported that while prevalence was higher in females in Western countries, this gender difference was reversed in South Asian countries. This finding was supported by Chang et al.’s (2016) survey of young people in Taiwan, where researchers also found young males had a higher prevalence than young females of online sexual solicitation.

Helweg-Larsen, Schütt and Larsen’s (2012) Danish survey, conducted in 2008, found that the 12-month rate of online grooming and sexual requests by an unknown contact were significantly greater for females (16.2%) than males (5.4%).
Similarly, Montiel, Carbonell and Pereda (2016) found that young women were more than twice as likely as young men to report online grooming by an adult (24.2% vs 9.4%) over the preceding 12 months, when asked to indicate their experiences using behavioural specific questions. The study did not require the respondents to self-identify as being targeted by an online groomer.

**Online grooming and age**

Only one study, in Spain, explored potential differences in prevalence of online grooming by an adult by the age of the target (Montiel, Carbonell and Pereda, 2016), finding that prevalence increased with the age of the young person, as it had done for young people receiving online sexual requests.

Whereas 9.6% of 12–13-year-olds reported being targeted by an adult online groomer, this figure increased to 17.3% for 14–15-year-olds and further to 25.6% for 16–17-year-olds.

**The frequency of online sexual grooming and sexual requests**

The Growing Up with Media study in the US found that of the young people who reported being targeted for online grooming or receiving sexual requests, 29% said that they have been targeted monthly or more frequently. However, it is not known whether the repeated requests were made by the same or different perpetrators.

**Requests to meet offline**

Young people’s internet use and online communication with previously unknown individuals can lead to requests for an offline meeting, which can occur inside or outside the context of sexualised conversations or grooming. Meetings that occur outside the grooming context do not involve the same level of risk of harm as those that do. For example, Marret and Choo’s (2016) survey of Malaysian young people found that 51% of respondents had been invited to an offline meeting by an online contact. Of whom, 60% complied with the request, and just under 2% of the sample experienced a serious sexual assault at the offline meeting. Since those who agreed to meet online contacts offline had met in person an average of six different online contacts, the chance of a serious contact CSA incident occurring at an offline meeting with someone who has not previously made a sexual request is 1 in 150.

Conversely, the first Youth Internet Safety Survey in 2000 found that only 3% of respondents experienced ‘aggressive solicitations’ (in which offline contact was requested or occurred), but the rate increased with the age of respondents: 1% of 10–12-year-olds, 4% of 13–15-year-olds and 5% of 16–17-year-olds reporting being the recipient of a request to meet someone who had been sending them online sexual requests.

This same age and risk trend was evident in the 2005 and 2010 survey findings, although while the prevalence rate remained the same for the 10–12-year-olds in all three surveys, the risk
increased slightly for both 13–15-year-olds and 16–17-year-olds (5% and 6% respectively) in 2005, and then declined in 2010 (to 3% and 4% respectively).

**Meeting offline**

Several studies have discovered that a considerable proportion of young people have offline meetings with people whom they originally met online.

Helweg-Larsen, Schütt and Larsen’s (2012) Danish survey found that in the preceding 12 months 45.4% of females and 40.8% of males had met an individual offline whom they had originally met online, as had 30% of Noll et al.’s (2013) US study participants.

As Helweg-Larsen, Schütt and Larsen’s (2012) survey and Noll et al.’s (2013) study were both conducted in 2008, and half of Noll et al.’s sample were deemed to be at high risk of revictimisation, these figures suggest that young people in the US were possibly less likely to meet offline a contact made online than were their Danish counterparts.

The rate of interacting with people only known online, and having offline meetings with online contacts, appears to be considerably lower in the UK than in other European countries. Only 12% of the UK sub-sample from the Net Children Go Mobile study (Mascheroni and Ólafsson, 2014) reported interacting online with previously unknown people, and just 3% reported meeting an online contact offline. The UK rate of offline meetings was considerably lower than the other six European countries included in the study (12% average).

In these other countries, just 3% of children and young people who had met an online contact offline said they had been upset by the experience. No UK respondent reported such a reaction.

Marret and Choo’s (2016) Malaysian survey found that 58.8% of young people complied with requests to meet an online contact offline, and that 55% of them reported that they had each met more than six people this way.

Offline meetings with online contacts who had engaged in online grooming or sending sexual requests were less frequent. In the third Youth Internet Safety Survey, conducted in 2010, only 3% of young people who had been groomed met the perpetrator offline.

Karayianni et al.’s (2017) survey, exploring lifetime prevalence of all forms of CSA in Cyprus, found that 2.2% of the sample, or 24% of those who experienced online grooming, indicated that when they met a contact offline that person was different from how they had portrayed themselves to be online. This suggests that while few children and young people in this sample met an online contact offline, they were more likely to meet them offline when their interaction had included online grooming.

This REA did not encounter any studies that examined the rate of offline meetings in the context of receiving sexual requests or sexual grooming in the UK.
The risk of sexual abuse at an offline meeting

Helweg-Larsen, Schütt and Larsen’s (2012) survey (in Denmark) found that 7.1% of males and 4.5% of females who had offline meetings with online contacts who were at least five years older than themselves reported that the person made a sexual request during the offline meeting. Furthermore, 1.2% of females and 0.5% of males who met offline with an older online contact reported experiencing forced sexual activity during the meeting. Similarly, findings from the third Youth Internet Safety Survey, conducted in 2010 in the US, revealed that only 1% of young people who received online sexual requests had sexual contact at an offline meeting.

However, Marret and Choo’s (2016) Malaysian survey found a higher rate of sexual abuse in these circumstances. They found that of the 58.8% of young people who met an online contact offline, 1.8% experienced forced intercourse, and thus rates of other forms of sexual contact would presumably be higher. This figure under-estimates the rate of sexual abuse that occurred during these meetings since the survey had no questions on non-penetrative sexual assault or sexual assault or rape that did not involve the use of force (for example, using deception).

The risk of harm from contact sexual offence posed by young people’s use of the internet is illustrated in Figure 3, which is based on data from the Youth Internet Safety Survey and should be read from left to right. It begins with the figure of 10,000 internet-using young people, then shows the number of them who go through the different stages that increase their risk of experiencing contact CSA: 900 received an online sexual request, of whom 270 experienced online grooming, nine were invited to an offline meeting with the perpetrators, three complied with the request, and one was sexually assaulted at an offline meeting.
Figure 3 Graphical representation of risk estimated for 10,000 internet-using young people in the US
Measurement tools used to assess online-facilitated CSA

A variety of forms of online-facilitated CSA were investigated in the studies described above. In some instances, established questionnaires were used in several studies (sometimes in modified format), and some researchers constructed their own questions to assess young people’s experiences. The strengths and limitations of the tools and questions used to assess each form of online-facilitated CSA are discussed below, looking at how they measure repeated or multiple incidents, and the potential they have for under or over-estimating prevalence.

Several surveys have developed and validated, or employed previously validated, questionnaires to ascertain whether their respondents have experienced online-facilitated CSA. The tools identified in this REA are the Juvenile Online Victimisation Questionnaire (Montiel and Carbonell, 2012) employed by Montiel, Carbonell and Pereda (2016) and the questionnaire for Online Sexual Solicitation and Interactions with Adults (Gámez-Gámez-Guadix, De Santisteban and Alcazar, 2017).

The Juvenile Online Victimisation Questionnaire

This questionnaire measures general online abuse and bullying has 30 items inquiring about five forms of online sexual abuse: sexual pressure (six items), sexual coercion (nine items), online grooming by an adult (seven items), unwanted exposure to sexual context (four items) and violation of privacy (four items), with possible answers on a four-point Likert scale: ‘never’, ‘occasionally’, ‘often’ and ‘always’.

To determine prevalence rates, the authors dichotomised the scores on each item (showing whether respondents had or had not experienced each form of abuse) with any respondent who stated that they experienced the item occasionally or more frequently classified as having been a victim of online sexual abuse. Respondents only had to respond ‘occasionally’ to any one item from one of the subscales to be classified as a victim. Although the full set of questions was not presented in the paper, the wording of the questions specified that the incidents were both unwanted and occurred via the internet, and the authors assessed 12-month prevalence rates. The questionnaire, currently in Spanish, has not been published in English.

The authors found considerably higher rates of online grooming when using this instrument than in other surveys with different measurement tools. They suggest this might be because they used a relatively large number of questions about specific behaviour to ascertain victim status and report that multi-item scales have been found to produce higher rates than single questions (Gradinger, Strohmeier and Spiel, 2010). It is possible that by asking about very specific behaviours, the questions become less ambiguous to participants. Indeed, Menesini, Nocentini and Calussi (2011) contend that the use of such multi-item scales is likely to capture experiences more accurately.
The Questionnaire for Online Sexual Solicitation and Interactions with Adults

This is a 10-item questionnaire that assessed adult perpetrated online sexual grooming of young people. The validation process was conducted with a sample of young people in Madrid, Spain. The ten statements were worded so that responses related only to incidents perpetrated by someone at least 18 years old and in the preceding year:

1. An adult asked me for pictures or videos of myself with sexual content.
2. An adult asked me questions about explicit sexual content through the internet or a mobile device.
3. I have been asked to have cybersex with an adult (e.g., via a webcam).
4. An adult asked over the internet me to have offline sex.
5. An adult sent me photos or videos of himself/herself with sexual content.
6. I have sent an adult photos or videos with sexual content of me.
7. I have maintained a flirtatious relationship with an adult online.
8. I talked about sexual things with an adult on the internet.
9. I’ve met an adult I previously met on the internet in person.
10. We have met offline to have sexual contact.

The response choices were based on a four-point Likert scale that permitted affirmative responses and stating the frequency of the experience: ‘never’, ‘once or twice’, ‘three–five times’ and ‘six or more times’. When a respondent gave an affirmative response, they were asked a probe question to ascertain the number of perpetrators, with the possible responses: ‘1 person’, ‘2–3 persons’, ‘4–5 persons’ and ‘5 or more persons’. The respondents were also asked to report how they originally met the perpetrator: ‘online’ or ‘offline’.

Although the wording of the statements might result from the translation process, the use of the word ‘maintained’ in statement 7 (‘I have maintained a flirtatious relationship with an adult online’) implies that the young person should take some responsibility for the interaction. Such wording might be internalised by the young person to infer victim blame or self-blame if they agreed with the statement.

The wording of the scale instructions and items are contradictory in that the instructions ask participants to report on experiences that have occurred over the phone or internet, but some individual questions ask for responses specific to either the internet or the phone.

This scale is likely to slightly under-estimate the prevalence of grooming as the tool does not capture unwanted solicitation by perpetrators who are believed to be under age 18.

Other questionnaires that determine online grooming and sexual requests

Most victimisation surveys that have included questions on online-facilitated CSA have focused on what has been referred to as ‘sexual solicitation’ (e.g. Baumgartner, Valkenburg and Peter, 2010; Chang et al., 2014; Gámez-Guadix, De Santisteban and Alcazar, 2017; Helweg-Larsen, Schütt and Larsen, 2012; Karayianni et al., 2017; Noll et al., 2013; Youth Internet Safety Survey),
which is the US term for online grooming and sexual requests. Since some studies have inquired about repeat victimisation (although none have asked whether it was perpetrated by the same or different individuals), clearly a proportion of online sexual requests do not comply with the definition of grooming, since they consist of a one-off incident or there is no evidence of progression through the stages of grooming (Whittle et al., 2013). There have been between one and ten questions to ascertain whether a respondent should be classified as a victim of online grooming ranged (Noll et al., 2013) (Gámez-Guadix, De Santisteban and Alcazar, 2017). Many studies have employed three questions (see Table 6) or slightly modified versions of those devised by Mitchell, Finkelhor and Wolak (2003) in the first wave of the Youth Internet Safety Survey.

In some instances, the wording of questions has separated what has been referred to as ‘wanted’ sexual requests from those that are ‘unwanted’, to prevent consensual age-appropriate peer interactions from being classified as abuse. Without this, calculations of prevalence could be over-estimated.

However, precautions must be taken to ensure that the experiences of young people who have been groomed by adults into believing that they are in a consensual relationship can also be captured in the prevalence figures. Merely asking about ‘wanted’ and ‘unwanted’ sexual requests would exclude the abuse experiences of victims of grooming, since they are likely to consider these requests as ‘wanted’ (Pearce, 2009). One way to overcome this problem is to ask about the age (or perceived age) of the person making the sexual requests. Where the person making the request is an adult and significantly older than the young person this grooming is reclassified as abusive even if the respondent refers to the request as ‘wanted’.

Analysis of the measures used in the studies included in this REA has highlighted that it is the combination of questions used, response choices offered to the survey participants, framing of the question(s) and age range of the sample that determines whether a particular study has the potential to garner a realistic estimate of prevalence of this particular form of online-facilitated CSA. These issues and the impact on the potential skewness of the reported prevalence rates for each study that assessed the extent of online grooming and sexual requests are presented in tables 4 and 6.
Table 6 Questions and response choices to determine experiences of online grooming and sexual requests

<table>
<thead>
<tr>
<th>Study</th>
<th>Questions asked</th>
<th>Response options permitted</th>
<th>Able to assess repeat victimisation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth Internet Safety Survey</td>
<td>‘In the past year, did anyone on the Internet ever try to get you to talk online about sex when you did not want to?’&lt;br&gt;‘In the past year, did anyone on the Internet ask you for sexual information about yourself when you did not want to answer such questions? I mean very personal questions, like what your body looks like or sexual things you have done?’&lt;br&gt;‘In the past year, did anyone on the Internet ever ask you to do something sexual that you did not want to do?’</td>
<td>‘Yes’ or ‘no’&lt;br&gt;Respondents were also asked if they were in a close online relationship with an adult; those who answered affirmatively and reported that the relationship was ‘sexual in any way’ were categorised as having been a victim of online grooming</td>
<td>No</td>
</tr>
<tr>
<td>Growing Up With Media study</td>
<td>Same three questions as Youth Internet Survey above</td>
<td>‘Yes’ or ‘no’</td>
<td>No</td>
</tr>
<tr>
<td>Baumgartner, Valkenburg and Peter (2010)</td>
<td>Same three questions as for Youth Internet Survey above</td>
<td>‘Never’, ‘once’, ‘twice’, ‘3 to 5 times’ and ‘6 times or more’</td>
<td>Yes</td>
</tr>
<tr>
<td>Chang et al. (2016)</td>
<td>‘How often has someone asked you to talk about sex online when you did not want to?’&lt;br&gt;‘How often has someone asked you to do something sexual online that you did not want to?’</td>
<td>‘Never’, ‘not this year’, ‘a few times this year’, ‘a few times a month’ and ‘a few times within a week’&lt;br&gt;Participants who answered ‘a few times this year’ or more frequently to either question were classified as a victim</td>
<td>To some extent</td>
</tr>
<tr>
<td>Noll et al. (2013)</td>
<td>‘How often have you had sexual advances from people online?’</td>
<td>0 = ‘never’ to 4 = ‘very often’</td>
<td>Yes – but imprecise</td>
</tr>
<tr>
<td>Study</td>
<td>Questions asked</td>
<td>Response options permitted</td>
<td>Able to assess repeat victimisation?</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
<td>-------------------------------------</td>
</tr>
</tbody>
</table>
| Helweg-Larsen, Schüt and Larsen (2012) | Asked about experiences of having:  
  - rumours spread online about them  
  - inappropriate picture(s) placed on the internet against respondent’s will  
  - been duped by a false internet profile  
  - been sexually harassed  
  - had online sexual requests from an unknown person  
  - been offered money or gifts for sex by an unknown person | Not reported                                                   | No                                                                |
| Karayianni et al (2017)              | Whether respondents had been:  
  - talked to in a sexual way online or on their mobile phone  
  - asked to meet someone who was not the person the respondent had communicated with online or via cell phone  
  - asked to record themselves or see them live via the internet to get sexual arousal or satisfaction  
  - asked to send naked photos or with sexual context via the internet or cell phone | ‘1 or 2 times’, ‘sometimes’, ‘once a month or two months’, ‘sometimes of the month’ and ‘once a week or more often’ | Yes, but imprecise                  |
| Kerstens and Stol (2014)             | Referred to:  
  - being asked questions about sex  
  - someone making requests for sexual intercourse  
  - questioned about breasts and/or genitals  
  - requests to undress on a webcam | ‘Never’, ‘once’ or ‘several times’                            | Yes                                                               |

**Gaps in the measurement of online grooming**

Any scale that measures the prevalence of online grooming should ensure that the different phases of grooming are included, so the number of successful and unsuccessful attempts to groom children and young people online for sexual purposes can be calculated. This would make it possible to estimate young people’s ability to manage online risks safely. Berson’s (2003) list of five stages of online grooming is helpful when critiquing existing scales or constructing new
measures of online grooming. She suggested that online grooming behaviours go back and forth through at least some of the following five discrete stages:

- **friendship formation**, making an effort to get to know the victim, which might include covert activity to find out key information about her or him
- **relationship formation**, to secure the target’s trust in the perpetrator, typically achieved by discussing personal issues related to family, friends, hopes and fears
- **risk assessment**, to assess the likelihood of getting caught by the police, often based on factors such as where the young person accesses the internet (e.g. own computer in bedroom) and the level of parental supervision
- **exclusivity**, by encouraging the target to keep their relationship a secret from others
- **sexual stages**, of enticed or forced through threats to engage in sexual conversations with the perpetrator, to send them sexually explicit images of themselves or to participate in live-streamed sexual activities.

**Exposure to adult pornography**

Ten studies included prevalence rates of exposure to adult pornography, which are presented in Table 7. They investigated the following types of exposure: voluntary exposure (Sabina, Wolak and Finkelhor, 2008), unwanted exposure (e.g. Chang et al., 2016; Montiel, Carbonell and Pereda, 2016; Youth Internet Safety Survey), undifferentiated voluntary and unwanted exposure (EU Kids Online study; Michelet, 2003; Net Children Go Mobile study) and forced exposure (Okur, van der Knaap and Bogaerts, 2015).

Prevalence rates were reported for one year and over the lifetime. Lifetime prevalence rates, as would be expected, were generally higher than 12-month rates.

Rates of exposure appear to be higher in South Asian countries than Western countries. Only two studies included samples from the UK (EU Kids Online and the Net Children Go Mobile), and these did not distinguish between voluntary and unwanted exposure. Overall, the prevalence rates for exposure to online adult pornography for the UK in 2010 and 2014 appeared to be considerably lower than that found in other countries.

Only one study specifically investigated young people’s exposure to images of CSA (Sabina, Wolak and Finkelhor, 2008). It is somewhat dated, as the survey was conducted in 2006, and found relatively high rates of exposure (15.1% of males and 8.9% of females).

**Key trends**

**Age**

Sabina, Wolak and Finkelhor’s (2008) survey conducted in the US in 2006 found that the age at which young people were first exposed to adult pornography ranged from 8 years to 17 years, with a mean of 14.3 years for males and 14.8 years for females. Only 3.5% of male respondents
and 0.5% of female respondents reported exposure under age 11. However, Michelet’s (2003) study in Thailand in 2002 found that 35% of 7–11-year-olds had either intentionally or unintentionally engaged with sexual content online.

The findings from the Youth Internet Safety Survey (Jones, Mitchell and Finkelhor, 2012) in the US; from young people in Serbia, South Africa and Argentina who participated in the Global Kids Online study (Byrne et al., 2016); and from Montiel, Carbonell and Pereda’s (2016) 2011 survey in Spain show that exposure to unwanted adult pornography increases with age as young people progress through adolescence.
Table 7: Studies examining exposure to pornography

<table>
<thead>
<tr>
<th>Study and country</th>
<th>Year of data capture</th>
<th>Type of exposure</th>
<th>Prevalence rate</th>
<th>Distressing exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td></td>
<td></td>
<td>2010 15% of 10–12-year-olds 23% of 13–15-year-olds 28% of 16–17-year-olds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2010 15% of 10–12-year-olds 23% of 13–15-year-olds 28% of 16–17-year-olds</td>
</tr>
<tr>
<td>Chang et al. (2016) Taiwan</td>
<td>2010</td>
<td>Unwanted exposure to online pornography 12-month prevalence</td>
<td>2010 – 33.9%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td></td>
<td>2011 – an additional 22% of those who had not previously been exposed (no other figures reported)</td>
<td></td>
</tr>
<tr>
<td>Okur, van der Knaap and Bogaerts (2015) Netherlands</td>
<td>2011–2012</td>
<td>Forced to watch pornographic images Lifetime prevalence</td>
<td>2.8%</td>
<td></td>
</tr>
<tr>
<td>Sabina, Wolak and Finkelhor (2008) US</td>
<td>2006</td>
<td>Exposure to online pornography under age 18 Lifetime prevalence</td>
<td>Overall 72% (62.1% of females and 93.2% of males) Unintentional exposure: 42% of females, 6.8% of males Exposed to images of CSA: 15.1% of males, 8.9% of females Exposed to images of rape or sexual violence:</td>
<td></td>
</tr>
<tr>
<td>Study and country</td>
<td>Year of data capture</td>
<td>Type of exposure</td>
<td>Prevalence rate</td>
<td>Distressing exposure</td>
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<tr>
<td>-------------------</td>
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<td>------------------</td>
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<td>---------------------</td>
</tr>
<tr>
<td>Montiel, Carbonell and Pereda (2016) Spain</td>
<td>2011</td>
<td>Unwanted exposure to online sexual content 12-month prevalence</td>
<td>Overall 24.4% (24.4% of males, 23.8% of females) 17.9% of 12–13-year-olds 26% of 14–15-year-olds 29.4% of 16–17-year-olds</td>
<td></td>
</tr>
<tr>
<td>Teimouri et al. (2014) Malaysia</td>
<td>2013</td>
<td>Unwanted exposure to online pornography Lifetime prevalence</td>
<td>54.5% exposed to unwanted obscene material on the web at least once 33.1% received unwanted obscene materials in a message or link at least once</td>
<td></td>
</tr>
<tr>
<td>Teimouri et al. (2014) Malaysia</td>
<td>2013</td>
<td>Unwanted exposure to online pornography Lifetime prevalence</td>
<td>54.5% exposed to unwanted obscene material on the web at least once 33.1% received unwanted obscene materials in a message or link at least once</td>
<td></td>
</tr>
<tr>
<td>Michelet (2003) Thailand</td>
<td>2002</td>
<td>Exposure to pornography Lifetime prevalence</td>
<td>At least 35% of 7–11-year-olds had found themselves at least once, intentionally or unintentionally, on a website containing sexually explicit material 58% of 12–18-year-olds had intentionally engaged with a pornographic website at least once</td>
<td>43% of under 11s 64% of 12–18-year-olds had found themselves on a website that had shocked them (mostly with sexually explicit content)</td>
</tr>
<tr>
<td>EU Kids Online and Net Children Go Mobile studies 7 EU countries including the UK</td>
<td>2010 2013/14</td>
<td>Seen sexual images on websites 12-month prevalence</td>
<td>2010 – 15% across all countries (18% of males, 12% of females) 2013/14 – 17% across all countries (15% of males, 19% of females) UK: online and offline exposure combined, 24% in 2010 down to 17% in 2014 UK: online exposure, 11% in 2010 and 12% in 2014</td>
<td></td>
</tr>
</tbody>
</table>
Gender

Only four studies had analysed exposure to pornography rates by gender. Montiel, Carbonell and Pereda’s (2016) Spanish survey conducted in 2011 found similar rates of unwanted exposure to online sexual content between males and females. However, the comparative analysis of the EU Kids Online and the Net Children Go Mobile Studies (Livingstone et al., 2014b) found that while young males were more likely to report exposure to sexual content on the internet in 2010 (18% vs 12%), by 2014 fewer males and more females (15% vs 19%) were exposed to sexual images. All four countries included in the Global Kids Online study (Byrne et al., 2016) found greater prevalence of exposure for young males than young females. It appears that gender equivalence in exposure was more likely for studies that examined unwanted exposure, and a higher prevalence rate for males was found in studies that did not differentiate between voluntary and unwanted exposure.

Sabina, Wolak and Finkelhor’s (2008) US study found that more males than females reported exposure to extreme forms of pornography (e.g. involving paraphilic activity or violence) and images of CSA. Most males (80%) reported feeling sexual excitement in response to their exposure, whereas only 27% of females reported likewise. In contrast, females were more likely than males to report feeling embarrassed (73% vs 25%), disgusted (51% vs 20%) or shocked (78% vs 65%).

Across time

The Youth Internet Safety Survey (Jones, Mitchell and Finkelhor, 2012) found that while there was an increase in unwanted exposure to online adult pornography between 2000 and 2005, the rate declined slightly in 2010 across all age groups. However, an analysis of the seven EU countries that participated in the EU Kids Online and the Net Children Go Mobile studies (Hasebrink, 2014) found that between 2010 and 2013/14 there was a slight increase (from 15% to 17%) in the proportion of young people aged 11–16 years who had seen sexual images online. In the UK, the rate of online exposure increased slightly from 10% in 2010 to 12% in 2014 (Livingstone et al., 2014a). However, the overall rate of exposure to sexual content online and offline had fallen significantly in between these two waves of data collection (24% in 2010 down to 17% in 2014).

Self-generated sexual content or sexting

Definitions of sexting

This sub-section describes studies relating to activities commonly referred to as ‘sexting’. One definition of this term is: ‘The sending, receiving or forwarding of sexually explicit messages, images or photos to others through electronic means, primarily between cellular phones’ (Klettke, Halford and Mellor, 2014, 45). However, a significant challenge in drawing together the findings on sexting by young people is the lack of consistency in definitions, and the term is frequently applied to very different activities. Although most studies treat sexting as a
communication with sexually explicit content, definitions of the exact nature of these communications vary. Several studies define sexting as comprising the sending of sexually explicit communications including nude and semi-nude images; some are more specific, for example defining sexts as images that include ‘breasts, genitalia or buttocks’ (Martinez-Prather and Vandiver, 2014; Mitchell et al, 2012); others include images of people having sex in the definition.

The studies reviewed for this REA treated sexting variously as involving images only, text only or a combination of the two. Some included only images that featured or were created by young people themselves. They also varied in their definitions of the methods of communicating messages, including only messages distributed by mobile phone text messaging, only messages sent over the internet, and those with a combination of different methods. The distinction between mobile phones and other internet-enabled devices may be unhelpful given the internet capabilities of smartphones.

The risks associated with sexting

Sexting has raised several concerns because images that children or young people may create and share of themselves and their peers may be classified as images of CSA in many legislative contexts, and can place children at risk of criminal proceedings. Youth-produced images may also inadvertently add to the availability of images of CSA available to adults. In addition, there are concerns that the creation and sharing of ‘youth-produced’ sexual content could increase their risk of exposure to other harms.

Studies of sexting included in this REA

A total of 17 of the identified studies reported on the prevalence of sexting, seven conducted in Europe and ten in the US. The studies, which are summarised in Table 8, were conducted in Europe (7 studies) and the US (10 studies). No UK studies were identified.

They report on data captured between 2009 and 2014. Given the fast pace of technological change, particularly in internet-enabled communications, the fact that over half the studies collected their data more than five years ago should be borne in mind when interpreting findings.

Studies had various research designs, age groups, samples and durations of reporting investigated (from one to two months to lifetime prevalence).

Findings

- The prevalence of sending sext messages varies from 2.5% to 54% with a median of 19%.
- The prevalence of receiving sext messages varies from 15% to 56% with a median of 17%.
Sending and receiving sexual images

Studies that defined sexting specifically as the exchange of messages containing images (as opposed to just text) produced lower average prevalence estimates for sending sexts. In these studies estimates:

- for sending sexts ranged from 2.5% to 31%, with a median of 12%
- for receiving sexts ranged from 7% to 56%, with a median of 17%.

Reporting period and age of participant

Studies that asked about experiences over a shorter time period did not produce lower estimates of prevalence. Those that asked for experiences over recent months or years tended to include older respondents (18+). As sexting tends to increase with age, the recent experiences of older respondents are more likely to show increased prevalence.

Correlates of sexting behaviour

Studies that explored the correlates of sexting behaviour revealed some consistent patterns, although the variables explored across different studies are diverse. Increased sexting was shown to be associated with increased age (seven studies), high levels of mobile phone use or dependency on mobile phone (four studies), psychological traits or well-being (three studies), other sexual activities (two studies) and parenting (two studies).

Gender differences in sexting

Most studies found similar levels of prevalence between males and females although some showed that males and females tend to engage in different types of sexting. The Teen Online and Wireless Safety Study (Cox Communications, 2009) found that young females were more likely to be sext senders than were young males.

Similarly, Jonsson et al.’s (2014) Swedish study of voluntary sexual exposure online found that young females were slightly more likely than young males to report having voluntarily sexually exposed themselves online (22% vs 19%). Mitchell et al.’s (2012) findings from the US Youth Internet Safety Survey revealed that almost twice as many young females as young males appeared in and created sexual images of themselves.

In the Jonsson et al. (2014) study, females were more likely than males to have ‘flushed’ over a webcam or mobile phone (16% vs 14%) whereas males are more likely to have engaged in sexual activity shown via webcam (3% vs 1%).

The most common reason given for sexting was because the two people involved were in a romantic relationship or to attract a possible boyfriend or girlfriend (Jonsson et al, 2014). Vanden Abeele et al.’s (2012) found that being in a romantic relationship was strongly associated with young females’ sexting behaviour, but not that of young males.
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Survey methodology</th>
<th>Year of data collection</th>
<th>Nature of messages</th>
<th>Medium</th>
<th>Time period</th>
<th>Sample</th>
<th>Prevalence of sexting estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pew Internet and American Life Project (2009)</td>
<td>US</td>
<td>Telephone survey</td>
<td>2009</td>
<td>Sending or receiving messages containing images of themselves</td>
<td>Mobile phones only</td>
<td>Lifetime prevalence</td>
<td>N=625 12–17 years (64% female)</td>
<td>4% sent; 15% received</td>
</tr>
<tr>
<td>Teen Online and Wireless Safety Study (2009)</td>
<td>US</td>
<td>Online survey</td>
<td>2009</td>
<td>Sending or receiving of messages containing images (not necessarily of themselves)</td>
<td>Mobile phone and internet</td>
<td>Lifetime prevalence</td>
<td>N=665 13–18 years (49% female)</td>
<td>9% sent; 17% received</td>
</tr>
<tr>
<td>Jonsson et al (2014)</td>
<td>Sweden</td>
<td>Distributed in schools</td>
<td>2009</td>
<td>Sending or receiving of messages containing text or images</td>
<td>Mobile phone and internet</td>
<td>While at high school</td>
<td>N=3,288 18 years (54% female)</td>
<td>21% sent or received</td>
</tr>
<tr>
<td>Vanden Abeele et al (2012)</td>
<td>Belgium</td>
<td>Distributed in school</td>
<td>2009</td>
<td>Sending or receiving of messages containing text or images</td>
<td>Mobile phone only</td>
<td>Last two months</td>
<td>N=540 12–18 years (57% female)</td>
<td>33% sent or received</td>
</tr>
<tr>
<td>Mitchell et al. (2012)</td>
<td>US</td>
<td>Telephone survey</td>
<td>2010</td>
<td>Creating, appearing in or receiving nude or nearly nude messages</td>
<td>Internet</td>
<td>Previous year</td>
<td>N=1,560 10–17 years (50% female)</td>
<td>2.5% created or appeared in a message; 7% received an image</td>
</tr>
<tr>
<td>EU Kids Online and Net Children go Mobile (2011, 2013, 2014, 2016)</td>
<td>27 EU countries and 7 EU countries respectively</td>
<td>Self-completion at home</td>
<td>2010 and 2013/14</td>
<td>Received sexual messages (textual or images)</td>
<td>Internet</td>
<td>Previous year</td>
<td>N=18,709 11–16 years (50% female)</td>
<td>15% received UK rate = 4%</td>
</tr>
<tr>
<td>Study</td>
<td>Country</td>
<td>Survey methodology</td>
<td>Year of data collection</td>
<td>Nature of messages</td>
<td>Medium</td>
<td>Time period</td>
<td>Sample</td>
<td>Prevalence of sexting estimate</td>
</tr>
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<tr>
<td>Strohmaier, Murphy and DeMatteo (2014)</td>
<td>US</td>
<td>Online survey</td>
<td>2011</td>
<td>Sending or receiving sexual messages (textual or images)</td>
<td>Internet and mobile phone</td>
<td>Up to age 18</td>
<td>N=175 18–22 years (61% female)</td>
<td>54% reported sending</td>
</tr>
<tr>
<td>Dating It Safe (2012, 2014)</td>
<td>US (Texas)</td>
<td>Distributed at school</td>
<td>2011</td>
<td>Sending next pictures of themselves</td>
<td>Mobile phone or email</td>
<td>Lifetime prevalence</td>
<td>N=948 14–19 years (56% female)</td>
<td>28% sent</td>
</tr>
<tr>
<td>Martinez-Prather and Vandiver (2014)</td>
<td>US</td>
<td>Online survey</td>
<td>2012</td>
<td>Sending or receiving a sexually explicit image</td>
<td>Mobile phone</td>
<td>While at high school</td>
<td>N=378 18–19 years (68% female)</td>
<td>31% sent; 56% received</td>
</tr>
<tr>
<td>Nielsen, Paasonen and Spisak (2015)</td>
<td>Finland</td>
<td>Online survey</td>
<td>2013–2014</td>
<td>Textual sexual messages (not images)</td>
<td>Mobile phone or internet</td>
<td>Lifetime prevalence</td>
<td>N=1,269 11–18 years (100% female)</td>
<td>19% sent; 38% received</td>
</tr>
<tr>
<td>Kopecky (2014)</td>
<td>Czech Republic</td>
<td>Online survey</td>
<td>2012–2013</td>
<td>Sending sexual images of yourself</td>
<td>Mobile phone or internet</td>
<td>Lifetime prevalence</td>
<td>N=21,372 (sub-sample of school children) 11–17 years (55% female)</td>
<td>Of sub-sample of children 7% shared images over internet, 12% sent images to others</td>
</tr>
<tr>
<td>Study</td>
<td>Country</td>
<td>Survey methodology</td>
<td>Year of data collection</td>
<td>Nature of messages</td>
<td>Medium</td>
<td>Time period</td>
<td>Sample</td>
<td>Prevalence of sexting estimate</td>
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<tr>
<td>Dake et al. (2012)</td>
<td>US (Midwest)</td>
<td>Distributed at school</td>
<td>Not stated (post 2010)</td>
<td>Sending or receiving messages containing sexually explicit images</td>
<td>Mobile phone, internet or social networking service</td>
<td>Lifetime prevalence</td>
<td>N=1,289 12–18 years (48% female)</td>
<td>17% sent, received or forwarded</td>
</tr>
<tr>
<td>Strassberg, Rullo and Mackaronis (2014)</td>
<td>US (Utah)</td>
<td>Distributed at school</td>
<td>Not stated (post 2007)</td>
<td>Sending nude pictures of self</td>
<td>Mobile phone</td>
<td>During high school</td>
<td>N=1,130 18+ years (59% female)</td>
<td>19% sent; 38% received</td>
</tr>
<tr>
<td>Choi, Van Ouytsel and Temple (2016)</td>
<td>Belgium</td>
<td>Distributed at school</td>
<td>Not stated</td>
<td>Sending a nude or semi-nude image of self</td>
<td>Mobile phone and internet</td>
<td>Lifetime prevalence</td>
<td>N=1,028 15–18 years (58% female)</td>
<td>11% sent</td>
</tr>
<tr>
<td>Gámez-Gámez-Guadix, De Santisteban and Alcazar (2017)</td>
<td>Spain</td>
<td>Distributed at school</td>
<td>Not stated</td>
<td>Sending a nude or semi-nude image of self</td>
<td>Mobile phone and internet</td>
<td>Lifetime prevalence</td>
<td>N = 3,223 12–17 years (50% female)</td>
<td>13.5% engaged in sexting, 11% sent a textual message, 7% sent photos and 2% sent videos</td>
</tr>
</tbody>
</table>
Factors that influence prevalence rates generated in self-report victimisation surveys

Research designs

Only one research design was a multi-wave study (the Youth Internet Safety Survey), which surveyed different groups of young people at three points in time in a 10-year period. However, the two cross-cultural studies (EU Kids Online and the Net Children Go Mobile) used very similar survey questions, which permitted a comparative analysis across seven European countries of two points in time. Two further studies employed a longitudinal design that followed the same groups of young people over one year (Chang et al., 2016) and three years (Growing Up with Media study). Three studies were based on retrospective recollections of young adults reporting on their experiences during childhood and adulthood (Karayianni et al., 2017; Okur, van der Knaap and Bogaerts, 2015; Sabina, Wolak and Finkelhor, 2008). Eleven studies were cross-sectional surveys of children and young people, and one was a quasi-experimental study (Noll et al., 2013). Finally, two studies had both retrospective and contemporaneous elements by asking adults to reflect on their childhood and adolescence, and young people to report on more recent experiences (Baumgartner, Valkenburg and Peter, 2010; Mohler-Kuo et al., 2014).

The most superior research design for examining changes in trends is the multi-wave study. Although the longitudinal design can highlight change in risk as young people progress through adolescence and early adulthood, the findings are limited to just one cohort and fail to capture the changing nature of risk for younger people who would not be present in subsequent surveys. Where the original sample of a longitudinal survey did not include non-internet users, subsequent waves of data collection did not include late-starting internet users whose experiences might have differed from those who began using the internet earlier (Hasebrink, 2014). Furthermore, there is an indication that young people who are most at risk of online CSA (e.g. those with a recent history of CSA or neglect) are less likely to complete follow-up surveys after the baseline survey (Chang et al., 2016), which leads to an under-estimation of prevalence.

The limitations of surveys conducted with young people

Studies asking young people to report on their experiences are often seen as superior to retrospective studies that ask adults to reflect on their experiences in childhood and adolescence. However, two factors suggest that surveys with children and young people may under-estimate the rate of victimisation: the tendency for some victims and survivors of CSA to experience a period when they cannot recall that they have been a victim of abuse (known as amnesia for CSA) and the need to gain parental consent to enable young people to participate in research surveys.
Amnesia for memories of CSA

Surveys on contact CSA conducted with children and young people have been criticised because a significant proportion (about 25%) of victims and survivors of CSA experience a period of amnesia for memories of their abuse experiences (Brown, Scheflin and Hammond, 1998; Epstein and Bottoms, 1998; Wager, 2012). This group would be unable to report these experiences in a survey (Fergusson, Horwood and Woodward, 2000; Wager, 2011). While some experimental psychologists have portrayed previously inaccessible memories of CSA that later become accessible as being contentious, this is a recognised phenomenon in the clinical literature (Wager, 2017). Indeed, the phenomenon, termed ‘dissociative amnesia’, is included in the Diagnostic and statistical manual of mental disorders, a clinical guide to diagnosing mental health issues (Wolf and Nochajski, 2013). The mean age of spontaneous memory recovery in a UK sample is 30 years (Wager, 2013).

The likelihood of experiencing a period of amnesia is associated with several offence-related characteristics and post-disclosure of CSA factors. The offence-related characteristics include whether the CSA entailed a contact offence, young age at onset of the abuse (Elliott and Briere, 1995; Williams 1995), the longer the duration and the greater the frequency of the abuse (Couacaud, 1999; Young, 2003), the severity of abuse as shown in the use of force, the nature of the sexual acts and multiple perpetrators (Elliott and Briere, 1995; Young, 2003), and whether the perpetrator is the victim’s caregiver or someone trusted (Schultz, Passmore and Yoder, 2003). Post-disclosure factors include disbelief by the recipient of the disclosure (Butler, 2001) and lack of either maternal or social support following disclosure (Alexander et al., 2005), but to date no known research has examined this tendency relating to online-facilitated CSA. However, particularly in the context of online grooming that leads to contact offences, it is possible that this phenomenon might occur and possibly result in under-estimating prevalence when young people are surveyed.

The potential impact of the requirement to gain parental consent

The second issue that might lead to a systematic under-estimation is the need for parental consent when interviewing or surveying children and young people. With the exception of Mohler-Kuo et al.’s (2014) survey in Switzerland, all the studies with samples under age 18 involved requesting parental consent before seeking assent from the young people. It can be reasonably assumed that both abusive parents and non-abusive parents who knew their child has experienced CSA would be more inclined to refuse to consent to their child completing the survey, the former for fear of discovery and the latter out of desire to protect their child from retraumatisation. Very few studies reported the rate of parental refusal; when reported it appeared relatively low: 2.7% in Gámez-Guadix, De Santisteban and Alcazar (2017) and 11% in Mitchell, Finkelhor and Wolak (2003).
The age ranges of childhood investigated in the studies

The definition of childhood adopted by IICSA is all young people up to 18 years old, but the period of childhood reported on in the studies varied significantly. This was partly because some surveys asked respondents to report on their experiences over their lifetimes and some asked about their experiences within a defined time frame, such as the preceding year or six months. Surveys of respondents’ recent experiences (e.g. within the past year) studied young people in age groups between 9 and 20 years, or between 10 and 17 years (e.g. Youth Internet Safety Survey and Growing Up with Media study). Others used more restrictive age ranges, for example, young people aged 12–17 (Baumgartner, Valkenburg and Peter, 2010; Montiel and Carbonell, 2012), aged 12–15 (Gámez-Guadix, De Santisteban and Alcazar, 2017), aged 14–17 (for Helweg-Larsen, Schütt and Larsen, 2012; Noll et al., 2013) and aged 16–17 (Chang et al., 2016).

Some studies included young people aged 18 and over, and did not restrict their responses to retrospective reports of incidents that occurred under age 18, though in most of them older young people tended to comprise relatively small proportions of the samples. For example, respondents in Marret and Choo’s (2016) sample were aged 12–18, Wachs et al.’s (2016) were aged 11–19, and Mohler-Kuo et al.’s (2014) were aged 14–20. However, in Karayianni et al.’s (2017) study the participants’ ages ranged between 15 and 25 years and 42% of the sample comprised respondents aged 19 and above. Again, it does not appear that the respondents in this study were asked to report only on incidents occurring before age 18. Where prevalence rates for online-facilitated CSA were computed with samples of 18-year-olds and over, the studies may have under-estimated prevalence rates since there is some indication that risk declines in young adulthood (Baumgartner, Valkenburg and Peter, 2010; Karayianni et al., 2017).

The period over which respondents were requested to report on their experiences

The length of time for which prevalence rates were reported varied between studies. Some reported six-month rates (Baumgartner, Valkenburg and Peter, 2010), others produced 12-month estimates (e.g. Chang et al., 2016; EU Kids Online; Growing Up with Media study; Net Children Go Mobile; Youth Internet Safety Survey), and others lifetime experiences under age 18 (e.g. for Helweg-Larsen, Schütt and Larsen, 2012; Okur, van der Knaap and Bogaerts, 2015; Sabina, Wolak and Finkelhor, 2008). Several studies asked respondents to report on experiences in both their lifetime and the preceding year (e.g. Mohler-Kuo et al., 2014). The authors of two articles were unclear about the reporting duration, but presumed it related to lifetime prevalence (Marret and Choo, 2016; Noll et al., 2013).

The advantage of lifetime prevalence studies is that they provide better estimates of the age at which risk of online-facilitated CSA first manifested and the prevalence rates for younger children than were typically captured in studies reporting on more constrained durations (e.g. experiences in the preceding year). However, when interpreting such estimates the potential
unreliability of memory recall for events in the more distant past should be taken into account (e.g. natural forgetting or difficulty in immediate recall and infantile amnesia, as discussed above).

The context in which samples were recruited

Survey participants were largely recruited through schools or nationally representative, randomised household surveys. Surveys conducted in classroom settings have been found to have a higher response rate than household surveys, though it has been proposed that respondents completing surveys in classrooms might be disinclined to report on personal and sensitive information, so the surveys may yield lower prevalence rates (Gámez-Guadix, De Santisteban and Alcazar, 2017). Strategies to enhance the representativeness of samples in the school and household contexts have been undertaken. For example, where samples were drawn from schools, those schools were often randomly chosen from a diverse range serving different populations with mixed social classes and geographical locations.

Populations and offences missed in self-report surveys

Victims of covert production or appropriation of images of CSA

All self-report victimisation surveys fail to capture instances of covertly produced images of CSA (e.g. those produced through hidden cameras in changing rooms) and self-produced images that have been surreptitiously engaged with by others and can be acquired by parasite websites and distributed widely without the subject’s knowledge. It is evident from the evidence below that both these phenomena lead self-report victimisation surveys to significantly underestimate the number of victims of image-related CSA offences.

The National Juvenile Online Victimisation study in the US (Wolak, Finkelhor and Mitchell, 2012) found that of those arrested for image-related CSA offences, 21% had used covert means to produce the images. A study conducted by Smith (2012) for the IWF found that 88% of self-produced sexually explicit images of young people that they encountered in a two-day period had been copied from their original location and uploaded onto public websites where the potential audience was far greater and out of the control of the young person.

The online abuse of very young children

No survey, even those that explore lifetime prevalence, captures the experiences of respondents when they were very young and still within the period when infantile amnesia dominates because children under age 2–3 years do not appear to retain memories of events (Peterson, Warren and Short, 2011) and memories are fragmented until about age 7 (Strange and Hayne, 2013). Although young children are unlikely to use the internet independently, it is evident from the sexual abuse known to have been committed in day nursery settings (e.g. Savill and Bunyan, 2009) that young children are among those victimised online. Thus, because of the
inevitable exclusion of young children’s experiences, estimation of victimisation that involves the production of images of CSA under-estimates the true extent of the problem.

**Marginalised and vulnerable young people**

Household surveys are unlikely to include children who live in local authority care, and both household surveys and those conducted in classroom settings are likely to exclude those who are homeless, in a correctional setting or receiving in-patient mental health treatment. These surveys therefore exclude those children and young people who are most at risk of all forms of CSA, including CSE.

**Gaps in the literature**

There is currently no dedicated victimisation survey that captures the full range of online-facilitated CSA of children and young people in England and Wales. While UK samples have been included in the two pan-European surveys (EU Kids Online and the Net Kids Go Mobile studies), the questions on online CSA were very limited in scope.

No studies identified in this REA have explored the prevalence of sexting or the different stages of risk associated with online sexual requests and grooming in the UK.

Children of nine years are the youngest children included in any of the victimisation surveys conducted in Western countries and most surveys that explore 12-month prevalence rates include only the experiences of those aged 12 years and over. This is a significant limitation as children appear to access the internet and use mobile phones at increasingly younger ages, and thus the experiences of this group of people are missing from the calculations. The exclusion of younger children in surveys exploring topics such as sexual abuse largely stems from ethical considerations on researching with children in general and particularly investigating sensitive topics such as sexual abuse.

As there are no standardised tools to measure the different forms of online-facilitated CSA, it is difficult to draw comparisons between countries or cohorts of young people. Indeed, the extent of the heterogeneity currently found between estimates is likely to be partly driven by the lack of such tools (Barth et al., 2013) and research protocols (e.g. the context in which the data are collected and the period of reporting).

**Self-reported perpetration of online-facilitated CSA**

**Studies of young people**

The systematic search strategy found four studies (six papers) of self-reported perpetration of online CSA by young people, which collected data from across Italy, Taiwan, the UK and the US, with no crossover or overlap between them. Summaries are presented in Table 9. All studies were based on retrospective self-reporting by perpetrators. Five were based on surveys and one examined the case files of individuals referred to a professional service for young people known
to have engaged in harmful sexual behaviour. Details on how the studies were undertaken and the measures used are set out in Appendix 8.

Only Hollis and Belton (2017) include data specifically from the UK, but they do not provide information about the general scale, extent, prevalence or frequency of child and adolescent perpetration of online CSA.

The studies report on data captured between 2006 and 2016. Ybarra, Mitchell and Korchmaros (2011) note that owing to technological changes and the increase in children and young people’s use of a wide range of internet-enabled devices studies of such behaviours quickly become outdated. There is therefore a need for continual research to explore the changing trends, patterns and extent of such behaviours, how they are undertaken and with what devices.

The definitions of online CSA, as well as the age ranges included in the definitions of children and young people, varied across the studies, making comparison between them unreliable.
<table>
<thead>
<tr>
<th>Source</th>
<th>Country</th>
<th>Year(s) of data collection</th>
<th>Methodology</th>
<th>Age range and size of sample</th>
<th>Types of offending</th>
<th>Prevalence rates</th>
</tr>
</thead>
</table>
| Growing Up with Media study (2006–8) | US | 2006 2007 2008 | Three-year longitudinal study reporting on perpetration in the preceding year | 10–15 years at baseline  
n1 = 1,018  
n2 = 76%  
n3 = 73% | Perpetrating unwanted online sexual solicitation and sexual contacts  
Waves 2 and 3 included unwanted sexts | Wave 1: online sexual solicitation = 2.7%  
Wave 2: online sexual solicitation = 2.7%, sexting = 10.1%  
Wave 3: online sexual solicitation = 3.3%, sexting = 16.1% |
| Chang et al. (2016) | Taiwan | 2010 2011 | One-year follow-up study reporting experiences from the previous year | 2,325 high school students drawn from 10th grade, and followed up in 11th grade in 26 schools | Perpetrating online sexual solicitation | In 10th grade 4.2% of those who remained in the study reported online sexual solicitation  
5.6% of those who dropped out by survey 2  
By 11th grade a further 4.2% perpetrated online sexual solicitation (6.6% males and 1.8% females) |
| De Fazio and Sgarbi (2016) | Italy | October 2012 to April 2013 | Online survey | 585 Italian students  
366 males  
12–19 years (mean age 14.5 years) | Perpetrating unwanted online attention via internet or other technology, including sexual contacts | ‘Sending unwanted needy or overly affectionate messages’ = 10%  
‘Sending unwanted sexually oriented images or messages (e.g. pornographic or obscene materials, etc.)’ = 3.8%  
‘Sending unwanted invitations or suggestions (e.g. sexual proposals)’ = 2.5% |
| Hollis and Belton (2017) | UK | 2014–2016 | Textual case analysis of 91 males accessing NSPCC ‘Turn the Page’ service | 91 cases of 5–18-year-old males displaying harmful sexual behaviour (35 offline, 35 offline and technology-assisted harmful sexual behaviour, and 21 harmful sexual behaviour only) | Prevalence of different forms of technology-assisted harmful sexual behaviours, compared with those not using technology and correlates with personal characteristics | 46% accessing the service (Jan–Oct 2015) displayed technology-assisted harmful sexual behaviour  
Only 7% engaged only in technology-assisted harmful sexual behaviour  
68% engaged in harmful sexual behaviour in more than one form |
Key findings

**Overall prevalence**

- Less than 1 in 30 children and young people reported they had made sexual requests online (3% Growing Up with Media study, 2006–2008; 2.5% De Fazio and Sgorbi, 2016) and similar proportions had sent unwanted sexual images or messages (3.8% De Fazio and Sgorbi, 2016).

**Gender differences**

- Only one study, conducted in Taiwan, reported the prevalence rates separately for young men and women (Chang et al., 2016), finding that young men were over three times more likely than young women (6.6% vs 1.8%) to make online sexual requests.

**Age differences**

- Perpetration of online-facilitated CSA increased very slightly as children and young people reached adolescence (Chang et al., 2016; Growing Up with Media study, 2006–2008), though this coincided with a general increase in the use of technologies and the availability of mobile technologies.

**Crossover between online and offline offending**

- The Growing Up with Media study (2006–2008) and Hollis and Belton (2017) found that online sexual abuse perpetration is very likely to co-occur with offline sexual abuse perpetration and unlikely to be separate categories of behaviour.
- Only 0.4% of Ybarra, Espelage and Mitchell’s (2011) sample from the Growing Up with Media study and 7% of the clinical sample in the UK discussed by Hollis and Belton (2017) reported perpetrating online, but not contact sexual offences.
- Some evidence suggests that online offending largely consists of viewing and downloading images of CSA rather than online grooming or sextortion (e.g. Hollis and Belton, 2017).

**Factors that influence prevalence estimates**

**Measurement tools**

As with the self-report victimisation studies, there is a paucity of validated measures to assess the different aspects of online-facilitated CSA. The Growing Up with Media study (2006–2008) and Chang et al. (2016) used similar questions to capture this behaviour, as the latter was based on the former. Both focused on online sexual offending in a general sense: encouraging someone else to do something sexual, talk about sex or share personal sexual information when
they did not want to. Thus, these studies will have under-represented the full range and scale of online sexual victimisation perpetrated by the age group studied (10–15-year-olds for the Growing Up with Media study). They do not capture the sharing of images or video, nor perpetrators’ one-way communications (e.g. when they send explicit material rather than encourage the victim to provide material of their own).

Table 10 presents the different measures, associated limitations and direction of potential bias in reported prevalence rates.

*The age of respondents*

Chang et al. (2016) do not provide the age range of their ‘high school student’ sample, although it appears that grade 10 in Taiwan refers to young people aged 16–17 years. De Fazio and Sgarbi (2016) and Hollis and Belton (2017) both used much broader definitions encapsulating all forms of sexual communication online or through technology by 12–19-year-olds and 5–18-year-olds, respectively, including the sending and receiving of messages, video and images. Hollis and Belton (2017) also included the use of what they termed ‘developmentally inappropriate’ pornography, which refers to engaging with legal (adult) pornography as a child. Thus, the age range of the samples varies considerably, as does the variety of behaviours researched, with some studies conflating legal and illegal activities, which contributes to an over-representation of the scale of online CSA perpetration.
<table>
<thead>
<tr>
<th>Source</th>
<th>Measurement tool (questions)</th>
<th>Key limitations</th>
<th>Potential skewness of the prevalence estimate</th>
</tr>
</thead>
</table>
| Growing Up with Media study (2006–2008) | In the past 12 months, how many times have you done the following when on the internet?:  
  ‘I tried to get someone to talk about sex when they didn’t want to.’  
  ‘I asked someone for sexual information about themselves that they didn’t want to tell me.’  
  ‘I asked someone to do something sexual that they didn’t want to do.’  
Questions about sexting in waves 2 and 3  | Retrospective study which relies on memory recall  
Relied on participants recognising and self-reporting their online sexual contacts as being unwanted  
Did not capture frequency of perpetration and conflated ‘little’ and ‘no’ perpetration categories                                                                                                                                                                                                                   | Likely to have under-represented the prevalence of perpetration                                                                                                                                                                                                                      |
| Chang et al. (2016)             | Within a larger study of online harmful behaviours asked:  
  ‘How often have you asked someone to talk about sex online when they did not want to?’  
  ‘How often have you asked someone to do something sexual online when they did not want to?’  | Retrospective study which relies on memory recall  
Did not capture frequency of perpetration  
Does not report on prevalence of perpetration at the two wave points (only changes between them)  
Relied on participants recognising and self-reporting their online sexual contacts as being unwanted  
Does not clearly set out age of perpetrators, or the age of victims                                                                                                                                                                                                                   | Cannot be used to determine the overall prevalence of perpetration                                                                                                                                                                                                                  |
| De Fazio and Sgarbi (2016)      | Unwanted online attentions are defined as: ‘behaviours carried out through the internet and technological devices to annoy, disturb, offend, humiliate, intimidate, threaten, harass, harm, or attack others’. These behaviours could include (but are not limited to):  
  • exaggerated messages of affection  
  • obscene images or messages  
  • pornographic images or messages  | The three categories of sexual contacts were not mutually exclusive, leading to an over-estimation of prevalence  
Relied on participants recognising and self-reporting their online sexual contacts as being unwanted  
Self-selected sample – unable to ascertain if representative of the broader population  
No data collected on frequency of perpetration                                                                                                                                                                                                                                         | Likely to have under-represented the prevalence of perpetration                                                                                                                                                                                                                  |
<table>
<thead>
<tr>
<th>Source</th>
<th>Measurement tool (questions)</th>
<th>Key limitations</th>
<th>Potential skewness of the prevalence estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hollis and Belton (2017)</td>
<td>Technology-assisted harmful sexual behaviour is defined as: ‘One or more children engaging in sexual discussions or acts – using the internet and/or any image-creating or image-sharing or communication device – which is considered inappropriate and/or harmful given their age or stage of development.’ This behaviour falls on a continuum of severity from the use of pornography to online CSA, including ‘inciting them to engage in sexual activity online’.</td>
<td>Significant amount of missing data in case files Sample is of officially referred young males recognised as engaged in harmful sexual behaviour; not representative of the general population No data on frequency of perpetration Data did not include information on the age of the recipients of sexual communications online – this may have included adults</td>
<td>Very likely to have over-represented the prevalence of perpetration</td>
</tr>
</tbody>
</table>
The age of the target or recipient

No study specifies that the communications sent by perpetrators (under age 18) targeted, or were received by, another child or young person so it is not possible to determine the extent to which they are perpetrating peer-on-peer abuse (online CSA). Furthermore, as the samples in two studies also include adults (18–19-year-olds) this is likely to result in some over-representation of the prevalence of online-facilitated CSA in an adolescent population.

The management of age-appropriate consensual online intimacy behaviours

A further key issue undermining the reliability of the data and potentially resulting in under-representative bias in the findings is the way in which the studies have sought to limit their capturing of consensual peer-to-peer online ‘flirting’ or similar behaviours (although, this in itself is contentious when referring to encouraging the sexual talk of others or the sending of sexual images or information). Chang et al. (2016), De Fazio and Sgarbi (2016) and the Growing Up with Media study (2006–2008) specifically required participants to report only on ‘unwanted’ attentions. Although this was the most direct way to limit reporting of consensual communications, participants are not always aware if their messages are unwanted or not by recipients, or if they are just unwilling to send information, images or messages in return.

Retrospective design and reliance on memory

All the studies were retrospective self-report analyses. Their reliability was affected by potential inaccuracies of memory recall, especially when high volume behaviours (such as engaging with abuse images) were measured as a single form of abuse alongside what, for some participants, are isolated occurrences (so both scored 1 in the studies). This results in a trend towards under-representation.

Duration of reporting period

Further undermining the reliability of the findings is the variation in time periods over which behaviour is reported. Two of the studies (Growing Up with Media study, 2006–2008, and Chang et al., 2016) required participants to report on their behaviours in the past year, while De Fazio and Sgarbi (2016) asked participants to report on their lifetime behaviours. Additionally, Hollis and Belton (2017) used self-report data captured in case files, thus, these are also likely to be based on lifetime reporting, and so will be affected not only by memory recall, but also the willingness of the participant to have thoroughly and completely reported thoroughly and completely all relevant behaviours to the service provider collecting data.

Reliance on the ability to recognise the target’s reaction to the perpetrator’s behaviour

All the studies relied on the perpetrator being able to recognise that their behaviour was unwanted or inappropriate, which is particularly difficult to ascertain for online behaviours
where there is no direct interaction between the two parties. Again, this ability to recognise this cannot be assumed and is likely to lead to an under-representation of the scale of online CSA.

**The representativeness of the samples**

The studies are also likely to be unreliable because their samples were unrepresentative. Three used samples of children and young people who had voluntarily chosen to take part (with parental consent where appropriate). It is not known if those who did not choose to take part in these surveys had different behaviour profiles from those who did. Hollis and Belton (2017) drew a sample from people referred to an NSPCC service for their sexually harmful behaviours, so the data do not represent the broader population of children and young people.

**Gaps in the literature**

As with victimisation studies, there is currently no perpetration survey with young people that captures the full range of online-facilitated CSA of children and young people in England and Wales.

The questions asked in the retrospective surveys are limited in scope, focusing specifically on unwanted sexual solicitations or contact with others. Online-facilitated accessing, downloading, distributing or producing CSA images, for example, are not captured in these studies.

Although Hollis and Belton (2017) focus on the UK (with data collected from centres in England, Wales and Northern Ireland) this study does not allow for generalisation to the wider population of young people. The remaining studies do not include data from England and Wales or the broader UK, although their findings may be cautiously generalised to England and Wales (see below).

No study makes it clear what proportion of ‘contacts’ should be classed as criminal, because they include instances where young people report unwanted contacts such as sending messages of ‘exaggerated affection’ (De Fazio and Sgarbi, 2016). Such peer-on-peer behaviours may not be classed as criminal unless they are so frequent as to become harassment.

Some studies (e.g. Chang et al., 2016) capture behaviour that meets the legal definition of online-facilitated CSA (e.g. sending sexual requests to adults) which can serve to inflate the prevalence estimates generated.

Additionally, the perpetrators’ perceptions of the ages of the people they target have not been systematically recorded so it is impossible to know if their actions truly equate to forms of online-facilitated CSA.

The data presented from these studies are limited in scope and comparability, and do not provide information about the full range of online sexual abuse behaviours nor the frequency of perpetration differentiated by gender or age.
Studies of adult self-report perpetration

Five self-report studies (six articles) of adult perpetration of online CSA, from Australia, Canada, the US and countries across Europe and Scandinavia, were included in this section of the REA. Only one included the UK (Seigfried-Spellar, 2014), but its data were not disaggregated by country, so there are no specific data on England and Wales.

The studies report on data captured between 2003 and 2014 (although three studies did not provide details of the date of data collection). Summaries are presented in Table 11.

The studies include a range of online CSA offences including accessing, viewing (Dombert et al., 2016; Klein et al, 2015; Seto et al., 2014), downloading and exchanging images of CSA (Seigfried-Spellar, 2014), and sending online sexual requests or grooming (Bergen et al, 2015; Schulz et al., 2016). No study assessed the rates of production of CSA images.

Schulz et al.’s (2016) study captures the prevalence of many of the harmful outcomes associated with online grooming (e.g. likelihood of engaging the young person in sexual acts online, offline meetings and contact offending during an offline meeting)

The studies varied as to whether they were asking about lifetime prevalence rates (Seto et al., 2014), rates since age 18 (e.g. Dombert et al., 2016; Klein et al., 2015) or prevalence over more defined durations (e.g. past 12 months – Schulz et al., 2016; past three years – Seigfried-Spellar, 2014). The longer the timeframe, the more likely the data are to be affected by memory recall unreliability.

Two studies measured online sexual contact between adults and children, including conversation and sharing of images. Though different studies, they were undertaken by research teams of the same authors (Bergen et al., 2015; Schulz et al., 2016). The remaining studies focused solely on images of CSA, but from different perspectives. For example, Seto et al. (2014) referred only to images depicting CSA by an adult and did not specify whether the images were online. Seigfried-Spellar (2014) measured accessing, viewing, downloading and sharing of inappropriate images of children (from nude images of children to images of children being sexually abused). Dombert et al. (2016) employed the phrase ‘child pornography use’ but did not define this more precisely other than stating that the image could depict the genitals of a child. Importantly, Dombert et al. (2016) did not specify whether the images of CSA were online or in hard copies. Since the studies explored such wide-ranging and varied sets of online CSA behaviours, this makes comparison between results, or aggregate consideration, inappropriate.
<table>
<thead>
<tr>
<th>Source</th>
<th>Country</th>
<th>Year(s) of data collection</th>
<th>Methodology</th>
<th>Age range and size of sample</th>
<th>Types of offending</th>
<th>Prevalence rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klein et al. (2015), also reporting on the Dombert et al. (2016) study</td>
<td>Germany</td>
<td>Not stated</td>
<td>Anonymous online self-report survey</td>
<td>8,718 men aged 18+ from a nationally representative sample</td>
<td>Contact CSA, Viewing images of CSA, Convictions for sexual offences</td>
<td>n = 132 (1.5%)</td>
</tr>
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<td>Bergen et al. (2015)</td>
<td>Finland, Germany and Sweden</td>
<td>Before 2014</td>
<td>Online self-report survey Reporting on behaviours in the previous year</td>
<td>717 people age 18+ (423 men, 304 women)</td>
<td>Online sexual solicitations to unknown adults, adolescents (14–17 years) and children (13 years and younger) Sexual conversations and the sending of sexual images</td>
<td>10.7% against young people under 18</td>
</tr>
<tr>
<td>Dombert et al. (2016)</td>
<td>Germany</td>
<td>Not stated</td>
<td>Online self-report survey Reporting on behaviours since they were over age 18</td>
<td>8,718 male participants aged 18–89 years (mean = 43.5),</td>
<td>Contact and non-contact offending against prepubescent children (12 years and under) Non-contact offending specifically refers to viewing images of CSA</td>
<td>148 (1.7%) reported viewing images of CSA but no contact offending</td>
</tr>
<tr>
<td>Source</td>
<td>Country</td>
<td>Year(s) of data collection</td>
<td>Methodology</td>
<td>Age range and size of sample</td>
<td>Types of offending</td>
<td>Prevalence rates</td>
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<tr>
<td>Seigfried-Spellar (2014)</td>
<td>Australia, Canada, UK and US</td>
<td>Not stated</td>
<td>Online survey using the Online Pornography Survey (Seigfried, 2007)</td>
<td>257 adult internet users (142 males, 128 females) Opportunistic sample</td>
<td>Viewing, downloading and exchanging images of CSA depicting children or young people under age 18</td>
<td>6% of the sample classed as consumers 12% of males, 3% of females Age and engaging with images of CSA: 5% of 18–25-year-olds, 7% of 26–35-year-olds, 1% of 36–45-year-olds, 0% of 46–55-year-olds, 3% ages 56+ Education level: less than 12 years 0%, high school 3%, bachelors 6%, MSc or PhD 7% 63% searchers or viewers, 18.5% downloaders, 18.5% exchangers</td>
</tr>
<tr>
<td>Schulz et al. (2016)</td>
<td>German, Sweden and Finland</td>
<td>2012</td>
<td>Online self-report survey Reporting on behaviours in the previous year</td>
<td>2,828 adult internet users (1,394 males, 1,434 females) From 126 websites and social networks and two German websites on paedophilic sexual interests</td>
<td>Online sexual solicitations to unknown adults, adolescents and children Online sexual conversations Sending and sharing images Offline meetings Offline sexual contact</td>
<td>Online sexual requests made: 17.6% to ages 18+, 16.4% to 14–17-year-olds, 3.7% to ages 13 and under 72.3% of those making an online request were male: 69.4% of those to 14–17-year-olds and 82.8% of those to ages 13 and under 5.1% of those making online sexual requests did so to more than 20 young people 10.9% maintained contact for a few days plus 1.4% sent someone 13 or under and 4.4% sent someone 14–17 a sexual image Of those engaged in online sexual conversations, 5.5% reported receiving a sexual image from a contact aged 14–17, as did 2.5% from a contact age</td>
</tr>
<tr>
<td>Source</td>
<td>Country</td>
<td>Year(s) of data collection</td>
<td>Methodology</td>
<td>Age range and size of sample</td>
<td>Types of offending</td>
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<tr>
<td>Seto et al. (2014)</td>
<td>Sweden</td>
<td>2003</td>
<td>Self-report survey Sample drawn from 17–20-year-old men in Swedish school system Reporting on lifetime prevalence</td>
<td>1,978 men of 17–20 years (median age 18 years)</td>
<td>Viewing images of CSA, defined as images of ‘children having sex with adults’</td>
<td>84 (4.2%) self-reported ever having viewed images of CSA that involved sexual activity between adults and children</td>
</tr>
</tbody>
</table>
Key findings on engaging with online images of CSA

- Estimates of prevalence of viewing images of CSA range between 1.5% and 6% of the populations surveyed. These findings can be cautiously extrapolated to the general population, although they are likely to be an under-estimate, as highlighted in Table 11.
- Only one study (Seigfried-Spellar, 2014) examined prevalence rates for the different degrees of engaging with CSA images and reported that:
  - 63% of people engaging with CSA images could be classified as searchers or viewers
  - 18.5% as downloaders
  - 18.5% as exchangers.

Age-related trends

Individuals under ages 18–36 seem to engage with images of CSA at a higher rate than older individuals (Seigfried-Spellar, 2014).

Gender-related trends

Men’s reported prevalence range is between 4.2% and 12%, apparently a considerably greater rate than that for women (3%). However, only three studies included women in their sample and only one reported on their engagement with online images of CSA.

Education and engaging with images

Engaging with CSA images appears to be positively associated with educational level, those with university education having the highest rates (Seigfried-Spellar, 2014).

Key findings on online sexualised conversations and grooming of young people:

Between 10.7% and 17.9% of respondents reported engaging in online sexualised conversations with young people under age 18: 10–16.4% with young people aged 14–17 years and 1–3.9% with children under age 13.

Gender of the perpetrators

One study (Schulz et al., 2016) reported on gender differences in perpetration rates, suggesting that while men are most likely to make online sexual requests and engage in grooming, women comprise just under a third of perpetrators overall (27.7%).

However, women appear to be less likely to send sexual requests to young people under age 13 (less than 1 in 5 perpetrators) than they do to young people aged 14–17 (just under 1 in 3 perpetrators).
Scale of individual offending behaviour

One study (Schulz et al., 2016) reported on the scale of each respondent’s offending behaviour, looking at the number of young people victimised and duration of contacts:

- Of all respondents who reported sexual online contacts with strangers, 1 in 20 reported interacting with more than 20 children or adolescents.
- This contact was maintained for a few days or longer by 10.9% of the overall sample, though this was more likely for those contacting adolescents (5.5%) than children (2.2%).

Outcomes for the young people targeted

Schulz et al. (2016) also asked respondents to report on each of the harmful outcomes for victims of these communications. They found the proportion of respondents engaged in sexualised conversations with young people who:

- sent a sexual image to the contact was:
  - 1.4% when the contact was under 13 years
  - 4.4% when the contact was 14–17 years
- reported receiving a sexual image from the contact was:
  - 5.5% when the contact was 14–17 years
  - 2.5% when the contact was under 13 years
- reported an interaction that involved online sexual activities was:
  - 3.5% when the contact was aged 14–17
  - 1.1% when the contact was aged under 13 years
- reported an interaction that led to an offline meeting with the contact was:
  - 5.9% when the contact was aged 14–17 years
  - 1% when the contact was aged under 13 years
- reported an offline meeting that resulted in sexual activity was:
  - 2.5% of when the contact was aged 14–17 years
  - 1.1% when the contact was under 13 years.

Factors that have the potential to influence prevalence estimates

Definitions

As with studies on self-report youth perpetration, differences in definitions used between studies are also apparent when defining ‘adult’ perpetrator, which makes comparisons between studies or conclusions based on aggregates of the findings inappropriate. All but one study (Seto et al., 2014) focused on perpetrators aged 18 years and over. Seto et al. (2014) included only those aged 17–20 and only male perpetrators, as did Dombert et al. (2016).
In order to ensure peer-to-peer consensual activity was not captured Bergen et al. (2015) included only data from participants who reported a perceived five-year age difference or more between themselves and the victim. No similar measures were taken on the other studies.

All studies referred to a ‘young person’ as being someone younger than 18. Dombert et al. (2016) focused solely on prepubescent children, defined as 12 years and under. Similarly, Bergen et al (2015) and Schulz et al. (2016) considered children under 13 years as a separate category of ‘child’ within an overall child category (under 18) and a specific adolescent category (14–17 years). The remaining studies did not report these separately.

Research design

Retrospective designs

Retrospective self-report studies, as these all are, generally suffer from potential data unreliability due to self-selection bias, inaccuracies in memory recall, or falsification by participants. The latter is somewhat ameliorated by rigorous anonymity and confidentiality procedures embedded within the online survey designs, as used by all the studies included here.

Sampling issues

The sampling strategies employed by the studies varied and the type of data collected, or the reporting of the studies, did not make it possible to explore the frequency of perpetration. All but one study distributed online survey links via social media and public and university discussion boards in the relevant countries. Seto et al. (2014) distributed the survey through the Swedish school system only.

Of those accessing the general internet-using population, three targeted paedophile forums (forums for gaining therapeutic advice or community networks of like-minded people) (Bergen et al., 2015; Klein et al., 2015; Schulz et al., 2016). These studies cannot be considered to have representative general populations and the data from the whole sample cannot be used to explore the prevalence of perpetration in a general population. However, Schulz et al. (2016) reports the findings for two sample groups separately, so data on the general population can be drawn out.

Construction of survey questions

All but two studies developed their own survey questions, developing direct questions that were similar in nature. For example, Schulz et al. (2016) asked a series of questions about whether participants had ever contacted someone online whom they did not know, what age the contact was, whether they spoke about sexual topics, and what kinds of sexual communication they had (e.g. flirting, making sexually insinuating or suggestive comments, sexual innuendo, or
conversing about sexual preferences, activities and pornography). Two studies used measures to explore prevalence of perpetration:

Dombert et al. (2016) used a viewing task based on the Explicit and Implicit Sexual Interest Profile tool (Banse, Schmidt and Clárbour, 2010) to measure sexual interest in children indirectly and directly. This was followed by questions around sex drive, personal sexual victimisation as a child, and use of images of CSA. An example of one of the questions is: ‘Have you ever watched pornographic depictions of children (e.g. the nude genitals of children), to get sexually aroused after you were 18 years of age?’

The 24-item Explicit Sexual Interest Questionnaire (Banse, Schmidt and Clárbour, 2010) was used to measure sexual fantasies and behaviours involving children; it has four sexual target categories (men, women, prepubescent boys and girls), with three items each on fantasy and behaviours (offline). Scores for sexual interest were based on participants’ self-reported fantasising sexually about a child, viewing ‘child pornography’, sexual offending against a child, and whether they were likely to offend against a child.

Seigfried-Spellar (2014) used the Online Pornography Survey (Seigfried, 2007; Seigfried, Lovely and Rogers, 2008; Seigfried-Spellar and Rogers, 2010), which measured four intentional ‘child pornography’ behaviours: searching, accessing, downloading and exchanging child abuse images. Questions include: ‘When was the most recent time that you knowingly searched for a pornographic website featuring individuals under the age of 18 years?’ , ‘How old were you the first time that you knowingly downloaded pornographic materials featuring individuals under the age of 18 years?’ and ‘How often in the past three years have you knowingly shared downloaded pornographic materials featuring individuals under age 18 years with someone over the internet?’

Table 12 presents the different questions, associated limitations and direction of potential skewness of the prevalence estimates.
<table>
<thead>
<tr>
<th>Source</th>
<th>Types of offending</th>
<th>Measurement tools and questions</th>
<th>Key limitations</th>
<th>Potential skewness of the prevalence estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klein et al. (2015)</td>
<td>Contact CSA&lt;br&gt;Viewing images of CSA&lt;br&gt;Convictions for sexual offences</td>
<td>Used a shortened 12-item version of the Explicit Sexual Interest Questionnaire (Banse, Schmidt and Clarbour, 2010).&lt;br&gt;Only used questions referring to prepubescent boys and girls, 3 on fantasies and 3 on behaviours relating to each target category. Behavioural questions related to contact CSA offences.&lt;br&gt;Engaging with images of CSA was assessed by asking: ‘Have you ever watched pornographic depictions of children, e.g., the nude genitals of children, to get sexually aroused after you were 18 years of age?’&lt;br&gt;Also asked about convictions for sexual offences.</td>
<td>Self-selecting sample completing, self-report study can result in bias which may lean towards under-representation.&lt;br&gt;Did not specify that the images of CSA were engaged with online (includes offline) – thus potential for a slight over-representation of perpetration.&lt;br&gt;Did not include images of 13–17-year-olds – significant under-representation of perpetration against children.</td>
<td>Under-estimation</td>
</tr>
<tr>
<td>Bergen et al. (2015)</td>
<td>Online sexual solicitations to unknown adults, adolescents (14–17 years) and children (under 13 years)&lt;br&gt;Both sexual conversations and the sending and sharing of images</td>
<td>‘Did you have a conversation about something sexual with the person? A sexual conversation refers to dialogues during which you or the other person flirted or during which you made sexual advances or discussed pornography or sexual activities.’&lt;br&gt;‘Did you engage in cybersex?’&lt;br&gt;‘Did you send or share sexual pictures?’&lt;br&gt;‘Did you send or share pornography?’</td>
<td>Recruitment from two paedophilic interest forums is likely to inflate the reported rate for online solicitation of children.&lt;br&gt;Reporting rates for the different samples (general population and those recruited from the forums) not provided.&lt;br&gt;Age of online contact was as perceived by the participant.&lt;br&gt;Removal of responses for all respondents who reported online sexual contact with a young person when there was less than a 5-year age difference between them. Thus excluded: those</td>
<td>Overall an under-estimation</td>
</tr>
<tr>
<td>Source</td>
<td>Types of offending</td>
<td>Measurement tools and questions</td>
<td>Key limitations</td>
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| Dombert et al. (2016)  | Contact and non-contact offending against prepubescent children (12 years and under)  
Non-contact offending specifically refers to viewing images of CSA | Explicit Sexual Interest Questionnaire (Banse et al., 2010).  
Images of CSA were defined as ‘pornographic depictions of children (e.g. the nude genitals of children)’.  
Participants were specifically asked about this viewing from they were 18 years of age. | Reporting contact with a child under 13 years if under 19 years, those reporting contact with 14–17-year-olds if under 23 years. This resulted in excluding responses of 59 respondents aged 18–22 years.  
Exclusion of sexual requests and grooming made by people already known to the young person.  
High non-response rate.  
As Klein et al. (2015).  
Under-estimation |
| Seigfried-Spellar (2014) | Accessing, downloading and exchanging images of CSA depicting young people under age 18 | Online Pornography Survey (Seigfried, 2007; Seigfried-Spellar and Rogers, 2010) | Self-selected sample, likely to result in under-representation of prevalence.  
Small sample sizes in some categories makes further analysis unreliable.  
The study relied on memory recall and participants’ perception that the image was of a child under 18 years.  
Under-estimation |
<table>
<thead>
<tr>
<th>Source</th>
<th>Types of offending</th>
<th>Measurement tools and questions</th>
<th>Key limitations</th>
<th>Potential skewness of the prevalence estimate</th>
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<tr>
<td>Schulz et al. (2016)</td>
<td>Online sexual requests to and grooming of unknown adults, adolescents and children</td>
<td>‘Encouraging someone to talk about sex, to do something sexual or to share personal sexual information’ – asked about people initially unknown to them in the past year. Follow-up questions on the perceived age of the contact and nature of the contact.</td>
<td>Opportunistic sample, including high risk forums indicating an over-representation of prevalence. Age of contact based on perpetrators’ perceptions.</td>
<td>Slight over-representation</td>
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<td>Sending images</td>
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<td>Seto et al. (2014)</td>
<td>Viewing of images of CSA, which were defined as images of ‘children having sex with adults’</td>
<td>Questions asked included their own sexual behaviours and experiences, sexual victimisation and ‘child pornography’ viewing.</td>
<td>The definition of images of CSA is very restrictive and specific, so it is difficult to compare with other studies – likely to be an under-representation of extent of online CSA. Does not differentiate between adult or child perpetration and only includes young males in the sample – unrepresentative of broader population. Reliant on memory recall across a protracted time span, so subject to reliability concerns.</td>
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<tr>
<td>Klein et al. (2015)</td>
<td>Contact CSA View of images of CSA Convictions for sexual offences</td>
<td>Use a shortened 12-item version of the Explicit Sexual Interest Questionnaire (Banse et al., 2010). Only used the questions referring to prepubescent boys and girls. There were 3 questions on fantasies and 3 on behaviours relating to each target category. Behavioural questions related to contact CSA offences. Engaging with images of CSA was assessed by asking:</td>
<td>Self-selecting sample completing, self-report study can result in bias, which may lean towards under-representation. Did not specify that the images of CSA were engaged with online (includes offline), thus potential for a slight over-representation of perpetration.</td>
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<tr>
<td>Bergen et al. (2015)</td>
<td>Online sexual solicitations to unknown adults, adolescents (14–17 years) and children (under 13 years) Both sexual conversations and the sending and sharing of images</td>
<td>‘Have you ever watched pornographic depictions of children, e.g., the nude genitals of children, to get sexually aroused after you were 18 years of age?’ Also asked about convictions for sexual offences. ‘Did you have a conversation about something sexual with the person? A sexual conversation refers to dialogues during which you or the other person flirted or during which you made sexual advances or discussed pornography or sexual activities’. ‘Did you engage in cybersex?’ ‘Did you send or share sexual pictures?’ ‘Did you send or share pornography?’</td>
<td>Did not include images of children aged 13–17 years so a significant under-representation of perpetration against children. Recruitment from two paedophilic interest forums is likely to inflate the reported rate for online solicitation of children. Reporting rates for the different samples (general population and those recruited from the forums) were not provided. Age of the online contact was as perceived by the participant. Removal of the responses for all respondents who reported online sexual contact with a young person when there was less than a 5-year age difference between them. Therefore, those reporting contact with a child under 13 years were excluded if they were under 19 years, and those reporting contact with 14–17-year-olds were excluded if they were under 23 years. This resulted in excluding the responses of 59 respondents aged 18–22 years. Exclusion of sexual requests and grooming made by people already known to the young person. High non-response rate.</td>
<td>Overall an under-estimation</td>
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<td>Explicit Sexual Interest Questionnaire (Banse et al., 2010). Images of CSA defined as ‘pornographic depictions of children (e.g. the nude genitals of children)’. Participants asked about this viewing from when they were 18 years of age.</td>
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<td>Schulz et al. (2016)</td>
<td>Online sexual requests to and grooming of unknown adults, adolescents and children Sending images Offline meetings Offline sexual offence</td>
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<td>Opportunistic sample, including high risk forums indicating an over-representation of prevalence. Age of contact based on perpetrators’ perceptions.</td>
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Gaps in the literature

Importantly, all these studies explore a limited number of forms of online CSA and do not capture the full extent and scale of such perpetration, thus considerably under-representing this range of behaviours.

No study so far has explored the production of images of CSA, and only one has separated searching, viewing, downloading and exchanging of images.

Only one study has explored the prevalence of the harmful consequences for young people who are targeted for online sexual communication and grooming (e.g. sending and receiving sexualised images, enticed into engaging in online sexual activities, enticed into meeting online contacts offline and committing contact CSA at offline meetings).

No study has explored commercial aspects of online CSE, including sextortion.

Only one study asked about the outcomes of perpetrators’ online sexual requests and grooming attempts (Schulz, 2016). It would be helpful in future studies to ask perpetrators about requests and attempts to gain the outcomes outlined (e.g. requests for sexual pictures, and attempts to entice young people to engage in sexual activities online or to meet offline), rather than just their successes. To do so would enable a better comparison with the findings from self-report victimisation studies (such as the Youth Internet Safety Survey) that highlight the differences in risks and harms to young people.

No study identified in this REA investigated self-report adult perpetration of online-facilitated CSA separately for samples in the UK. However, studies exploring men’s self-reported inclination towards sexual offending against adults have found similar prevalence in the US and the UK, for example Alleyne et al. (2014) in the UK, and Parkhill and Abbey (2008) and Abbey et al., (2006) in the US. This suggests that data from the US findings might be extrapolated to the English and Welsh contexts.

There has been a tendency to concentrate on males as potential offenders, with three of the six studies included in this REA limiting their sample to men, although the three studies that included women demonstrated that women are also committing online CSA offences, albeit to a lesser extent than men. If studies continue to focus on men as perpetrators it serves to reinforce the notion that only men commit these offences, which compromises the recognition of, and elicitation of appropriate responses to, victims and survivors who are abused online by female perpetrators.
5 The rate of crossover between image-related and contact CSA

This section of the REA explored the proportion of perpetrators who have committed both online and contact CSA and included 12 studies drawn from Western countries including the UK, Canada (three), Germany (three), the Netherlands, Switzerland, the US (three) and one international study. The key features of the studies are presented in Table 13 and a more detailed summary of each study is included in Appendix 11.

The studies were published between 2005 and 2017, and relate to data captured between 1973 and 2014, although most studies report on data from after 2000.

With the exception of the meta-analysis by Seto, Hanson and Babchishin (2011), the studies overwhelmingly conceptualised online CSA as being offences related to images of CSA. Only Seto, Hanson and Babchishin included making sexual requests and online grooming attempts in reference to online CSA. Thus, the crossover rates provided in this analysis predominantly relate to the proportion of the CSA offending population who commit both image-related and contact CSA offences, and not to broader categories of online offences (e.g. sexualised communication, making sexual requests of a young person etc.).

Three studies only sampled men (Bailey, Bernhard and Hsu, 2016; Eke, Seto and Williams, 2011; Seto and Eke, 2015), and no study discussed the gender split of their samples or analysed them by gender of offender.

The studies employed different sampling frames or recruitment strategies. Four were based on police-file or Federal Bureau of Investigation (FBI) analysis (Eke, Seto and Williams, 2011, Goller et al., 2016; Owens et al., 2016; Seto and Eke, 2015) and one was based on a file analysis of a convicted sample (Howard, Barnett and Mann, 2014). Three inter-related studies recruited help-seeking, self-identified paedophiles and hebephiles (Beier et al., 2015; Kuhle et al., 2017; Neutze et al., 2012). One recruited a community sample of individuals who self-identified as having a sexual interest in children and young people (Bailey, Bernhard and Hsu, 2016). One recruited individuals convicted of image-related CSA offences who were participating in polygraph testing as part of their risk management (Buschmann et al., 2010). One explored disclosures of contact CSA offending made by suspects in image-related CSA cases during a polygraph assessment conducted as part of the police investigation (Bourke et al., 2015).

The studies used a variety of methods to ascertain crossover between online and offline CSA offending. Those based on police-file analysis variously included offences that had led to formal sanctions such as cautions, final warnings, arrest and convictions. Four were based on self-report perpetration; three from Germany included both detected and undetected offending (Beier et al., 2015; Kuhle et al., 2017; Neutze et al., 2012) and one was based on the self-report of adjudicated offences (Bailey, Bernhard and Hsu, 2016). Two studies explored disclosures of previously unknown contact offending during polygraph testing; one used a sample of offenders convicted of image-related CSA offences undergoing post-conviction polygraph testing.
Buschmann et al., 2010), the other the polygraph of a police investigation of suspects of image-related CSA offences (Bourke et al., 2015). Finally, Seto, Hanson and Babchishin’s (2011) report on two meta-analyses combined the findings from 21 studies on sexual offence histories of online offenders and nine studies on the recidivism rates from follow-up studies of online offenders.

Calculating the rate of crossover from self-report studies

The rate of crossover can be assessed from either self-report lifetime criminal offending histories (Beier et al., 2015; Kuhle et al., 2017; Neutze et al., 2012) or self-reports of more recent criminal histories (e.g. the last 12 months) (Kuhle et al., 2017).

Different ways of calculating the rate of crossover offending from official records

There are three ways in which the rate of crossover offending can be calculated using official data related to formal sanctions for offending, each based on what is known as an index offence, the offence that brings the offender into the research sample. For example, a researcher might look at all the people arrested for image-related offences between June 2011 and June 2012. It would then be possible to look at an offender’s:

- concurrent offences (e.g. whether they have also been arrested for a contact CSA offence at the same time as the images of CSA offence)
- history of contact CSA offending before committing the current image-related CSA offence, known as a retrospective analysis of criminal history, which predates the index offence (e.g. Owens et al., 2016)
- subsequent contact CSA offending after the arrest for the image-related CSA index offence, known as a prospective analysis, which Goller et al. (2016) and Seto and Eke, (2015) used.

Some of the subsequent arrests are for offences that preceded the index offence, following a delay in victims and survivors reporting of non-recent CSA offences.
Table 13 Studies investigating the rate of crossover between online and offline CSA offending

<table>
<thead>
<tr>
<th>Source</th>
<th>Country</th>
<th>Year(s) of data capture</th>
<th>Study design and origin of data</th>
<th>Nature of offence</th>
<th>Sample</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Owens et al. (2016)</td>
<td>US</td>
<td>1996–2002 2010</td>
<td>Case-file analysis of FBI files of individuals convicted of offences related to images of CSA</td>
<td>Possessing images of CSA, Producing images of CSA, Travelling with intent to arrange meetings with children for sexual purposes, Contact CSA</td>
<td>251 FBI case files</td>
<td>38% reported as crossover cases where engaged in two or more offence categories, which may not have been a crossover between contact and online offences. Calculation based on patterns of crossover that would more reflect the online or contact crossover suggested a rate of 31.1%</td>
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<tr>
<td>Howard, Barnett and Mann (2014)</td>
<td>England and Wales</td>
<td>2008 and 2011</td>
<td>Retrospective analysis of prior criminal history and prospective analysis of formal sanctions once returned to the community. Mean follow-up = 37.3 months</td>
<td>Convicted of sexual offending: Contact CSA, Contact adult SA, Images of CSA, Paraphilias (exhibitionism)</td>
<td>14,804 offenders</td>
<td>Retrospective analysis: 0.5% of the sample had previous convictions for both contact and image-related CSA. Prospective analysis: 4% went from images of CSA to a contact offence, 0.6% went from a contact offence to committing an images of CSA offence</td>
</tr>
<tr>
<td>Seto, Hanson and Babchishin (2011)</td>
<td>Australia, Canada, France, Germany, New Zealand, Switzerland, UK, US</td>
<td>Studies included were published post 2000</td>
<td>Two meta-analyses: one of the previous criminal histories (official and self-report) of people convicted of online</td>
<td>Online CSA offences were crimes related to images of CSA and online grooming attempts and making</td>
<td>Study 1: 4,987 offenders across 24 studies, Study 2: 2,630 offenders across 9</td>
<td>Analysis of prior criminal histories found that on average rate of crossover across the studies assessing officially recognised arrests, charges and convictions</td>
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| Neutze et al. (2012)   | Germany     | 2005–2010                | Anonymous and confidential survey of self-reported offending histories                           | sexual requests   | studies | was 12.2%:  
  • arrests (4 studies) 0–20.9%  
  • charges (9 studies) 0–43%  
  • convictions (8 studies) 0.9–13.9%  

  55.1% of online offenders admitted to a previous or concurrent contact sexual offence in the studies with self-report data; proportions of crossover offenders in the 6 studies ranged from 32.2% to 84.5%  

  Analyses of reconviction data found that 4.6% of online offenders committed a new sexual offence of some kind during a 1.5–6-year follow-up; 2.0% committed a contact sexual offence; 3.4% committed an offence related to images of CSA  

  Offence histories of 345 help-seeking self-identified paedophiles and hebephiles (all age 18+) who answered a media campaign advertising a new  

  37% reported committing crimes related to images of CSA only and only 38% of these individuals’ crimes had been detected  

  21% reported committing contact CSA offences and only and of these 53% had been detected |
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<td>Beier et al. (2015)</td>
<td>Germany</td>
<td>2005–2011</td>
<td>Anonymous and confidential survey of self-reported offending histories</td>
<td>Self-report histories of undetected and adjudicated offences, including contact CSA and online CSA</td>
<td>291 help-seeking self-identified paedophiles and hebephiles (all over age 18) who were accessing the Dunkelfeld Project</td>
<td>Only 21.3% of the offending individuals were officially recognised as offenders&lt;br&gt;Undetected offences: 41.7% exhibited crossover between online and offline CSA offences&lt;br&gt;Adjudicated offences: 5.8% exhibited crossover between online and offline CSA offences</td>
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<tr>
<td>Kuhle et al. (2017)</td>
<td>Germany</td>
<td>2005–2014</td>
<td>Anonymous and confidential survey of self-reported offending histories</td>
<td>Focused on undetected images of CSA offences and contact CSA offences&lt;br&gt;Examined recent offending history (past 6 months) and lifetime offending history</td>
<td>190 help-seeking self-identified paedophiles and hebephiles (all age 18) Individuals affected by an acute mental disorder who were in need of treatment were excluded</td>
<td>Recent offending:&lt;br&gt;23.2% no offences, 53.7% images of CSA offences only, 23.2% both contact and image-related CSA&lt;br&gt;Lifetime offending histories:&lt;br&gt;5.8 % non-offenders, 51% images of CSA offences only, 5.8% contact CSA offences only, 37.4% both contact and images related CSA</td>
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<td>Bailey, Bernhard and Hsu (2016)</td>
<td>US</td>
<td>Not reported</td>
<td>Cross-sectional, online survey of self-reported adjudicated CSA offences</td>
<td>Child sexual assault (defined as offences against people under age 15)</td>
<td>1,102 men recruited from websites for individuals sexually attracted to children</td>
<td>13.7% reported arrests and/or convictions for both image-related and contact related CSA</td>
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| Buschmann et al. (2010) | The Netherlands | 2004–2005 | Voluntary post-conviction polygraph assessment | Investigation of previously undisclosed contact offending and additional elements of sexual behaviour that predates the index offence and post-sentence treatment | 25 participants aged 25–65 (mean 41 years); convictions for offences over images of CSA, but they had no known history (adjudicated or revealed in therapy) of contact CSA offences | During polygraph testing all 25 disclosed contact CSA offences – 100% crossover  
Comparison of reported behaviour pre- and post-polygraph showed reported age of onset of masturbating to images of CSA fell from 41 to 18 years  
Preferred age of children in images – 2nd preferred age 7–12 years – 17 as opposed to 9 offenders admitted to this preference  
Pre-testing 21 denied any high risk behaviour, but post-testing 9 acknowledged masturbating while looking at children in the park and 14 admitted cruising looking for contacts |
| Goller et al. (2016)    | Switzerland   | 1973–2014 | File analysis of people convicted of image-related CSA offences | Reconviction rates of contact CSA at 3, 5 and 10 years follow-up | 4,612 offenders Swiss national cohort of individuals convicted of ‘illegal pornography’ | 0.2% reconviction rate for contact CSA at 3 and 5 year follow-up  
0.5% reconviction rate at the 10-year follow-up |
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| Eke, Seto and Williams (2011) | Canada | 2005–2010 | Analysis of police files examining criminal histories before the index offence, concurrent offences, post-arrest or conviction and historical cases that newly emerge | Convicted CSA image offenders Images of CSA defined as sexualised images of young people posing as though under age 18 Examined reconviction for contact and non-contact sexual offences; no indication that these categories were restricted to young people under age 18 | 541 male CSA image offenders who were on the sex offenders’ register | Prior offences:  
- 17.6% of sample had previous convictions for contact sexual offences, with an average of 1.5 prior convictions for contact sexual offences each  
- 12% of sample had previous convictions for non-contact sexual offences  
Reconvictions:  
- 8.5% for a non-contact sexual offence  
- 3.9% for a contact sexual offence  
- 2.4% for an historical sexual offence  
- 6.8% for an additional offence related to images of CSA |
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| Seto and Eke (2015)    | Canada  | 1993–2006 91% of investigations were since 2000 | Analysis of police files        | Offending over 5 years since being in the community following a conviction for an image-related CSA image offences | 266 male CSA image offenders | On follow-up:  
  - 29% committed a new offence  
  - 11% committed a new sexual offence  
  - 3% committed a new sexual contact offence against a child  
  - 9% committed a new image CSA offence |
| Bourke et al. (2015)   | US      | Not stated               | Investigative tactile polygraph testing with suspected CSA image offenders | Disclosure of contact CSA offences                         | 127 suspects in images of CSA cases (gender not reported) | 57.5% admitted previously unrecorded contact CSA offending  
Admitted to committing contact offences against an average of 2.6 victims each |
Key findings on conviction data

- Analysis of the criminal histories of individuals convicted of images of CSA offences showed that 0.5% of offenders have convictions for both image and contact related CSA (Howard, Barnett and Mann, 2014).

- Analysis of subsequent offending following release from custody or the start of a community sentence following conviction for image-related offences found that:
  - at three years’ follow-up the rate of crossover to contact offending was between 0.2% (Goller et al., 2016) and 4% (Howard, Barnett and Mann, 2014)
  - at 10 years’ follow-up the rate of crossover was 0.5% (Goller et al., 2016).

Police data including all formal sanctions

Police data, which tend to use all formal sanctions rather than just convictions (e.g. cautions, arrests, charges), are better placed to ascertain the extent of crossover offending than conviction data, because of the low conviction rate for sexual offences.

Retrospective analyses

- Analysis of prior offending history suggested that between 17.5% (Eke, Seto and Williams, 2011) and 31.1% (Owens et al., 2016) of known perpetrators are dual offenders who commit both image-related and contact CSA.

- However, Seto, Hanson and Babchishin’s (2011) analysis of prior criminal histories of image-related offenders found that crossover estimates were influenced by the type of formal sanction used to determine engagement in contact CSA where the sanctions of higher order (convictions) are associated with lower estimates of crossover than the lower order sanctions (arrests). They found the following crossover rates:
  - 0–20.9% for those arrested
  - 0–43% for those charged
  - 0.9–13.9% for those convicted.

Prospective analyses

- Analysis of subsequent offending following the index offence suggested that between 2% (Seto, Hanson and Babchishin, 2011) and 3.9% (Eke, Seto and Williams, 2011) of perpetrators of image-related CSA go on to commit contact CSA.

- Some historical offences came to light after the index offence, although they were committed before it. Eke, Seto and Williams (2011) reported that 2.4% of their cases were recognised as crossover offenders, after reporting of historical offences. Examination of subsequent arrests, charges and convictions suggests that 6.3% of the sample were recognised as crossover offenders.
Self-reported offence histories

Anonymous survey data

- 13.7% of Bailey, Bernhard and Hsu’s (2016) participants in a self-report survey about adjudicated offences (arrest and/or conviction) reported having committed both image-related and contact CSA.
- Seto, Hanson and Babchishin’s (2011) meta-analysis found a range of between 32.2% and 84.5% of reported crossover offending, with a mean rate of 55.1%.
- The three inter-related studies examining the self-reports of help-seeking individuals reported on detected and undetected offences, and those that occurred within the past six months and across the individual’s lifetime. They found that:
  - the two rates provided for detected crossover offending were 5.8% and 13.7%
  - the undetected rates of crossover offending were 42% (Beier et al., 2015; Neutze et al., 2012)
  - 23.2% of the sample reported crossover offending in the past six months Kuhle et al. (2017)
  - whereas 37.4% of the sample reported crossover offending at some point in their lifetime.

Disclosures made during polygraph testing

Buschmann et al.’s (2010) examination of polygraph disclosures of contact CSA offences by men who had only been officially recognised, or referred to themselves in post-sentence therapy, as image-related offenders reported that 100% disclosed a contact offence.

In contrast, Bourke et al.’s (2015) report on the investigative use of polygraph testing resulted in 57.5% of those suspected of image-related CSA offences disclosing they had committed undetected contact CSA offences. This rate of crossover is considerably lower than that found by Buschmann et al. (2010), but can be partly attributed to the different contexts in which the disclosures were made (investigation vs post-conviction).

Overall, these two studies produced rates of crossover that were not too dissimilar from those found in the self-report studies of help-seeking individuals.

Explanations for the variance between estimates

The findings here suggest that studies that rely on convictions or other formal criminal sanctions are likely to considerably under-estimate the rate of crossover between image-related and contact CSA. One contributing factor to this is plea bargaining in court, where the defence offers a guilty plea, but for a lesser offence than the one for which they are charged. It is recognised that plea bargaining often results in the sexual element being left out of the criminal conviction (e.g. a sexual assault becomes an assault) (Rice et al., 2006), which has potential to lead to an
under-estimation of crossover between offences related to images of CSA and contact sexual offending.

The findings suggest that a slightly higher rate of crossover between contact and online CSA is evident in prospective studies when compared with retrospective studies, which might partly be explained by the growing availability of internet-enabled communications over time.

The self-report studies of help-seeking individuals are likely to slightly over-estimate the rate of crossover between contact and image-related CSA, in part due to the potential for help-seeking individuals to be concerned about their behaviour, which has initiated their motivation to seek help.

**Limitations of the studies**

It is not a legal requirement that offences related to images of CSA have to have been committed online, but it is now assumed that this is the most likely medium for these offences. Therefore, many studies that used a retrospective design to examine image-related adjudicated offences may have conflated online images with hard copy images of CSA and thus not technically captured online offences. Consequently, they might have slightly over-estimated the rate of crossover offending.

Recruiting samples through online forums for individuals who share a sexual preference for children and young people can result in selecting participants who have an established affinity with the internet and possibly higher rates of image-related CSA than those unfamiliar with the internet.

Self-report studies, particularly those that recruit online, inevitably exclude CSA offenders who are serving custodial sentences, patients in secure hospitals or psychiatric units, and those who have a court order that prevents them from accessing the internet. They are likely to under-estimate the prevalence rate.

In Goller et al.’s (2016) study image-related CSA offences were captured under the category of ‘illegal pornography’ offences, which included material that satisfied other paraphilic interests than those purely related to images of CSA. This might have served to under-estimate the rate of crossover from images of CSA to contact CSA, since image-related offenders who have paraphilic interests that does not involve children or young people are unlikely to commit a contact CSA offences.

There appears to be an assumption that there is a progression from image-related offending to contact offending, rather than seeing these two behaviours as either co-occurring or their temporal relationship being reversed (contact offending precedes non-contact offending). Such an assumption leads some researchers to exclude analysis of contact offenders’ subsequent reconvictions for image-related offences (e.g. Goller et al., 2016). This can lead to an under-estimation of the rate of crossover between image-related and contact offending.
In some studies (e.g. Eke, Seto and Williams, 2011) all contact sexual offences against victims of all ages are included in the crossover calculations so estimates of crossover were overestimated.

The implications of the findings

The fact that a sizeable proportion of CSA image-related offenders appears to be committing undetected contact CSA offences has significant implications for risk assessment and the risk management of offenders, and the safety of their past, current and future potential victims.
6 Reports of incidence

Reported concerns

Establishing whether an incident of online sexual abuse has occurred is a difficult matter because of the nature of virtual environments, which separate victims from perpetrators. It becomes more difficult still quantifying criminal activity in this area where there are differing legal rules for different jurisdictions (including variations in what is the age of consent to sexual activity) and lack of clarity in defining key terms such as ‘online sexual abuse’ or ‘online sexual exploitation’ of children and young people and inconsistency in their application.

This leaves various perspectives that help explain incidents of online-facilitated CSA, albeit very imperfectly. There are measures of offences that become known to the authorities (notably police recorded offence data), of people’s sexual interest in children (of online activity, typically viewing or posting images of CSA), of complaint making and of help-seeking attempts in response to issues related to online-facilitated CSA.

Table 14 summarises the key data sources, type of data and findings of studies that estimate incidence of online CSA included in this REA.
<table>
<thead>
<tr>
<th>Source</th>
<th>Country</th>
<th>Year(s)</th>
<th>Nature of reports</th>
<th>Figures</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEOP</td>
<td>UK</td>
<td>June 2013</td>
<td>Estimated number of UK images of CSA</td>
<td>50,000</td>
</tr>
<tr>
<td>Internet Watch Foundation</td>
<td>Global (HQ in UK)</td>
<td>2016</td>
<td>Data on images of CSA online</td>
<td>Confirmed 59,550 reports of images of CSA by external sources, a 13% reduction from previous year 57,335 URLs containing images of CSA</td>
</tr>
<tr>
<td>CyberTipline: National Centre for Missing and Exploited Children</td>
<td>US</td>
<td>October 2013 to April 2016 2014–2015</td>
<td>Sextortion reports</td>
<td>1,428, a 90% increase in the total number of reports, and an increase of 150% within first several months of 2016 compared with the same period in 2014</td>
</tr>
<tr>
<td>Cybertip.ca</td>
<td>Canada</td>
<td>9/2017</td>
<td>Reports to Tipline from the public, and authority action</td>
<td>Since 2002, over 215,000 CSE reports received resulting in 514 individuals being arrested</td>
</tr>
<tr>
<td>Project Arachnid</td>
<td>Canada</td>
<td>2017</td>
<td>Web-crawler tool detecting images of CSA</td>
<td>Detected over 5.1 million unique web pages hosting images of CSA (over a six-week period from processing over 230 million web pages). The tool is discovering approximately 80,000 unique images per month (for assessment) with the trend in number rising</td>
</tr>
<tr>
<td>NSPCC Helpline or O2 and NSPCC Online Safety Helpline</td>
<td>UK</td>
<td>2015/16</td>
<td>The number of calls and emails related to online CSA</td>
<td>650 calls, 41% referred to an external agency</td>
</tr>
<tr>
<td>Childline</td>
<td>UK</td>
<td>2015/16</td>
<td>The number of counselling sessions related to online CSA</td>
<td>3,716, an increase of 24% from the previous year and an increase of 250% over the past 3 years</td>
</tr>
<tr>
<td>The International Association of Internet Hotlines (INHOPE)</td>
<td>2014</td>
<td>URLs confirmed to contain images of CSA by the INHOPE reporting management system</td>
<td>89,758, a 63% increase from 2013</td>
<td></td>
</tr>
</tbody>
</table>
Sources identified

*The Internet Watch Foundation*

The IWF is a UK charity that works with a range of agencies (internet service providers, telecommunications companies, the police and government), as well as the public to minimise the availability of online illegal content, especially CSA images.

As part of its work, the IWF collects a very wide range of data. Sources actively search the open internet (using web crawlers) to locate images of CSA and receive reports from external agencies (including law enforcement and other professionals) and other sources (IWF members and the public).

In 2016 the IWF received 59,550 reports, which staff assessed as containing criminal content (breaching UK legislation) from a total of 105,420 reports (see Figure 4). This is a 12.5% decrease on the 2015 figure, after earlier increases of 118% (from 2014 to 2015) and 137% (from 2013 to 2014).

*Figure 4 The number of IWF processed reports containing criminal conduct, 2013–2016*

![Graph showing the number of IWF processed reports containing criminal conduct from 2013 to 2016]

**Web pages containing CSA imagery**

IWF staff identified some 57,335 confirmed URLs (web addresses) containing images of CSA, or having links to CSA imagery or advertising such material. This is a 15.8% reduction on the previous year (which identified 68,092 such URLs), itself an 118% increase on the 2014 figure (of 31,266). Newsgroups (n = 455) containing images of CSA were also lower in number (but only by 1.5%) on the previous year’s figure of 448.
Age profiles of children

IWF staff examine the age profile of all CSA URLs they analysed. The findings showed an increasing number of images of 11–15-year-olds (18% in 2004, 30% in 2015 and 45% in 2016), and a decline in images of the two other age group categories employed by the IWF: 10 years or younger (80% in 2014, 69% in 2015 and 53% in 2016) and 2 years or younger (4% in 2014, 3% in 2015 and 2% in 2016).

In explaining this trend, the IWF suggests that it reflects the increasing amount of ‘self-produced’ content created using webcams and uploaded online, and the greater propensity of the public to report images of children 10 years old and younger.¹

An earlier IWF (2012) study of young people (20 years of age or younger) and ‘self-produced’ online sexual content (images and videos) found that the overwhelming majority (89.9%) of all images found had been harvested from the original upload location and were being redistributed onto third-party websites (IWF, 2015, 3). It is important to note here that ‘self-produced sexual content’ is defined by the IWF as ‘nude or semi-nude images or videos produced by a young person of themselves engaging in erotic or sexual activity and intentionally shared by any electronic means’ (IWF, 2015, 3).

Classifications of CSA images by severity

The IWF classifies CSA images by the type of abuse they depict. Nearly half (46.9%) of those depicting children 15 years old or younger were deemed to constitute the two most serious categories: Category A showing ‘penetrative sexual activity involving children, including rape or sexual torture’ or images involving sexual activity with an animal or sadism, and Category B showing ‘non-penetrative sexual activity’. Just over a quarter (27.6%) had content of young people aged 16–20 years (IWF, 2015, 3).

The IWF found there had been a decline in the number of Category A images, from 43% in 2014, to 34% in 2015 and 28% in 2016 (Figure 5) and in the number of Category B images, from 30% in 2014, to 28% in 2015 and 19% in 2016.

¹ The IWF will issue a report on ‘self-produced’ content created using web-cams and shared online in the coming months. It was not available at the time of compiling this REA.
Domains and geographical locations of hosting sites

There has been a 21% increase in the number of domains identified as hosting images of CSA, from 1,991 in 2015 to 2,416 in 2016. Of these domains, 80% of all web pages that contained images of CSA were concentrated in five domains: .com, .net, .se, .io and .cc.

The IWF found that social networks were the least likely site types to contain images of CSA, and image hosts the most consistent sites for distributing images of CSA. ‘Image hosting’ allows an individual to upload images to an internet website, where it is then stored on the site’s server, from which other people can view the image. Many image hosts are free (supported by advertisements) and some do not require any registration, which increases anonymity. Similarly, ‘image boards’ (as with bulletin boards) are a type of internet forum that host discussion groups on a variety of topics, but mostly operate through the posting of images (IWF, 2016, 53).

In 2016 Europe hosted more identified web pages containing images of CSA (34,212) than any other region, a 19% increase from the previous year. Some 37% of identified web pages (21,295) were hosted in North America, a decrease of 20% from the previous year. The IWF has compiled the ‘top five countries’ hosting the vast bulk of CSA imagery URL’s identified globally in 2016. These are (ranked): the Netherlands (20,972, up 18% from 2015); the US (12,492, a decrease of 15% from 2015); Canada (8,803, a decrease of 5% from 2015); France (6,099, an increase of 5% from 2015); and Russia (4,716, a decrease of 5% from 2015).

Analysis of hidden services (the ‘dark web’) displaying images of CSA

There was a decline in the number of newly identified hidden services between 2015 and 2016 from 79 down to 41. They commonly contain hundreds or thousands of links to images of CSA.
and the location of the hosting server cannot be traced in the normal way, making it more challenging to remove.

In 2016 the IWF identified 1,572 websites that were ‘disguised’ by using access through digital pathways (via other websites) to hide images of CSA, an 112% increase from 2015’s figure of 743.

**Commercial exploitation of images of CSA**

Some 10% (5,452) of the 57,335 web pages containing images of CSA identified in 2016 were deemed commercial in nature, a 62% decrease from the previous year (14,708). The IWF believes this decrease results from methods being developed to avoid being discovered by the authorities and the shift to disguised websites. In 2016 the IWF detected attempts to encode images to prevent identification of the source host.

In addition, there has been a gradual increase in the number of identified disguised payment methods (Bitcoin wallets) to engage with commercial services associated with images of CSA, from four websites that accept Bitcoin wallets in 2015 to 42 in 2016.

There also appears to be an increase in ‘branding’ of dedicated CSA websites that are commercial in nature. Since 2009, the IWF has identified 2,771 unique website brands. In 2016, there were 766 active brands, an increase of 15% from the 664 found in 2015. The IWF believes that most CSA websites are operated by small criminal groups.

The IWF has devised an innovative ‘image hash list’ service assigning a unique code to each image of CSA thereby giving that image a unique identifier, which makes it possible to remove images at source and eliminate duplicates.

The IWF’s work with data on CSA is one of the most comprehensive attempts to identify the myriad of ways in which images of CSA are distributed on the internet and explore the extent of this activity over time. Unlike other organisations, the IWF actively searches both the world wide web and the hidden web to locate images of CSA by using automated web crawlers. It is therefore not wholly reliant on receiving reports from external sources.

**NSPCC Helpline, UK**

The National Society for the Prevention of Cruelty to Children (NSPCC) is a UK children’s charity that offers a variety of services and resources to protect children and improve their overall health and well-being, and provides training for a range of children services. The NSPCC works directly with children and families in service centres across the UK.

The most common reason for contacting the NSPCC helpline in 2016/17 was physical and emotional abuse (83% of all calls), a trend that has increased over nine years. The second most

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2 An ‘image hash list’ is a IWF tool that turns images of CSA into a unique code (rather like a digital fingerprint) using Microsoft’s PhotoDNA; this allows automatic matching of images.
common reason was to report ‘sexual abuse’ (encompassing all sexual abuse including online perpetrated abuse). Sexual abuse calls increased by 23% and emotional abuse calls by 41% since 2015/16.

Calls tend to come from concerned parents or schools (duty holders) phoning for advice about how to support worried parents, and relate to younger children than those made to Childline (see below). Indeed in 2015/16, where the age of the child was mentioned (in 222 out of 623 calls), almost a third of the calls related to concerns about under 11-year-olds, half were about 12–15-year-olds, and 14% were about 16–18-year-olds.

In 2016/17, over half (54%) of contacts to the helpline about CSA led to a referral (Bentley et al., 2017), but it is not clear to what extent sexual abuse involved an online element.

The main limitation with these data is that they rely on people’s personal perceptions of what constitutes sexual abuse, and the caller being motivated and able to report. Sometimes members of the public respond to news coverage and the NSPCC’s campaign activities. In some cases, calls made relate to more than one child, so the figures should not be seen as reliable indicators of the number of children affected by online-facilitated CSA.

**Childline**

Childline is a UK charity run by the NSPCC that offers a free confidential online and telephone advice and counselling service for children and young people (under 19 years of age) in the UK.

This service takes calls directly from children and young people themselves. The data for 2015/16 separates the counselling sessions it provided for online CSE and CSA by exposure to sexually explicit content, sharing of sexual images and online CSE by age group of the affected children. Of the 3,716 sessions, the largest category of concern overall was online sexual requests and grooming, mostly because this was the most prevalent issue for children aged 11 and younger (43% of sessions of this age group), although they comprised the smallest category of callers. Online sexual requests and grooming was the second highest concern for those in age groups 12–15 and 16–18, with 38% and 43% of sessions, respectively, on this issue. The next main concern for those aged 11 and younger was exposure to sexually explicit material (39%), whereas this appeared to be less of a concern for the 12–15 (22%) and 16–18 (21%) age groups. The sharing of sexual images was the least prevalent concern for those aged 11 and younger (18%), but the most dominant concern for the 12–15-year-olds (40%) and the second most likely concern for the 16–18-year-olds (36%), likely reflecting the correlation between increased aged and ‘self-produced’ images. These figures are all reported in Bentley et al. (2017).

Trends in data over the longer term are more difficult to disaggregate as Childline combines ‘sexual abuse’ and ‘online sexual abuse’ in the same category (Bentley et al., 2017). Examining trends over an eight-year period (2009/10 to 2016/17), the number of counselling sessions carried out for ‘sexual abuse/online sexual abuse’ decreased from 2010/11 to 2016/17 (with the exception of a marginal rise in 2014/15). Consequently, 2016/17 figures show under 10,000 such
sessions, from a peak in 2010/11 of marginally over 16,000 sessions. Nevertheless, it is important to note that in 2016/17 more counselling sessions were conducted about ‘sexual abuse/online sexual abuse’ than any other abuse-related main concern, equating to 9,452 sessions (Bentley et al., 2017).

The counselling session data provide an important indication of the reasons why young people call Childline and make it possible to identify emerging trends. The key limitation for the purposes of this REA is that the trend data do not disaggregate online CSA from other forms of CSA. A further difficulty with these data is that the sessions are categorised administratively by attributing a ‘primary concern’. This could be problematic where the individual presents with complex needs, for instance, where the recorded primary concern highlights some other problem (e.g. ‘neglect’) in addition to raising the occurrence of online CSA as an additional but secondary concern. Under these circumstances the online CSA would not feature so it is likely that the counselling data lead to some undercounting of these concerns.

The key limitations of using the Childline data to assess the extent of online-initiated CSA is that they capture only the number and content of answered calls, and cannot distinguish repeat calls about the same issue. The data might therefore constitute an under-estimate of the number of young people seeking help for these issues or be inflated by the double counting of repeat calls.

*Barnardo’s ‘Survey on online grooming’ (Fox and Kalkan, 2016)*

Barnardo’s is a UK children’s charity that helps to improve the lives of vulnerable children and young people, including those who have been sexually exploited, young people leaving care, and children with a parent in prison. Barnardo’s also assists parents and carers who struggle to cope with parenting a young person, through a wide range of services.

The ‘Barnardo’s survey on online grooming’ (Fox and Kalkan, 2016) was a snapshot investigation of five UK services that support young people at risk of sexual exploitation. Two were in England and one in each of Wales, Scotland and Northern Ireland. The aim was to ascertain the number of children and young people who had experienced online grooming as part of their abuse. These are some of the survey findings:

- In the six-month survey period, 702 young people had been supported by one of these five services relating to CSE.
- Of these, 42% reported having experienced online grooming.
- 89.2% of them were female.
- Their ages ranged from 10 to 19 years and 82.5% were aged 14–17 years.
- Risk of being groomed online appears to increase significantly from age 13 and then demonstrated an almost year-on-year increase up to age 17.
- Of those who experienced online grooming, 61% met the perpetrator offline and were sexually exploited.
Almost half of those who experienced online grooming were exploited by multiple perpetrators.

There were several limitations with this study. Notably, the survey does not cover a representative sample of young people in the UK but rather a subgroup of young people who over a six-month period accessed Barnardo’s services for people affected by grooming, so the findings cannot be generalised beyond the sample to the wider population, nor is it possible to estimate the sampling error. As with all surveys it relies on respondents recalling past events accurately. That said, it does inform about this limited subgroup who are users of this service, one which shows high levels of exposure to online grooming.

CyberTipline

CyberTipline is a US-based online and offline CSA reporting service run by the National Center for Missing & Exploited Children. It allows members of the public and internet service providers (ISPs) to report alleged instances of online sexual grooming (‘enticement’) and sexual exploitation of children, CSA images, unsolicited obscene materials sent to a child, as well as misleading domain names, words or digitalis images on the internet. The service allows reporting of a range of other offline CSE categories (e.g. child sex tourism, child sex trafficking and child sexual molestation).

CyberTipline’s data show a 90% increase between 2014 and 2015 in reports of alleged CSE or sextortion, which is primarily online – the non-physical coercion of children through blackmail to acquire sexual content, such as images and video (78%), money or goods (7%), or to engage in sex with the child (5%).

Some 1,428 sextortion reports were received from October 2013 to April 2016. Most came from internet companies (33%), child victims (24%) and parents or guardians (22%), with others from peers, siblings, romantic partners (7%) duty holders – such as police, teachers, counsellors (5%) and online strangers to the child (3%).

The main limitation of these data is that they rely on reports being received from members of the public and ISPs (predominantly operating within the US). The data therefore do not represent a complete figure of online CSA within the US, although it is unclear where all reports originate from geographically. Not all of the CyberTipline data are disaggregated by type of offending, for instance, there have been 12.7 million reports of suspected CSE from its inception in 1998 to 2016, but this headline figure conflates online and offline CSE.

3 All data are taken from the CyberTipline website; not all percentage figures total to 100% (presumably because of miscellaneous categories which have not been communicated and rounding errors).
Cybertip.ca

Cybertip.ca is operated by the Canadian Centre for Child Protection. It is a reporting (‘tipline’) service receiving, processing and referring reports from members of the public about online sexual exploitation of children and other potentially illegal material and activities. Reports are referred to Canadian law enforcement and child welfare agencies. The service also provides support, education and awareness functions for safer internet use among Canadians.

Since the inception of Cybertip.ca in September 2002 until 2009 the tipline has responded to over 215,000 CSE reports received from the public, resulting in 514 individuals being arrested (Bunzeluk, 2009).

The most recent published figures, from September 2017 (from the International Survivors’ Survey,\(^5\) \(n = 150\)), found that all respondents reporting being the subject of CSA had been video-recorded by the perpetrator(s). Of these 61% believed that the material had been distributed online (while 38% were unsure whether it was shared online). Over half the respondents (58%) had been abused by more than one person, and 42% were abused for more than ten years. The survey also found that in scenarios involving multiple perpetrators, 82% of the primary perpetrators were parents or members of the child’s extended family.

Age at onset of abuse shows that over half (56%) of respondents said the abuse began before age 4, while the overwhelming majority (87%) were 11 years of age or younger at the time of onset.

Cybertip.ca suffers the same limitations as CyberTipline, or indeed any other such reporting mechanism, which requires an informed person or duty holder who is able to recognise CSE and sufficiently motivated and enabled (able and willing to act) to report a concern. The other limitation is that report categorisations do not differentiate between activities that could constitute CSA or CSE from reports of potentially illegal material (images) that could depict the same individual multiple times (duplicates from the same hosting sites or across different sites).

Both measures are very likely to provide sizeable under-estimates of the true extent of online-facilitated CSA because of underreporting or the activities not coming to the attention of potential reporters. A further limitation with the raw data is that the ‘reports’ are unsubstantiated. For instance, not all the reports are about abuse that would necessarily constitute an instance of CSE on subsequent assessment. Similarly, while arrests are a measure

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4 The Canadian Centre for Child Protection is a national charity dedicated to the personal safety and protection of children

of criminal justice activity and are based on ‘reasonable suspicion’ of wrongdoing, this does not equate to guilt (which can be determined only by a court of law).

CSA image detectors

Project Arachnid (Canadian Centre for Child Protection)

Project Arachnid is a new automated web-crawler tool developed by the Canadian Centre for Child Protection to detect images and video based on confirmed digital fingerprints of illegal material. The Canadian Centre for Child Protection states that the tool is ‘exponentially faster’ than previous methods at detecting online images of CSA. Indeed, it reports that Project Arachnid has detected over 5.1 million unique web pages hosting images of CSA over a six-week period (processing over 230 million web pages). The designers state that when images of CSA are identified, a notice is sent to the hosting provider to request its immediate removal (Canadian Centre for Child Protection, 2016).

The Canadian Centre for Child Protection (n.d.) states that Project Arachnid is currently ‘discovering approximately 80,000 unique images per month that require analyst assessment and this number is steadily rising each month’. The analyst assessment is then triggered when the web crawler identifies a web page with images that are ‘suspect in nature’.

Web-crawler tools provide a recent innovation in detecting potential images of CSA and flagging the web page for assessment, and Project Arachnid appears to be especially prolific in its returns. It is particularly advantageous that it can conduct this activity in an automated way.

The key limitation with the information presented by the Canadian Centre for Child Protection is that there is no provision for a false positives measure within Project Arachnid, without which one cannot discount the sensitivity of the algorithm as a consistent error. If the current procedure relies on a manual assessment by an analyst (even if it is a representative sample exercise) to confirm the existence of images of CSA, this may suggest that the reported ‘5.1 million unique web pages hosting CSA material’ may in fact refer to suspected rather than confirmed web pages.

INHOPE Foundation

The International Association of Internet Hotlines (INHOPE) is a collaborative global network that reports hotlines for illegal online content, and aims to combat the distribution of images of CSA. It is co-funded by the European Union.

According to the statistics and infographics pages on their website, in 2014, 89,758 URLs were confirmed to contain images of CSA by the INHOPE reporting management system, a 63% increase from 2013, when some 54,962 URLs were similarly confirmed to contain images of CSA, a 47% increase on 2012’s figure of 37,404.
In 2014 most images of CSA were identified on image hosting sites (42%) (up from 22% in 2013, and 41% in 2012), websites (30%) (down from 37% in 2013, and 41% in 2012), file hosting sites (20%) (down from 29% in 2013, and 4% in 2012), social networking sites (5%) (down from 7% in 2013, and up from 3% in 2012) and banner sites (3%) (down from 5% in 2013, and 11% in 2012).

INHOPE distinguishes between commercial or non-commercial hosting of images of CSA, which show a steady growth of non-commercial hosting over commercial hosting. In 2014, 91% of images of CSA were hosted for non-commercial purposes, which was up from 87% in 2013, and 82% in 2012, respectively.

These data carry the same limitations as the CyberTipline, as they rely on reports received from the public. However, the organisation has a wider global reach than CyberTipline, with reporting hotlines distributed internationally.

Other studies of interest

*The European Financial Coalition against Commercial Sexual Exploitation of Children Online*

The European Financial Coalition against Commercial Sexual Exploitation of Children Online was an EU funded project of 36 months duration to tackle the commercial sexual exploitation of children online. It focused on tackling the payment and information, communications and technology systems used to run these illegal operations. The project published a strategic assessment of commercial sexual exploitation of children online, its scale and extent of activity, including developments in October 2013, which was based on interviews with experts in the field (n = 18) (Europol, 2015).

The most useful aspect of this coalition’s reported work is its identification of emerging issues in the commercial online exploitation of children, for example the migration of commercial CSE from traditional payments systems to a new and a ‘largely unregulated digital economy made up of hosting services, anonymising internet tools, and pseudonymous payment systems’ (Europol, 2015).

This point was also flagged by the IWF when examining the growth in Bitcoin payment systems to engage with commercially hosted images of CSA. The authors of the Europol (2015) report note there is a greater entrepreneurial motivation for those producing and distributing CSA material, driven by a search for new and novel markets believed to be operating on the darknet. There is now on-demand and tailor-made material commercially traded on the darknet and deep web, although it is more limited than material available on the surface web.

Luxembourg and Singapore are two new countries in the ‘top ten’ registered by INHOPE for hosting commercially distributed images of CSA (in addition to Canada, the Czech Republic, Germany, Hungary, Japan, Kazakhstan the Netherlands, the Russian Federation and Ukraine) Another emerging trend is that live streaming of CSA for payment is now an established practice.
Summary

The various helpline data provide information about the concerns and problems that young people and their carers who call on their behalf express. In the UK, the most frequent reason for contacting the NSPCC is to report a matter that fits into the category ‘abuse’, and the number of contacts relating to abuse has increased in the last nine years. Contacts about sexual abuse feature prominently after emotional abuse.

The Childline data derived from counselling services also illustrates the prominence of online grooming: 65% of calls to Childline from or about 12–15-year-olds related to online CSA. Similarly, for the same period and for the same age group the NSPCC helpline reported that 50% of calls were about online CSA, which was of second highest importance for older ages groups (12–16 and 16–18-year-olds).

The overwhelming majority of calls are from females, who appear to be at a significantly increased risk of being groomed from age 13. CEOP’s (2013) analysis of images of CSA also identified a 70% increase in female victims, but with a distinctly younger age profile as figures relate to children under 10 years old (with a corresponding reduction in the number of images of male victims under age 10). The NSPCC data show that nearly half of those experiencing online grooming were exploited by multiple perpetrators.

Looking further afield, CyberTipline data from the US shows there was a 90% increase in reports of CSE over a 12-month period from 2014 to 2015, with internet companies filing the majority of reports (33%). Helpline data on CSE and CSA from Canada show that more than three out of five victims who had their CSA recorded believed it was later shared online.

These services provide some valuable information about victimisation and associated risk profiles (as well as modus operandi of perpetrators and related dimensions of their criminal careers). Nevertheless, as with all reported incidence, they capture only sexual abuse that callers have identified and reported, and consequently these figures are likely to be an undercount of the true extent of online-facilitated CSA.

Perhaps the most authoritative source of data on images of CSA derives from the very considerable work of the IWF. The foundation has the advantage of not only receiving reports of images of CSA from a range of sources, but can supplement these data by actively seeking out images of CSA in the open (and hidden) internet using web crawlers. Examination of the trend line on URLs (web addresses) containing images of CSA (that constitute criminal content in the UK) shows considerable year-on-year increases over the three years before 2015. Thereafter, there was a modest decrease (of nearly 16%) in last year’s data (2015 to 2016). It is assumed that the fact that the IWF and its partner agencies can take down and remove identified images of CSA has contributed to this decrease.

In turn, adaptive perpetrators appear to have increasingly used hidden methods, such as proxy networks (the dark web), between 2012 and 2015, which made it difficult to trace the hosting
server. However, incidents decreased from 79 in 2015 to 41 in 2016. The IWF attributed this to the increasing awareness of law enforcement agencies internationally of this method of distributing images of CSA.

In a similar manner, the apparent decrease in commercial websites trading in images of CSA may simply reflect a move to perpetrators using more disguised websites as a response to the growing hostile environment for this material of the open internet. The gradual growth in untraceable crypt-currency (Bitcoin wallets) payment methods supports this point.

Nevertheless, the number of domains hosting images of CSA continues to rise, with image host domains (which allow offenders to upload images) being the most consistently abused sites. The IWF’s (2016) annual report states that Europe is the main continent hosting images of CSA (some 60%, an increase from 19% in 2015), followed by North America (37%) down 20% from the previous year and Asia (just 3%), with the UK hosting just 0.1% of the global total of images of CSA (down from 0.2% in 2015 and from 18% in 1996 when the IWF began its work). This suggests there has been considerable success in reducing the number of domains hosting images of CSA in the UK at least, despite perpetrators continuing to adapt by using ever more sophisticated technical methods to disguise their activities.

**Police data on crime reports and perpetrators**

Five studies and sources examining police data from the UK, the Netherlands, Sweden and the US were included in this section. They report on data captured between 2000 and 2013, and the trends in police recorded crime for England and Wales between 2002/03 and 2016/17. A brief synopsis of each study is presented in Table 14 and summaries of the studies are provided in Appendix 12. When a source refers to a multi-wave study it is referred to by its study name; single publication studies are referred to by the surname of the first author and date of publication.

The most significant observation regarding these studies and sources is the lack of uniformity about what is being captured in the data (e.g. the type of offence, number of images or perpetrators being counted, and duration of the period of data capture). One multi-wave study explored trends in arrests for offences associated with online-facilitated CSA across a ten-year period in the US (the National Juvenile Online Victimisation Study) by surveying investigators. Others have examined the police files of all reported CSA cases identified as having an online component, and one used the police recorded crime figures published by the Office for National Statistics.

It is difficult to draw comparisons between the studies as a variety of forms of offences were investigated in each of them (e.g. producing images of CSA, internet-facilitated commercial CSE, sexual exploitation and grooming of children and young people, and the volume of images encountered by the police).
The published police recorded crime figures for England and Wales report on groups of offences. It is difficult to disaggregate offences that were specifically against, or relate to, children and young people (e.g. the obscene publications category includes other types of publication in addition to images of CSA), or whether the offence involved the use of the internet (e.g. sexual grooming).

However, in June 2017 the NSPCC published a report based on freedom of information data that separated out all internet sex crimes against young people under age 18 (Bentley et al., 2017). Additionally, Wright (2017) reported on a set of experimental statistics based on data from 22 police forces, which attempted to disaggregate the recorded crime figures for sexual crimes by age and gender of the victims. Both studies provide valuable information on trends in young people’s experiences of CSA, particularly when the abuse has an online element.

The National Juvenile Online Victimisation study was the most comprehensive attempt to quantify incidence rates of different forms of online CSA. It involved four waves of data collection in the US over ten years. The data collection points were in 2000/01, 2006, 2009 and 2010. The general objectives of the study relevant to this REA were to obtain an initial estimate of the number of arrests for online CSA and CSE during the preceding 12 months, so that changes in trends over time could be ascertained, and examine the characteristics and profiles of these types of crime. This study involved surveying 2,574 state, county and local law enforcement agencies in the US, followed by in-depth interviews with investigators.

The other national (McManus and Almond, 2014) and international studies (Leukfeldt, Jansen and Stol, 2014; Shannon, 2008) offer some information on the characteristics of suspects and offenders that are missing from the data on police recorded crimes.

A variety of forms of offences were investigated in these studies (e.g. producing images of CSA, internet-facilitated commercial CSE, and sexual exploitation and grooming of children and young people) as was the volume of images encountered by the police, so it is difficult to draw comparisons between the studies, but each offers additional insight in its own right.

The central limitation of these studies is that police data capture only a small proportion of offending and victimisation and are therefore poor indicators of incidence rates of particular crimes. These are some of the multifarious reasons why police recorded crime statistics fail to capture most offending:

- Victims and guardians do not recognise that a crime has been committed (particularly likely in grooming cases – see Pearce, 2009) and therefore do not report it. Or victims and guardians are unwilling to report recognised abuse because they do not believe the offences to be serious enough, or self-blame or fear being blamed or not believed.
- Some forms of sexual abuse may fall below the threshold of being legally defined as a crime, often because the law takes time to be amended to accommodate new
categories or methods of offending (e.g. the new provision under the Serious Crimes Act 2015 criminalises adult’s sexualised conversations with young people).

- Police fail to record a proportion of reported crimes or conclude that no crime has been committed. A report by Her Majesty’s Inspectorate of Constabulary (HMIC)(2014) discovered that in 2014 across the police forces in England and Wales, 26% of sexual crimes were not recorded and a further 20% of recorded incidents were later and erroneously recorded as ‘no crime has been committed’.
- Police records are not always accurate (HMIC, 2014). This is further complicated by the fact that some crimes involve multiple offences and those deemed to be relatively less serious may not be recorded. Thus, in the context of online grooming, the police may only record the most serious of crime outcomes such as rape or sexual assault, and omit the grooming element from the records).
- Accuracy of police records is also likely to be compromised by the inadequacy of record keeping and the appropriate following up of reported crimes. The HMIC (2015) assessment of the police response to online CSE in six police forces concluded that some forces maintained unacceptable levels of record keeping and/or failed to follow up reported cases with suitable investigations.
- It is difficult to generalise data generated from police files from various countries to a UK context as there are differences in laws, recording practices and levels of law enforcement.
### Table 15 Studies of incidence rates using police data

<table>
<thead>
<tr>
<th>Source</th>
<th>Country</th>
<th>Year(s) of data capture</th>
<th>Nature of data (e.g. suspects arrested)</th>
<th>Nature of offences</th>
<th>Key limitations</th>
</tr>
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<tbody>
<tr>
<td>The National Juvenile Online Victimisation Study</td>
<td>US</td>
<td>2000–2001 2006 2009 2010</td>
<td>Survey of 2,574 state, county and local law enforcement agencies</td>
<td>Producing images of CSA Internet-facilitated commercial CSE Sexual exploitation of young people</td>
<td>The data captures only suspected offending Investigators’ responses may be biased by the training they had received and their impression about victims Possible to under-estimate online-facilitated CSA perpetrated by family and acquaintances</td>
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<tr>
<td>Leukfeldt, Jansen and Stol (2014)</td>
<td>The Netherlands</td>
<td>2007</td>
<td>159 police files</td>
<td>Images of CSA</td>
<td>Based on caught perpetrators only Not known whether suspects have been convicted Analyses are based on police files from 2007; with the rapid change of technologies, the number of juvenile suspects may now be larger</td>
</tr>
<tr>
<td>Home Office: Crime England &amp; Wales</td>
<td>UK</td>
<td>2002/3–2016/17</td>
<td>Police recorded crimes in England and Wales</td>
<td>Number of ‘obscene publications’ and sexual grooming offences recorded</td>
<td>Obscene publications are not necessarily either online or images of CSA Sexual grooming need not be committed online</td>
</tr>
<tr>
<td>Source</td>
<td>Country</td>
<td>Year(s) of data capture</td>
<td>Nature of data (e.g. suspects arrested)</td>
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<td>Shannon (2008)</td>
<td>Sweden</td>
<td>1/2004–9/2006</td>
<td>315 police reports from 14 of the 21 police authorities</td>
<td>Examined online sexual communications and/or grooming offences where victim and perpetrator had been in contact online and where victim was under age 18</td>
<td>The veracity of the offence descriptions to reflect actual events accurately is questionable, since such reports often vary considerably in the level of detail given; and their content depends on the thoroughness of the investigation on which they are based and the decision-making of the reporting officer on what to include. Additionally, officers are not given guidance on what to include in the offence descriptions and thus may focus their attention on what they see as the more serious crime elements of the alleged offence.</td>
</tr>
<tr>
<td>McManus and Almond (2014)</td>
<td>UK</td>
<td>2005/06–2012/13</td>
<td>Home Office data</td>
<td>Images of CSA</td>
<td>Official crime statistics and conviction rates are poor indicators of the prevalence of offending. As the police are responsible for recording crimes, the most serious of sexual crimes (rape or sexual assault) may be reported by victims and followed through within the criminal justice system. The Jimmy Savile investigation has increased the number of victims coming forward to report sexual abuse (known as the ‘Yewtree effect’).</td>
</tr>
</tbody>
</table>
Findings relating to the UK: images of CSA

The Home Office publishes figures of police recorded offences for creating, possessing or distributing images of CSA (being an offence in the UK), categorised under the broader umbrella offence of ‘obscene publications’. This category of the Home Office Counting Rules combines several offences relating to obscene material (that ‘tends to deprave and corrupt’) and does not disaggregate the possession or distribution of images of CSA from a host of other offences.

According to the reports on police recorded crimes (e.g. Ministry of Justice, 2017), the number of obscene publication offences has more than doubled in each of the four UK nations between 2010/11 and 2014/15. Northern Ireland has had the largest percentage increase of 292% over these five years (to 231 offences in 2014/15), though it has the smallest number of offences, reflecting its population size in relation to the rest of the UK. There was a 184% increase in Wales (to 587 offences in 2014/15), a 168% increase in Scotland (to 603 offences in 2014/15) and a 134% increase (to 7,324 in 2014/15) in England since 2010/11. These increases have been attributed to a rise in the creation and distribution of indecent or pseudo-photographs of children and adults using internet and mobile technology.

The increases in obscene publications offences are even more marked from 2014/15 to 2015/16. In 2015/16, in England there was a 64% increase (to 11,992 offences), and in Wales a 50% increase (to 881) (Bentley et al., 2017). Indeed, the broad trend for this offence has been of gradual increases from approximately 2,000 offences (for both England and Wales) in 2002/03, rising in 2003/04 and 2004/05 to under 3,000, then gradually increasing again from 2007/08, with the rate of increase changed markedly from 2012/13 onwards.

The increase in the number of obscene publication offences between 2012/13 and 2013/14 marked the start of a yearly escalation in subsequent years. According to the Crime Survey for England and Wales in 2016 (Flatley, 2016), the steep (98%) rise in the number of obscene publications offences between 2013/14 and 2014/15, from 5,401 to 10,683 per year, was predominately due to an increase in the number of offences related to making and distributing indecent photographs or pseudo-photographs (including those of children) via the internet or through mobile technology. In contrast, Bentley et al. (2017) attribute the recent increase in 2015/16 to targeted and coordinated activity by the National Crime Agency and the police against online sexual exploitation and abuse, and arresting more suspects than in the past, rather than a change in prevalence.

Figure 6 plots the trend in recorded obscene publications offences in England and Wales over the past 15 years.
The main limitation with these data (in addition to the aggregate nature of the offence category in England and Wales) is that they count only those offences that come to the attention of the authorities and are recorded by them (including discrepancies in recording practices), rather than the number of offences that actually occur. As with any officially recorded crime data, they can also reflect activities and performance by the authorities (including periodic crackdown operations and other strategies), which can mask trends in prevalence. A further difficulty is undercounting or overcounting for budgetary and political reasons. Nevertheless, these particular data are very likely a considerable undercount of the number of offences of creating, possessing or distributing images of CSA, while the disaggregation problem further reduces their value.

Additionally, the offence type does not differentiate between self-produced and distributed images rather than those produced by adults or those involving an element of coercion in their production and distribution. However, it is evident that the ubiquity of mobile technology is driving the broad increase in the number of reported obscene publication offences.

_Disaggregated crime data – Police Service Northern Ireland_

There was also a year-on-year increase in police recorded obscene publications offences where the victim was under 18 years old in Northern Ireland, from 2008/09 onwards (PSNI, 2016).
In 2007/08 there were 60 recorded offences, which fell to 51 in 2008/09, before rising to 57 in 2010/11, 93 in 2011/12, 116 in 2012/13, 151 in 2013/14, 213 in 2014/15 and 394 in 2015/16. The overall percentage increase from 2007/08 to 2015/16 was over 556% (PSNI, 2016).

_Disaggregated crime data – Policing Scotland_

The Scottish Government (2017) reports that in Scotland ‘cyber-enabled crime’ covering the offences ‘communicating indecently’ and ‘cause to view sexual activity or images’ now account for just over half (51%) of ‘other sexual crimes’. This is an increase from 2013/14 when 38% were cyber-enabled.

In Scotland, there has been a small but steady year-on-year increase in the number of offences of taking, distributing and possessing indecent photos of children since 2014/15, following a small decrease between 2013/14 (621 recorded offences) and 2014/15 (693 recorded offences). There were 645 offences recorded in 2015/16 and 649 offences in 2016/17.

Unfortunately, the number of reported offences does not provide any indication of the number of young people who have been abused in these crimes.

_The Child Exploitation and Online Protection Command_

The UK’s Child Exploitation and Online Protection (CEOP) Centre is a command of the National Crime Agency (NCA). In 2013, CEOP published _Threat assessment of child sexual exploitation and abuse_, which estimated that there were approximately 50,000 individuals in the UK who downloaded and shared images of CSA during 2012 (CEOP, 2013). CEOP also reported there had been a twofold rise (from 2011) in overall levels of still and moving images of CSA contained within their ‘indecent images of children transaction reports’\(^6\) to just over 8,000 in 2012. A fifth of this total were assessed as being self-generated by their subject (a self-portrait photograph).

From January 2010 to December 2012, CEOP identified a 125% increase in the number of images involving penetrative sexual abuse of children. Although, there was no corresponding increase in images depicting children in erotic poses but with no sexual activity, these remained the most prevalent types of images.

During this same period, there was a 70% increase in female victims under 10 years old (with a 68% reduction in male victims under 10) depicted in the images. There was a 23% increase in images in which both adults and children were present.

CEOP advisers stated that they were confident that this image sample was representative of the wider number of images of CSA in circulation through webmail and social networking sites.

CEOP and the NCA are at the forefront of investigating and tackling online CSA in the UK and therefore have very considerable expertise in this area. However, they provide no precise

\(^6\) These are transactions over webmail, social networking sites and hosting services
methodology as to how they estimate the number of individuals involved in downloading and sharing images of CSA, and it is recognised that the reluctance to release such information into the public domain is related to concern that this could jeopardise their future operations. Without an understanding of the methodology used to arrive at this estimate, it is not possible to make a judgement about the reliability of the figures produced.

**Insights from studies of perpetrators convicted of CSA image-related offences**

A study by McManus and Almond (2014) explored the rates of conviction for offences related to images of CSA from 2005/06 to 2012/13 in the UK, years which predate the most significant rises in obscene publications. These are some of their findings:

- There had been a slight increase in the number of offenders convicted for possessing images of CSA from 227 in 2005/06 to 268 in 2012/13.
- The mean number of possession offences per offender had risen from 8.51 to 9.38.
- The number of offenders convicted of taking, making or distributing images of CSA increased by 35% from 921 in 2005/06 to 1,247 in 2012/13.
- The mean number of offences recorded per offender rose from 8.48 in 2005/06 to a peak of 10.72 in 2010/11.
- The number of images of CSA offenders sentenced since 2005/06 (n = 9,744) continued to increase to 2012/13 (n = 14,497).

**The international picture**

**The US**

The National Juvenile Online Victimisation study, which explored arrests for online-facilitated CSA, was conducted at three time points (2000/01, 2006 and 2009). The number of arrests for offences related to producing images of CSA more than doubled across the nine years of the study (Wolak, Finkelhor and Mitchell, 2012). This trend was largely accounted for by the increase in self-produced images created by young people themselves, which had begun by 2006. Arrests for self-produced images rose from 22 in 2000, to 233 in 2006 and 1,198 in 2009. This contrasts with a much lower level of increase in adult-produced images, which rose from 380 in 2000, to 626 in 2006 and 713 in 2009. However, there is a greater risk of contact CSA relating to adult-produced images of CSA.

In about 50% of the arrests for adult-produced images of CSA the perpetrator was also arrested for a contact CSA offence against the young person. The adult perpetrator who had requested the images from the young person was the person most likely to be arrested. One-quarter (25%) of images produced were known to have been distributed (Mitchell et al., 2010) and 21% of producers used covert methods to capture images.

Investigating the 2006 figures Mitchell et al. (2010) found that:
cases involving multiple victims were less likely to lead to an arrest
levels of covert production of images were similar to those found in the 2000 survey (25%).

The Netherlands
Leukfeldt, Jansen and Stol (2014) analysed the nature of images of CSA offences and the characteristics of the suspects arrested for image-related offences. They analysed 159 police files involving 172 suspects related to cases of CSA image-related offending, which were investigated in 2007.

These were their findings on suspects:

- In most cases only one suspect was involved (93.6%). Some cases had two suspects (4.5%), three suspects (1.3%) and five suspects (0.6%).
- In the files containing more than one suspect, the suspects are neither part of an established group nor part of organised crime.
- Most suspects were not involved in organised crime though the evidence suggested they were in some form of organisation.
- Those who were apprehended for downloading images were not part of any criminal organisation.
- Some offences were discovered by accident (e.g. when a suspect took his computer to be repaired the images of CSA were discovered, or the images were discovered by family members, partners and ex-partners).
- Two suspects had engaged in sextortion.
- The gender of 167 of the 172 suspects was known: 164 were men and 3 were women (98.2 and 1.8%, respectively).
- The age of 168 of the 172 suspects was known, and ranged from 14 to 83 years, with most suspects aged between 18 and 54 years:
  - 14 perpetrators (8.3%) were 12–17 years old
  - 26 perpetrators (15.5%) were 18–24 years old
  - 32 perpetrators (19%) were 25–34 years old
  - 37 perpetrators (22%) were 35–44 years old
  - 36 perpetrators (21.4%) were 45–54 years old
  - 16 perpetrators (9.5%) were 55–65 years old
  - 7 perpetrators (4.2%) were 65+ years old.

Findings relating to the UK: sexual grooming

As with the obscene publications crime trend, there has been a marked year-on-year increase in the number of grooming offences in England and Wales since 2012/13 (Figure 7).
Figure 7 Police recorded sexual grooming offences in England and Wales, 2004/05 to 2016/17

Police Recorded Sexual Grooming Offences in England and Wales

Freedom of information requests on grooming and online-facilitated CSA

The data shown in Figure 7 can usefully be supplemented by two sets of recent published data from a freedom of information requests from the NSPCC to UK police forces. The first findings were reported in a recent 2017 NSPCC publication, which looked at disaggregated data by offence category across each of the UK’s national jurisdictions (Bentley et al., 2017). These data show the increases in ‘sexual grooming’ offences in the UK between 2014/15 and 2015/16:

- in England an increase of 48.9%, from 652 to 971 offences
- in Scotland\(^7\) a much greater increase of 117.4%, from 23 to 50 offences, although from a lower baseline
- in Wales an increase of 12.8%, from 39 to 44 offences, the smallest increase within the UK
- in Northern Ireland a far larger percentage increase of 1050%, from 4 to 46 offences; this very significant increase derives from the very low baseline 2014/15 figure and therefore somewhat skews the figure.

While much sexual grooming may have an online element, it is not clear from these figures to what extent the internet played a part in these offences. However, in the second series of freedom of information requests the NSPCC (reported on the NSPCC website) asked 43 police

\(^7\) This offence category is worded differently in Scotland as ‘grooming of children for purposes of sexual offences’.
forces for figures for sexual crimes recorded against children and young people under age 18 in which an online (cyber) element had been flagged. An initial request was made about the crime figures for 2015/16 and another in April 2017 for crime figures for 2016/17, which received responses from 39 of the 43 police forces.

The figures showed there had been a 44% increase in police recorded crime relating to online-facilitated CSA between 2015/16 and 2016/17, from 3,903 crimes recorded in 2015/16 to 5,653 crimes in 2016/17.

Since this is just the second year in which police forces have had to flag the online element in these crimes, the increase may be partly accounted for by better recording of the online element.

While these figures do not reflect the full extent of online-facilitated CSA offences, the 2017 request also led to the release of some data on the age profiles of the crime victims, which assists in understanding risk trends:

- The youngest recorded victim of online-facilitated CSA was 3 years old.
- 100 of the victims were aged under 10 years.
- The most common age of children who were targeted online was 13 years.

**Crime statistics disaggregated by age and gender**

The crime statistics reports do not typically disaggregate data by age and gender, but a report by Wright (2017), based on additional data provided by 22 police forces on violent and sexual crimes for the year ending March 2016, has done so. Sexual crimes were dichotomised as being either rape or other sexual offences. This latter category included grooming and sexual exploitation, although there was no reference to any online element.

Wright (2017) found that overall 49% of sexual offences recorded by the police involve victims under age 16. Young men and women were disproportionately recorded as victims of ‘other sexual offences’. Although females aged 10–14 years represent just 5% of the female population, they accounted for 23% of recorded sexual assaults against females. Similarly, although males aged 10–14 years represented just 6% of the male population, they accounted for 29% of all sexual assaults against males. Such disproportionality, to varying degrees, was evident for females age 5–50 years and for males aged 1–19 years.

The limitation with these data or those on ‘sexual grooming’ offences is that they do not differentiate online CSA from contact CSA. Nevertheless, research evidence indicates that these offences are predominantly conducted online. The trends need to be read with caution as the authors only give data over a single year.
CEOP

CEOP receives reports from approximately 1,000 children a year concerning online abuse by adults, although it is unclear to what extent this is sexual in nature.

International studies exploring trends in online grooming

The US

The National Juvenile Online Victimisation study in the US explored police files for suspects arrested for online grooming and sending sexual requests. The 2000 data (Mitchell, Finkelhor and Wolak, 2005) showed that:

- 46% of cases involved more than one victim
- about 18% of online-facilitated CSA was perpetrated by a family member (including intimate partners) or acquaintance
- 45% of the victims were aged 6–12 years.

The third survey of arrest data from 2009 (Wolak and Finkelhor, 2013) relating to perpetrators who met a young person online found that:

- only a small minority (15%) of perpetrators pretended to be younger than they really were
- 51% of offenders were under 25 years old
- 1% of offenders were female
- 20% of the victims had claimed to be over age 18
- across the three waves of data collection there were 29 organised online-facilitated CSA cases (10 in 2000, 11 in 2006 and 8 in 2009), which accounted for 3%, 3% and 1% of all of the online CSA arrests across the three waves of data collection (Wolak, 2015)
- just over 50% of these cases were deemed to be a familial enterprise
- 23% involved commercial CSE where the young people were being used to sell sexual activities
- 15% were online sex rings where the young people were subjected to CSA live on webcam, which was then streamed to other viewers.

Mitchell et al. (2011) noted that with the advancement of technology the range of offence tactics employed by perpetrators has grown. In the context of this REA it is noteworthy that the increased use of webcams has been associated with a significant rise in the use of video and live streaming of sexual activity involving young persons, which has not been measured in the self-report victimisation studies.

The study also had several noteworthy strengths. Focusing on arrests was deemed superior to crime reports of open investigations, since these were most likely to represent actual crimes and likely to include more complete information on perpetrators, victims and the nature of the
crimes. Additionally, focusing on arrests minimised the likelihood of double counting where individuals were investigated for the same crimes by different law enforcement agencies.

One limitation of the study is that the figures under-estimate the extent of online-facilitated CSA as they capture only the number of arrests made and not the number of children and young people abused by these perpetrators.

**Sweden**

Shannon (2008) analysed the police files for 315 suspected sexual offences involving online communication between an adult and a young person under age 18 reported in Sweden between January 2004 and September 2006. They were drawn from 14 of the 21 Swedish police authorities.

Shannon (2008) identified four categories of online interaction: online contact only, online and phone or text contact only, online communication leading to an offline meeting where no sexual contact was reported to have taken place, and online communication which led to sexual contact at an offline meeting.

**Online contact only**

Online contact only accounted for 57% \((n = 179)\) of the cases, which were characterised by the perpetrator initiating sexual conversations, attempting to persuade the victim to pose nude or semi-nude on a webcam, or exposing him or herself via webcam. These are some of Shannon’s (2008) findings:

- 96% of perpetrators were reported to be male.
- 21% of perpetrators were believed to be aged 18 or younger.
- 91% of victims were female.
- 57% of contacts happened on just one occasion.
- 12% of contacts were sustained for at least one month.

The age groups of the victims were:

- under 11 years (13%)
- 11–12 years (31%)
- 13–14 years (38%)
- 15–17 years (18%).

**Online and phone or text contact only**

Online and offline communication (phone or text) only without any suggestion of meeting in person accounted for 14\(\%\) \((n = 45)\) of the cases. These are some of Shannon’s (2008) findings:

- 100% of perpetrators were reported to be male.
- 4% of the perpetrators were believed to be under age 18.
- 96% of the victims were female.
• Only 14% of the contacts happened on only one occasion.
• 30% of these contacts were sustained for more than one month before being reported to the police.
• 10% were sustained for over a year.

The age groups of the victims were:
• under 11 years (4%)
• 11–12 years (21%)
• 13–14 years (42%)
• 15–17 years (18%).

Online communication leading to an offline meeting where no sexual contact was reported to have taken place
Online communication leading to an offline meeting between perpetrator and victim accounted for 18% of cases. Victims did not report any sexual assault, but in all cases the parents strongly suspected that some form of sexual activity had taken place. These are some of Shannon’s (2008) findings:
• The victims were most likely to believe they were chatting with someone of a similar age to themselves.
• In 7% of cases (n = 22) the perpetrator was already known to the victim in an offline setting and had used the internet to develop the relationship for sexual purposes.
• 100% of the perpetrators were reported as being male.
• No perpetrators were under age 18 (police identified 86% of this sample, so it is likely that their actual age was recorded).
• 81% of the victims were female.

The age groups of the victims were:
• under age 11 years (0%)
• 11–12 years (15%)
• 13–14 years (38%)
• 15–17 years (46%).

Online communication which led to sexual contact at an offline meeting
In 22% of cases (n = 69) the perpetrator and victim had initially met online but subsequently offline and sexual offence was suspected or reported. These are some of Shannon’s (2008) findings:
• 100% of the perpetrators were male.
• 10% of the perpetrators were aged 18 or younger.
• 96% of the victims were female.
• 20% of the cases involved victims and perpetrators of similar ages.
• The age range of the perpetrators was 15–22, with a mean age difference between the perpetrators’ and victims’ ages of two years and a maximum age difference between them of five years.

The age groups of the victims were:

• under 11 years (0%)
• 11–12 years (8%)
• 13–14 years (42%)
• 15–17 (49%).

Other factors that can influence the level of reported and recorded incidents

As with any recorded crime statistics, what comes to the attention of the authorities largely reflects reported crime (technically incidents) and it has long been recognised that CSA is notoriously underreported for a host of reasons. Moreover, incidents reported (usually via incoming calls from the public) do not match the types of crimes that are recorded. This is because the official crime figures are the end result of a social, administrative, legal and political process affected by police practices and discretion, and the prevailing operational targets.

Moreover, the propensity to report is likely to vary by neighbourhood characteristics and levels of public awareness and consciousness (notably stories in the mass media).
7 Assessment of the supply and demand of images of CSA

Table 16 summarises key information acquired from literature reviewed for this REA to gain a comprehensive understanding of previous research efforts concerned with measuring and quantifying data sharing through internet-enabled mechanisms. This chapter investigates the differences in the data sources and systems, provides a summary of the date and duration of capture, and discusses key findings and limitations.

Data sources and systems

Most digital content distribution systems operate in a decentralised peer-to-peer manner without a central point of digital content storage; instead digital content is dispersed, located and shared from the personal computers of many users. There is, however, a centralised indexing mechanism that tracks the location of digital content for uploading and downloading purposes. There is also often a search engine enabling users to search for digital content and download a file providing indexing information, which can subsequently be used by software to locate and download the digital content in multiple parts from many users, thus distributing the communication evenly.

It would be practically unfeasible to capture and identify the transfer of illegal content by monitoring all internet traffic.\(^8\) A common theme identified in all studies is that they acquire information from a search engine by monitoring either user searchers (demonstrating demand) or the availability of illegal information (demonstrating supply). The subsections below discuss common data sources.

Gnutella

The Gnutella network is a distributed peer-to-peer network that was developed in the early 2000s. Users are required to have a ‘client’ application running on their machine to engage with the Gnutella network and facilitate the sharing of digital content. A widely used client application is LimeWire.

The Gnutella network keeps a track of each digital file through an associated ‘hash value’ generated by passing the digital file through a mathematic function to produce a fixed size unique descriptor. There are many benefits in using hash values; the most prominent are error checking and identification. If the file contents changes at all, the hash value is different and the file can be assumed to be corrupt. Hash values also provide a uniform mechanism for identifying files, without the potential of conflict that would normally occur if using file names.

\(^8\) Cisco estimates that in 2016 there was a monthly global transfer of 1.2 zettabytes (1 trillion gigabytes) on the internet.
**Mininova**

Mininova is a website search engine for the BitTorrent network. Much like the peer-to-peer distribution mechanism of Gnutella, BitTorrent networks are decentralised and require an index file (torrent) that contains information about what files need to be downloaded and the network location of trackers. These are computers on the system able to find users sharing desired content. Mininova was a very popular BitTorrent search engine, but closed in December 2010 after a series of legal battles over the sharing of copyrighted content.

**eDonkey and eMule**

eDonkey and eMule are commonly used peer-to-peer file sharing platforms that are not part of a BitTorrent or Gnutella network, but it is widely accepted that they are not as popular as BitTorrent systems, and their number of users is in decline. The implementation and use of specific network systems for the eDonkey and eMule platforms limit the availability of information to their systems, whereas the principles of a BitTorrent network are the same for most desktop BitTorrent software.

**Web crawler**

Westlake and Bouchard (2016) investigated the sharing of CSA content through publicly accessible websites, analysing websites and identifying CSA content available on websites, and exploring links between websites to find networks of related websites sharing CSA content. The study used seed websites known to contain CSA content as the starting point for their search software, which iteratively explores all available links, looking for images containing CSA by matching against known CSA hash values.

**Discussion**

Westlake and Bouchard (2016) analysed over 300 websites including 4.8 million websites. They matched image hash values, and used 82 keywords to identify CSA content. Their analysis started from ten known seed websites. They found that the networks were overwhelmingly oriented towards images of young males (78%), non-explicit in their content (87%) and image focused (82%). The two seed websites that predominantly focus on images of young females led the authors to identify networks with a high quantity of content (89% and 71%).

Wolak, Liberatore and Levine (2014) and Bissias et al. (2015) use the hash values of files known to contain CSA. This systematic comparison provides a robust way to assess the availability of known CSA images accurately. Wolak, Liberatore and Levine (2014) collected data over a year (October 2010 to September 2011) and found that 244,920 US computers shared 120,418 known images of CSA.
More than 80% of the computers shared fewer than ten files during the study or shared for less than ten days. Less than 1% of computers (915) made a high annual contribution of more than 100 known images of CSA.

The study undertaken by Bissias et al. (2015) covers a large timeframe between mid-2011 and 2014. Bissias et al. (2015) report that they acquired data from many sources (Gnutella, eDonkey, BitTorrent, etc.) but do not explain how they captured it. They acknowledge that they ‘worked with law enforcement’, which suggests these data were made available through ISP and law enforcement monitoring. These authors also do not explain why they chose the timeframe they used.

Bissias et al. (2015) estimate that there are 840,000 unique worldwide installations or programmes used for sharing images of CSA, and that at the time of their survey 3 in 10,000 internet users worldwide were sharing images showing CSA in any given month.

In a study over one year (October 2010 to September 2011) Hurley et al. (2013) acquired approximately 1.5 billion records denoting network activity using a custom developed tool. These were their findings:

- Some 139,604 and 29,458 known files containing images of CSA were shared by 775,941 and 1,895,804 unique BitTorrents (supply) within the Gnutella and eMule systems, respectively.
- In most of the EU and the UK approximately 1% of traffickers (unique users identified during the study) share CSA material. In Germany and the US more than 10% of the internet-using population access and distribute images of CSA.

The research focused on analysing redundancy within the peer-to-peer network, where redundancy is the number of users sharing a specific file. The system aspires to download the file in many parts from many users, and requires a high number of users to be online sharing the same file. A high measure of redundancy indicates that the file is shared by a high number of users.

This survey highlights that 99% of all files known to contain images of CSA had sufficient redundancy to enable good availability, which suggests that most images of CSA have been duplicated multiple times and distributed widely among perpetrators who download them.

Hurley et al. (2013) provide some useful figures on the longevity (length of time files remain in circulation) of individual images of CSA. They found that over 80% of files were available for more than one day, 30% were available for more than 10 days, and 5% were available for more than 100 days.

Steel (2009) adopted a different approach of data acquisition, monitoring user searches within the Gnutella network, and thereby focusing more on user demand than Hurley et al. (2013). The study captured data for several weeks, and eventually identified 235,513 search queries. After
processing the acquired queries against common CSA keywords Steel (2009) concluded that 0.2% of searchers were looking for ‘pre-teen hard core’ content, clearly demand for inappropriate images of children. Just 10% of the total queries for images of CSA is the equivalent of 2,770 unique files. The study also determined that 29% of demand for images came from the US, 15% from Malaysia, 12.5% from Brazil, 9% from Germany and 6.5% from the UK.

Mehta, Best and Poon (2002) collected data in a similar way to Steel (2009), focusing on user searches, with the key difference that these authors searched and downloaded content they identified through keywords known to signify a user searching for pornography in general, rather than searching specifically for images of CSA. Mehta, Best and Poon (2002) identified 1,251 videos through 23 known CSA keywords and manually inspected and categorised 1 in 3 (n = 507) of them. They found that 3.7% of the 507 videos contained CSA content, suggesting that 3.7% of searches made for pornography in general are likely to generate images of CSA.

Rutgaizer et al. (2012) processed data acquired on user search queries and torrent downloads, acquiring 453 million search queries and 515 million torrent downloads over 67 days in 2009 (2–25 September and 15 October to 7 December). The authors developed a dictionary of 47 keywords to identify the searching and sharing of images of CSA. They detected five in one million files that contained a minimum of one keyword verified to link to images of CSA.

When comparing search queries and downloads 7.2% of all queries for content containing CSA result in no matched downloads. This suggests that 92.8% of search queries for CSA content match to a user downloading CSA content, and that a significant portion of those users are downloading it. This adds credibility to supply statistics as it demonstrates that the majority of hits on online CSA images originate from users searching and downloading CSA content.

However, the authors expressed a degree of caution as matching a user search to a download was based on a combination of time and location, and there was potential uncertainty in large cities where many queries co-occur over a short timeframe.

Shavitt and Zilberman (2013) investigated the occurrence of content containing CSA from multiple sources (Mininova, The Pirate Bay, BitSnoop). The Mininova element of their study was based on that of Rutgaizer et al. (2012). There is little new insight in this paper, other than the Mininova statistics being used alongside those acquired from other sites to extend knowledge on which sharing mechanisms are more common.

A new statistic specified in this paper is that each top-10 CSA keyword (out of the total 47) appears in 1 in 25,000–100,000 Mininova search queries. This demonstrates that 0.001–0.004 of all Mininova search queries contain one of the top-10 CSA keywords.

Shavitt and Zilberman (2013) used alternative torrent websites The Pirate Bay and BitSnoop for further keyword analysis, but only datasets detailing available content were available. This information can be used to gauge demand, but does not reflect supply, nor capture how many
users actually downloaded the content for which they searched. The authors found that that most popular CSA keywords used were ‘teensex’ (765 times on The Pirate Bay) and ‘lolita’ (2,718 times on BitSnoop) on the snapshot taken on 8 February 2012.

In another study, Latapy, Magnien and Fournier (2013) acquired hundreds of millions of keyword-based queries in 28 weeks’ worth of user searches (10 weeks from 2007 and 18 weeks from 2009), which they tried to match to known keywords that indicated CSA. The quantity of keywords is not available nor is supplementary data used to produce the results in this research. The authors concluded that approximately 0.25% of user queries were for CSA content and more than 0.2% of users enter such queries.

Fournier et al. (2014) conducted a study based on keyword matching on eDonkey and Kad (technically similar to eDonkey). The authors used 72 known CSA keywords to match against a total of 241,152, 166,154 and 250,000 search queries from an eDonkey server in France and Ukraine, and a Kad server with no given location, respectively. The research concluded that 0.09% and 0.25% of total searches on Kad and eDonkey (France and Ukraine servers combined), respectively, involve known CSA keywords. The authors also determined that the occurrence of age-related keywords increases in a linear fashion from ‘1yr’ to ‘14yr’ (average 500 to 3,000 in total occurrence) and then decreases to ‘16yr’, where the average is around 500. Results from all three datasets demonstrate a similar trend.
Table 16 Studies investigating the supply and demand of images of CSA

<table>
<thead>
<tr>
<th>Source</th>
<th>Date and duration of data capture</th>
<th>Medium observed</th>
<th>Method</th>
<th>Measures</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wolak, Liberatore and Levine (2014) US</td>
<td>October 2010 to September 2011 One year of trading traffic</td>
<td>Gnutella peer-to-peer network</td>
<td>Used a hash value recognition software Roundup to identify the trading of previously known images of CSA</td>
<td>The number of computers sharing CSA files&lt;br&gt;The number of total and unique CSA image files shared&lt;br&gt;Average daily rate of CSA file sharing&lt;br&gt;The proportion of CSA files shared by individual computers</td>
<td>CSA content will be missed if it has not already been classified and its hash value recorded</td>
</tr>
<tr>
<td>Bissias et al. (2015) US</td>
<td>Mid-2011–2014 Five peer-to-peer networks: eDonkey, Gnutella, Gnutella2, BitTorrent and Ares</td>
<td>Five peer-to-peer networks: eDonkey, Gnutella, Gnutella2, BitTorrent and Ares</td>
<td>How many people shared known images of CSA, what are the trends per country, what is the prevalence of severe images of CSA, how many known files are shared over time and what are the introduction and survival rates of each file on these networks</td>
<td>Multiple data sources are analysed over a 3-year period, making it difficult to identify trends within each system</td>
<td></td>
</tr>
<tr>
<td>Latapy, Magnien and Fournier (2013)</td>
<td>2007 10 weeks 2009 28 weeks</td>
<td>Keyword queries from eDonkey</td>
<td>A very systematic methodology of developing a software application capable of detecting CSA queries, which are subsequently validated through expert evaluation</td>
<td>Number of search queries that contain known keywords</td>
<td>Data acquired for short periods&lt;br&gt;Sophisticated mechanism of detecting CSA queries depends on a known database</td>
</tr>
<tr>
<td>Steel (2009)</td>
<td>No dates given Gnutella peer-to-peer network</td>
<td>Analysed 235,513 queries and hits for content involving images of CSA</td>
<td>The number of queries (demand) and hits (supply)</td>
<td>No dates provided&lt;br&gt;Researchers were unable to verify file</td>
<td></td>
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<tr>
<td>Source</td>
<td>Date and duration of data capture</td>
<td>Medium observed</td>
<td>Method</td>
<td>Measures</td>
<td>Limitations</td>
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<tr>
<td>US</td>
<td>over several weeks</td>
<td>Set up a customised version of the Phex 3.0.3 client as an ultrapeer; the application has query monitoring capability</td>
<td>Query results classified as relating images of CSA on the basis of keywords</td>
<td>contents owing to US laws</td>
<td></td>
</tr>
<tr>
<td>Westlake and Bouchard (2016)</td>
<td>No dates given</td>
<td>Web pages linked to 10 initial known 'seed' web pages</td>
<td>The web crawler starts from a known website and analysed 10 networks (originating from known sites) This resulted in crawling 300+ websites with a collective total of 4.8 million websites The web crawler searched for any 82 known keywords and known databases of images</td>
<td>The number of identified sites identified with images of CSA How the sites link together to form a network or community How the network changes over time</td>
<td>Network size limited to 300 websites and 500,000 web pages at each and possible that important sites were not analysed because of these limits Biased towards initial 10 starting (seed) websites No verification or validation owing to scale</td>
</tr>
<tr>
<td>Mehta, Best and Poon (2002)</td>
<td>July–August 2001</td>
<td>Gnutella BitTorrent peer-to-peer network</td>
<td>Acquired 1,251 video files from the Gnutella network using Bearshare software. Video files were downloaded if they were identified by searching for 25 keywords 1 in 3 (507) video files were inspected manually to verify the nature of their content</td>
<td>Number of search queries that contain known keywords</td>
<td>Only video content was considered and there was no analysis of images Analysis is 15 years out of date and focused on Gnutella, which is no longer a dominant BitTorrent service</td>
</tr>
<tr>
<td>Source</td>
<td>Date and duration of data capture</td>
<td>Medium observed</td>
<td>Method</td>
<td>Measures</td>
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<tr>
<td>Rutgaizer et al. (2012)</td>
<td>2–25 September 2009 15 October to 7 December 2009 Acquired 67 days’ worth of data</td>
<td>User searchers from BitTorrent acquired from the Mininova search website</td>
<td>Analysed 453 million search queries and 515 million torrent downloads A dictionary of 47 paedophile-related terms</td>
<td>Behavioural patterns in search queries and download patterns of images of CSA</td>
<td>Analysis based on data acquired over a short period For technical reasons it is assumed there is a degree of uncertainty when correlating users’ search terms with those downloading</td>
</tr>
<tr>
<td>Fournier et al. (2014)</td>
<td>2010 for a 3-month period No dates provided</td>
<td>User searches for both eDonkey and Kad peer-to-peer networks Three datasets are used: eDonkey from a server in France, eDonkey from a Ukraine server, and Kad with no location given</td>
<td>72 keywords are used to match paedophile activity in the user search queries In total, 241,152, 166,154 and 250,000 queries for the three datasets</td>
<td>Percentage of searches indicating paedophile activity</td>
<td>Focuses on a few servers on the eDonkey network; BitTorrent sharing mechanisms are another significant peer-to-peer sharing service</td>
</tr>
<tr>
<td>Source</td>
<td>Date and duration of data capture</td>
<td>Medium observed</td>
<td>Method</td>
<td>Measures</td>
<td>Limitations</td>
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</tr>
<tr>
<td>Hurley et al. (2013)</td>
<td>1 October 2010 to 18 September 2011</td>
<td>Number of images shared through eMulem, Gnutella, IRCm and Ares of known images of CSA</td>
<td>Approximately 1.5 billion records are analysed to identify files known to contain paedophile activity</td>
<td>The behaviour of ‘seeding’ (possessing and readily sharing) a file known to contain content classed as CSA content</td>
<td>Data were acquired and the study was performed in the US; key findings are likely to be biased towards the US</td>
</tr>
<tr>
<td>Shavitt and Zilberman (2013)</td>
<td>Mininova: 2–25 September 2009 and 15 October to 7 December 2009 The Pirate Bay: 8 February 2012 BitSnoop: 10 February 2012</td>
<td>Three sources used: • Mininova – search queries and downloads • The Pirate Bay – a snapshot of all links available • BitSnoop – a snapshot of all links available</td>
<td>47 known keywords used to search these datasets: • Mininova contains 453 million search queries and 515 million torrent downloads • The Pirate Bay dataset contains 1.64 million magnetic links (to torrent files) • No size is provided for the BitSnoop dataset</td>
<td>The occurrence of known keywords was analysed in each dataset</td>
<td>The Pirate Bay and BitSnoop datasets consist of a snapshot of available torrents, as well as information on the top keywords; these datasets were acquired at a specific time and do not illustrate any dynamic activity</td>
</tr>
</tbody>
</table>
Key findings

All surveys match content using known keywords and/or known image hash values. The number of keywords varies (from 47 to 72), although the publications do not explicitly list the words used.

Supply

Key findings on the supply of images:

- 1% of images of CSA come from the UK (Hurley et al., 2013).
- 99% of all files containing CSA had sufficient redundancy (being shared by enough computers) to enable a reliable and complete download (Hurley et. al., 2013).
- It is estimated that three in 10,000 internet users worldwide were sharing images of CSA in any given month (Bissias et al., 2015).
- 92.8% of search queries for CSA content match to a user downloading CSA content, suggesting that a significant portion of those users are downloading CSA (Rutgaizer et al., 2012).

Demand

Key findings on demand of images:

- 6.5% of the global demand for CSA images was found to come from the UK (Steel, 2009).
- Of all internet queries, between 0.09% (Fournier et al., 2014) and 0.25% (Fournier et al., 2014; Latapy, Magnien and Fournier, 2013; Steel, 2009) of users search terms associated with images of CSA.
- Steel’s (2009) found that 0.2% of all internet searchers used terms explicitly associated with images of CSA involving prepubescent children in images classified as being at the extreme end of the scale.
- 3.7% of all internet queries for sexually explicit material led to accessing and/or downloading images of CSA (Mehta, Best and Poon, 2002).
- Internet queries involving keywords associated with images of CSA originate from 0.2% of all internet users (Latapy, Magnien and Fournier, 2013).
- Where the age of the child is included in internet queries, there is an incremental demand for images of children as they age between one and 14 years, but thereafter a decline in demand until the images are of young people aged 16 and over (Fournier et al., 2014).

The longevity of images in circulation

Key findings on the longevity of images in circulation:

- Over 80% of files believed to contain CSA images were available for more than one day.
• 30% were available for more than 10 days.
• 5% were available for more than 100 days (Hurley et al., 2013).

If these findings are robust and replicable it suggests that in most instances images have a relatively short life-span online. Although they may remain saved on individual computers, they are not so easily accessed during internet searches for images of CSA.

Limitations
Key limitations to these studies:

• All studies were for relatively short durations (<= 1 year), except Bissias et al. (2015), which was conducted over three years with cooperation from US law enforcement.
• All studies attempting to identify and quantify the number of images and establish supply and demand of them were based on matching content (keywords or files) against keywords and/or image hash values associated with known CSA images. The use of image hash values would not identify images of known CSA content when even a very small detail (e.g. one pixel’s colour) is changed.
• Most studies focused on US data and the supply and demand of CSA content within the US.
• Although most studies were performed over the previous 10 years, it should be noted that substantial changes are occurring in available peer-to-peer systems. For example, many torrent websites sharing illegal content are being shut down. It is possible that the closure of large BitTorrent search websites has resulted in people using many torrent websites that are not as rich in information and do not have large user bases to assess supply and demand adequately.
• In most studies it was not possible to verify the presence of CSA content within digital content because researchers are precluded from examining the content of image files in many countries, and they could face prosecution for the illegal viewing of CSA.
8 Conclusion

The aim of this review was to investigate the ways in which online-facilitated CSA have been measured and to identify the sources that are available nationally and internationally to assist in quantifying the scale of the problem. This section is structured according to each of the research objectives:

- to identify and appraise the measures currently available in England and Wales, and internationally, that could contribute to quantifying the scale of online CSA
- to identify and appraise the range of data sources that are available for quantifying the scale of online CSA
- to consider what each of these measures say about the scale of online CSA
- to identify gaps in the existing literature.

Measures and data sources of online CSA

A plethora of behaviours and experiences are encompassed under the broad definition of online-facilitated CSA, including young people’s exposure to adult pornography and sexually explicit material, the sending and receiving of online sexual requests, online sexual grooming, online sextortion and sexual exploitation, the production and distribution of images of CSA, and accessing, viewing and downloading images of CSA. There are essentially four ways in which online-facilitated CSA can be measured: by counting the number of offences committed, the number of perpetrators, the number of victims, and the number of images that have been viewed, downloaded and exchanged. Each inevitably produces very different figures, partly because they are counting different aspects of online-facilitated CSA.

The sources of data identified include estimates of prevalence of perpetrating and experiencing online CSA found in self-report surveys, estimates of incidence drawn from data collected from service providers and police crime figures, and estimates of the number and reach of online images of CSA through the use of automated searches of internet queries using terms known to be associated with images of CSA and police data on computer investigations of known perpetrators.

Table 17 sets out the key data sources identified by this review, the measures they use to quantify the scale of online-facilitated CSA and the availability of data specific to England and Wales or to the UK more broadly.

No single source fully captures all aspects of online-facilitated CSA

It is clear from the omissions from the list of measures presented in Table 17 that there have been few attempts internationally to quantify aspects of commercial online CSA and CSE or sextortion. It is also evident that the full range of behaviours and offences related to online-
facilitated CSA has not been captured by one single source. Rather, a more comprehensive understanding of the scale of the problem comes from the use of several different sources.

Additionally, each of the data sources has strengths and limitations (as set out in the synopsis of each study presented in the Annex to this report), which affect the completeness and reliability of the estimates of scale they provide. The most accurate assessment of the scale of online CSA is therefore produced by drawing on a combination of these sources.

However, the potential to combine information generated from different sources is currently complicated by the lack of standardisation and consistency between the measures of online-facilitated CSA offences used within and across them. For example, one data source defined online grooming as being perpetrated by someone at least seven years older and previously unknown to the targeted individual. This narrow definition corresponds with neither the one used by other researchers, nor the legal definition of grooming used in compiling police recorded crime figures.

The limited range of sources in the UK

Table 17 shows that the range of sources and the measures they employ to estimate the scale of online-facilitated CSA in the UK, and specifically England and Wales, is noticeably limited. No comprehensive self-report perpetration or victimisation studies based on UK populations were identified in the literature search for this REA. Where survey data do exist in the UK they are limited to investigating the rates of exposure to online pornography, or the experiences of victims and survivors of grooming who are accessing services. Thus they miss the full range of risks and harms to victims and the range of offences committed by perpetrators of online-facilitated CSA.

Additionally, information that could be gleaned through police-file analysis on aspects other than image-related offences specific to the UK is under-explored. This is likely to change in the future, once the police start to flag crimes in which there is an online element.

Most of the figures currently available in the UK are drawn from service-providing organisations (the NSPCC and Barnardo’s) and thus represent incidence of help and advice seeking behaviour rather than prevalence or incidence of perpetration or victimisation.
<table>
<thead>
<tr>
<th>Source</th>
<th>Measures</th>
<th>Specific estimates for UK or England and Wales?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-report victimisation surveys</td>
<td>The proportion of young people who are:</td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td>- exposed to online pornography (voluntarily or unintentionally)</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>- the recipients of online sexual requests or are targeted by online groomers</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>- subjected to online sexual exploitation</td>
<td>No</td>
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<tr>
<td></td>
<td>- sexually abused at an offline meeting with an online contact</td>
<td>No</td>
</tr>
<tr>
<td>Self-report sexting studies</td>
<td>The proportion of young people who:</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>- send sexual messages (text only)</td>
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<td></td>
<td>- send sexual images</td>
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<td></td>
<td>- send sexualised self-images</td>
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<td></td>
<td>- receiving sexual messages (text only)</td>
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<tr>
<td></td>
<td>- receiving sexual images</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- forwarding or sharing received messages to others</td>
<td></td>
</tr>
<tr>
<td>Self-report perpetration (by young people)</td>
<td>The proportion of young people who report:</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>- sending unwanted sexual requests</td>
<td></td>
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<tr>
<td></td>
<td>- sending unwanted sexts</td>
<td></td>
</tr>
<tr>
<td>Self-report perpetration by adults (general public)</td>
<td>The proportion of adults who report:</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>- viewing images of CSA</td>
<td></td>
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<tr>
<td></td>
<td>- downloading images of CSA</td>
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<tr>
<td></td>
<td>- exchanging images of CSA</td>
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<tr>
<td></td>
<td>- viewing images of sexual activity involving an adult and a child</td>
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<tr>
<td></td>
<td>- making online sexual request or holding sexualised conversations with young people online</td>
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<tr>
<td></td>
<td>- making online sexual requests to unknown young people</td>
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<tr>
<td></td>
<td>- sending young people sexual images</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- requesting sexual images from young people</td>
<td></td>
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<td></td>
<td>- requesting offline meetings</td>
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<tr>
<td></td>
<td>- offline sexual contact with a young person met online</td>
<td></td>
</tr>
<tr>
<td>Self-report perpetration by individuals with an acknowledged sexual</td>
<td>The proportion of people with a sexual interest in children or young people who report having a history of adjudicated offences related to both image-based and contact CSA</td>
<td>No</td>
</tr>
<tr>
<td>interest in children and young people</td>
<td>The proportion of people with a sexual interest in children or young people who report having a history of undetected offences related to both image-based and contact CSA</td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td>Measures</td>
<td>Specific estimates for UK or England and Wales?</td>
</tr>
<tr>
<td>--------</td>
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<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Calls to helplines (NSPCC or O2)</td>
<td>The number of requests for advice or information about online CSA</td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td>The proportion of contacts that result in a referral being made to an external organisation</td>
<td></td>
</tr>
<tr>
<td>Calls to or counselling sessions (Childline)</td>
<td>The number of young people seeking support or advice about online CSE, exposure to sexually explicit material and sexting behaviour</td>
<td>UK</td>
</tr>
<tr>
<td>Barnardo’s survey of service providers for victims of online grooming</td>
<td>The number of young people who supported by the service</td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td>The proportion of the young people using the service who reported online grooming</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The proportion of groomed young people who met and were sexually abused by the perpetrator offline</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The proportion of young people exploited by multiple perpetrators</td>
<td></td>
</tr>
<tr>
<td>Internet Watch Foundation</td>
<td>The number of people reported (by police, IWF members and partner organisations, and the public) and identified through proactive, automated searches of web URLs with online images of CSA. Captures data on:</td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td>- the apparent age of the young person in the images</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- the severity of the images</td>
<td></td>
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<tr>
<td></td>
<td>- the location of the files</td>
<td></td>
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<tr>
<td></td>
<td>- the number of URLs hosting commercial images of CSA</td>
<td></td>
</tr>
<tr>
<td>INHOPE</td>
<td>The number of reports of URLs containing images of CSA</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>The number of these URLs that contain commercial hosting of CSA images</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The number of these URLs that contain non-commercial hosting of CSA images</td>
<td></td>
</tr>
<tr>
<td>Police recorded crimes in England and Wales</td>
<td>Police recording of offences related to obscene publication and sexual grooming</td>
<td>England and Wales</td>
</tr>
<tr>
<td>Analysis of police files for cases of online CSA cases and/or offenders</td>
<td>The number of cases related to images of CSA</td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td>The number of cases and associated arrests for commercial online-facilitated CSE</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>The number of reports of online grooming</td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td>The number of reports of online sexual communication offences</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>The proportion of people arrested or convicted of image-related offences who have a prior criminal history involving contact offences.</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>The proportion of people arrested or convicted of image-related offences who are subsequently convicted of a contact sexual offence</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>The proportion of offenders convicted concurrently for image-related and contact CSA offences</td>
<td>No</td>
</tr>
</tbody>
</table>
Availability of data specifically related to England and Wales

Table 17 shows that only a limited number of aspects of online-facilitated CSA have been quantified in the context of the UK and specifically England and Wales. The measures and data sources available are summarised and discussed below.

**Online sexual communications or sexual requests (including sexting)**

Online sexual communications or sexual requests have been measured internationally through self-report victimisation and perpetration surveys of young people and adults, self-report sexting surveys, calls to helplines and analysis of police files. The only data identified that might be used to quantify this aspect of online CSA in the UK were the number of calls to Childline.

**Online grooming**

Only three sources provide data about the scale of online grooming that relate directly to the UK: Barnardo’s survey of clients who used their services for young victims of online grooming, the NSPCC’s report following a freedom of information request made to police forces in the UK in April 2017, and the analyses of police files and police recorded crime figures. Although Barnardo’s survey was unable to provide an estimate of prevalence of online grooming per se, it gives insight into the proportion of help-seeking or referred victims and survivors who experience contact CSA because of grooming, and the number of people who have exploited or victimised them. The police recorded incidence of sexual grooming in England and Wales is
reported in the annual crime figures, but without making freedom of information requests it is not possible to ascertain what proportion of these involved an online element. The NSPCC report on police crime figures has captured the trends in recording this crime over the past few years and provides limited information on the age profiles of victims and survivors whose cases are recorded by the police.

*Exposure to adult pornography and sexually explicit material*

Exposure to adult pornography is currently captured in self-report victim surveys and young people’s calls to Childline, both of which have enabled quantification of exposure in the UK. However, the self-report surveys have examined all manner of exposure combined into one category (intentional, unwanted and forced), while it can be assumed that only young people who encounter unwanted or forced exposure to sexually explicit material contact Childline. Consequently, these sources lack comparability and the self-report surveys are likely to overestimate the levels of unwanted exposure to sexually explicit material online.

Young people’s exposure to sexually explicit material was captured by both the EU Kids Online and the Net Children Go Mobile studies, which were conducted in 2010 and 2013/14 respectively. The comparative analysis between these two surveys (Hasebrink, 2014) allows for some limited analysis of trends in the UK between 2010 and 2014.

*Engaging with images of CSA*

Engaging with images of CSA covers a broad range of offences: searching for, accessing, viewing, downloading, exchanging and producing images of CSA. Estimates of the scale of these behaviours internationally are provided by self-report perpetration studies of adults, self-report surveys on sexting, the IWF, INHOPE, official statistics on police recorded crime on obscene publications, analyses of police files and studies of URLs identified as or suspected of hosting images of CSA. The sources identified quantifying the scale of online images of CSA in England and Wales or the UK are: IWF information in relation to the UK, and police-file analyses and the recorded crime figures that have been produced specifically for England and Wales. However, it is impossible to disaggregate within police crime figures the offences related to images of CSA from other offences that relate to obscene publications.

There is a distinct lack of evidence internationally about the number of victims of image-related CSA offences, young people who are directly harmed and aware that sexualised images have been made of them, and victims who are unaware of the offences against them.

The only sources currently available in England and Wales to quantify the number of CSA images are those based on police-file analysis. The question of image production is notably absent from most self-report perpetration and victimisation surveys and not readily available in the police recorded crime statistics.
Key strengths and weaknesses of measures and data sources of online CSA

Reported incidents

Reported incidence captured by police recorded crimes and reports of victimisation to organisations such as Childline only include a very small proportion of cases involving offending and victimisation, and are therefore poor indicators of incidence rates of particular crimes. They often rely on not only disclosures made by victims and survivors, but also a series of decisions being made by people to whom the victim and survivors disclose. Any one of these decisions can lead to the experience not being reported and the decisions made are influenced by the prevailing norms and media campaigns at the time.

Self-report victimisation surveys

The primary strength of self-report victimisation studies is that they can capture abuse that does not come to the attention of the police and other authorities. They therefore have the potential to generate the most realistic estimation of the scale of online-facilitated CSA from the different sources discussed in this report. The key weaknesses of these surveys are that they exclude from participation those who are most vulnerable in society, who are most likely to experience online CSA, and they typically cannot capture the experiences of young children or quantify the number of victims involved in the covert production of images of CSA.

Self-report perpetration surveys

As with the self-report victimisation studies, the key strength of the self-report perpetration surveys is that they can quantify the scale of undetected offending when the limits to confidentiality permit such disclosures. The weaknesses in existing surveys have been the limited range of behaviours and offences that have been included in the survey questions and the potentially unrealistic reliance on respondents’ capacity to recognise when online sexual advances, between age-appropriate peers (e.g. 16–17-year-olds), are unwanted.

Counting the number of images of CSA

Automated web searches based on search terms known to be associated with images of CSA have enabled calculation of the proportion of all internet searches, within defined parameters (e.g. number of days and using particular search engines) that are potentially conducted with the intention of engaging with images of CSA. Key limitations with these studies are the lack of certainty that the terms were intentionally used for engaging with images of CSA, and that they actually lead to files that truly contained images of CSA, and the likelihood that the list of known search terms excludes the most recent search terms.
Differences between, and comparability of, estimates produced by the different sources

The key ways in which the scale of online-facilitated CSA might be quantified are looking at the number of offences recorded by the police or other official bodies, and at behaviours and experiences self-reported by the public on perpetration and victimisation surveys, and calculating the number of images viewed, downloaded and exchanged.

Even if data on each of these aspects of online-facilitated CSA attempted to capture the same behaviours (which they typically do not) estimates based on each one inevitably produces very different figures.

Lowest estimates based on the number of apprehended offenders

Estimates of scale based on the number of perpetrators who come to the attention of the police, or whose actions are reported to other official bodies (the number of offences reported), are among the lowest. These data are considered to under-estimate the true scale of online-facilitated CSA because many perpetrators evade detection, in part because of the low disclosure rate of victims. For example, Mitchell, Finkelhor and Wolak (2003) found that only 10% of their US survey respondents who received sexual requests and 18% of those whose request included a suggestion to meet offline disclosed this to an official body (e.g. school or police).

These data are also affected by police practices, including the rate of ‘no-crime’ of reported incidents. While the rate of police no-crime-reported incidents of online-facilitated CSA is not currently known, an HMIC (2014) study stated that 26% of rapes reported to the police are not officially recorded and that 20% of no-crime decisions on reported sexual offences were incorrect.

Furthermore, the findings from the Dunkelfeld project in Germany provide some sense of the scale of the proportion of perpetrators who successfully evade detection: 69% of image-related CSA perpetrators remain undetected by the police (Beier et al., 2015). It is likely that this figure under-represents the extent of undetected image-related CSA offending on two counts. First, images of CSA are also accessed by people who would not self-identify as being a paedophile or hebephile (an essential criterion for inclusion in Beier et al.’s 2015 study). Such individuals are potentially less likely to be apprehended for the behaviour as they lead lives that outwardly appear conventional. Second, the sample was drawn from a population of individuals seeking help with their sexual attraction to children and young people. It is feasible that confrontation with the law is what motivated the help-seeking behaviour of some of these individuals. If so, there is likely to be a higher rate of adjudicated offenders in the sample.

Estimates of scale based on the number of perpetrators are likely to appear lower than those based on the number of victims or the number of images, since each perpetrator is likely to offend against more than one victim and possess more than one image.
**Perpetrator self-report surveys**

Estimates of scale drawn from self-report perpetration surveys followed by self-report victimisation surveys provide the next lowest figures. The rationale for assuming the self-report perpetration surveys will produce lower estimates of prevalence than victimisation surveys is twofold: each perpetrator is likely to offend against more than one young person, and perpetrators might tend to give the socially desirable responses and reflect similar levels of minimisation and denial found in therapeutic contexts.

Additionally, as there are concerns about how to manage ethical issues around the limits to confidentiality when asking people about sexual crimes they have committed against children, there is a reluctance by some researchers or their ethics review boards to ask about undetected offences. Two strategies have been adopted to manage this problem: to frame the questions to ask about anticipated or hypothetical behaviour rather than actual behaviour (e.g. Wurtele, Simons and Moreno, 2014), and to ask people to self-report on their adjudicated (officially recognised by the police and/or courts) offending behaviour (e.g. Bailey, Bernhard and Hsu, 2016). Responses in each case do not explicitly capture rates of sexual offending but instead people’s willingness to report their inclination to do so, therefore these data should not be used to calculate the extent of sexual offending.

**The highest estimates: the volume of images of CSA**

The largest figures are likely to be generated when counting the number of images of CSA as each perpetrator is likely to have produced, viewed, downloaded or shared multiple images and more than one image is likely to have been created of each victim. Even when just one image is produced of a victim, it is likely to be duplicated numerous times through sharing. Thus the number of images identified on their own provides little information about either rates of offending or the number of victims and survivors.

Each measure is likely to be imprecise or difficult to capture. Typically, while in many ways imperfect, the studies that measure self-reported experiences of online CSA are likely to produce figures that quantify the true extent of online CSA most closely, and to exceed the prevalence figures generated from official records or reported incidents significantly. This is because many of these surveys permit disclosures to be anonymous (e.g. Fricker et al., 2003), although ultimately they under-estimate the extent of victimisation as they cannot capture the abuse experiences of several groups of young people. The representativeness of any figures produced from such surveys varies significantly between studies because of the different methods used, for example over question construction and sampling frames employed.
The scale of online-facilitated CSA

The number of offences recorded by the police

*Image-related offences*

The number of offences recorded in relation to obscene publications has risen dramatically yearly over the past six years in each of the UK’s four nations. In 2015/16 there were 11,992 recorded offences in England and 881 in Wales, which was approximately four times higher than the number of offences recorded in 2009/10.

*Online sexual requests and sexual grooming*

In England, ‘sexual grooming’ offences (which include offline offences) increased from 652 recorded offences in 2014/15 to 971 in 2015/16. There was an increase in Wales from 39 to 44 recorded offences for the same period.

NSPCC freedom of information requests to 43 police forces in the UK in 2016 and 2017 showed that the police recorded 3,903 crimes in 2015/16 and 5,653 in 2016/17 with an ‘online element’.

A comparison of the official recorded figures and the figures generated in the freedom of information requests shows that a very large proportion of online-facilitated sexual crimes against young people are likely to be either something other than grooming or for offences deemed more serious than grooming.

*Other reported incidents of victimisation*

Childline reported that in 2015/16 it provided 3,716 counselling sessions to young people on issues related to online-facilitated CSA, 1 in 8 of which related to online grooming.

*Sextortion*

CyberTipline in the US received 1,428 reports of sextortion involving young victims between October 2014 and April 2016. It reported a 90% increase in sextortion between 2014 and 2015, with offences including blackmail to acquire sexual content such as images and video (78%), to acquire money or goods (7%) or to engage in sex with the child (5%).

*The number of perpetrators*

*Image-related offences*

CEOP (2013) estimated that there were approximately 50,000 individuals in the UK involved in downloading and sharing images of CSA during 2012. McManus and Almond’s (2014) exploration of the UK convictions for offences related to CSA showed that in 2012/13 there were 268 people convicted for possessing images of CSA, and 1,247 for taking, making or
distributing images of CSA. The mean number of offences recorded for each convicted perpetrator was almost 11.

Steel (2009) found that 6.5% of the global demand for CSA images came from the UK. The UK provided 1% of the supply of images of CSA worldwide (Hurley et al., 2013). Bissias et al. (2015) estimated that 3 in 10,000 internet users worldwide were sharing images of CSA in any given month. Internet queries involving keywords associated with images of CSA originate from 0.2% of all internet users (Latapy, Magnien and Fournier, 2013).

Self-report perpetration surveys conducted in Australia, Canada, Sweden, the UK and the US show that between 4% (Seto et al., 2014) and 12% (Seigfried-Spellar, 2014) of men and 3% (Seigfried-Spellar, 2014) of women in the general population engage with images of CSA. Although Seigfried-Spellar’s (2014) study drew on a UK sample, the results in the report were not disaggregated by country and thus there are no specific figures for the UK. Again, it is unlikely that the proportion of adults in England and Wales who engage with images of CSA would fall below Seto’s (2014) more conservative estimate of 4%. One-quarter (25%) of producers of images of CSA in the US used covert means to capture the images in 2006, a slight rise in comparison with the 21% identified in the 2000 survey of police forces (Mitchell et al., 2010).

Enticing young people to self-produce images of CSA

Wolak et al.’s (2011) examination of police files in the US found that an adult had been involved in producing just over a third of self-produced images of CSA in the US between 2008 and 2009. Just over half were young adults aged 18–24.

Online sexual requests and sexual grooming

Between 1 in 10 (Bergen et al., 2015) and 1 in 5 (Schulz et al., 2016) adult respondents to self-report surveys conducted in Finland, Germany and Sweden reported having engaged in online sexualised conversations with young people under the age of 18 in the previous year. The proportion was below 1 in 20 in relation to sexualised conversations held with young people aged 13 years and younger (Bergen et al., 2015).

While no study identified in this REA examined the proportion of adults holding online sexualised conversations with young people in England and Wales, it is unlikely that figures would be below the lowest estimate of 1 in 10 adults.

Schulz et al.’s (2016) respondents reported that of those with whom they had engaged in sexualised online conversations online, they had an offline meeting with 5.9% of 14–17-year-olds and 1% of young people under 14. The respondents further indicated that they had engaged in sexual activity at an offline meeting with 2.5% of contacts aged 14–17 years and 1% of contacts under the age of 14.
One self-report perpetration study investigated gender differences in making online sexual requests and grooming young people (Schulz et al., 2016). This found that across all age groups of victims, women comprised a little over a quarter of the perpetrators; there were female perpetrators in 1 in 5 cases against young people under the age of 14 and 1 in 3 cases against those aged 14–17.

Victims and survivors’ responses on self-report surveys also provide some tentative findings on the age profiles of perpetrators. Up to two-thirds of perpetrators who sent unwanted sexual requests were believed to be aged 18–20 years and those who engaged in online grooming were perceived to be slightly older (18–25 years) (Mitchell, Finkelhor and Wolak, 2003). Young men reported that they were most likely to have received unwanted sexual requests from similar aged peers (Helweg-Larsen, Schütt and Larsen, 2012).

**Crossover between image-related and contact CSA**

The prevalence of crossover between image-related and contact CSA has been calculated in various ways: using conviction data or arrest data and either retrospectively analysing past criminal offending or analysing subsequent offending, through anonymous self-report surveys, or analysing disclosures made during polygraph interviews. Each produces somewhat different prevalence rates.

Only one study on crossover identified in this REA was conducted in the UK (Howard, Barnett and Mann, 2014), which was based on retrospective and prospective analyses of conviction data. The authors found crossover rates of 0.5% when examining previous criminal histories and of 4% when examining subsequent offending over three years.

Studies that considered all formal sanctions (rather than just convictions) that explored retrospective criminal offending history found that between 1 in 5 and 1 in 3 were both online and contact offenders. Yet prospective analyses assessing contact offending following an image-related index offence revealed far lower rates of crossover, of between 2% (Seto, Hanson and Babchishin, 2011) and 6.3% (Eke, Seto and Williams, 2011).

Of the studies based on self-report data, 13.7% of Bailey, Bernhard and Hsu’s (2016) participants reported crossover offending for adjudicated offences (arrest and/or conviction) and the help-seeking individuals from the German Dunkelfeld project reported detected rates of crossover offending of between 5.8% and 13.7% and undetected crossover of 42% (Beier et al., 2015; Neutz et al., 2012).

The highest rates of crossover were reported in disclosures made during polygraph examinations conducted as part of a criminal investigation where Bourke et al. (2015) found 58% crossover, and during post-sentence therapy where Buschmann et al. (2010) found 100% crossover.
The number of victims

Images of CSA

The IWF’s 2016 report analysing URLs containing images of CSA provided some information on the ages of children appearing on the images: 2% were aged 2 years or younger, 53% involved children aged 10 years or younger, and 45% were of young people aged 11–15 years.

These figures represent a significant shift in the age profiles of young people depicted in the images since 2004. Essentially, a greater proportion of the images are of pubescent young people. This has been partly explained by the dramatic growth in self-produced images by young people, which are harvested from their original upload locations by parasitic websites.

Half the images depicting young people under 16 years and a quarter of those depicting young people aged 16–20 years were assessed as constituting the two most serious categories of CSA imagery. However, overall there has been a marked decline in the proportion of images assessed as belonging to the most serious category.

Previously, CEOP (2013) had reported a 125% increase between 2010 and 2012 of the number of images that had involved penetrative CSA and a 70% increase in the number of female children under the age of 10 being depicted in the images.

Fournier et al. (2014) looked at internet searches of CSA material by age of the child and found that there is an incremental demand for images of children as they age from 1 to 14 years, then a falling off and demand for images of young people aged 16 and over (Fournier et al., 2014).

Self-produced images

CEOP (2013) concluded that 1 in 5 of the images of CSA in the UK that had been reported to them in 2012 had been self-generated by a young person. Several self-report studies in the US and Sweden that examined sexting behaviour of young people identified a trend in which young women were more likely than young men to expose themselves sexually online (Cox Communications, 2009; Jonsson et al., 2014; Martinez-Prather and Vandiver, 2014; Mitchell et al., 2012).

Up to 1 in 5 young women reported sending someone a sexualised image of themselves (Jonsson et al., 2014; Strassberg, Rullo and Mackaronis, 2014). An age trend was found in Gámez-Guadix, De Santisteban and Alcazar’s (2017) Spanish study, where the sending of sext messages increased significantly with age (3% of 12-year-olds vs 36% of 17-year-olds). Strassberg, Rullo and Mackaronis (2014) found that 1 in 5 young people reported having forwarded a received sext to another person.
**Exposure to adult pornography**

The two interlinked studies that captured the UK prevalence of young people’s voluntary and unintentional exposure to adult pornography in 2010 and 2014 found online and offline exposure combined had declined from 24% in 2010 to 17% in 2014, but online exposure had increased slightly from 11% to 12% (EU Kids Online and Net Children Go Mobile).

Sabina, Wolak and Finkelhor’s (2008) US survey found that young people were first exposed to adult pornography between the ages of 8 and 17 years (mean age 14.3 years for males and 14.8 years for females). More males than females reported their first exposure had occurred under the age of 11 (3.5% vs 0.5%).

There was a consistent finding across the self-report data that exposure increased as young people progressed through adolescence (Byrne et al., 2016; Jones, Mitchell and Finkelhor, 2012; Montiel, Carbonell and Pereda, 2016). Sabina, Wolak and Finkelhor’s (2008) analysis of gender differences in exposure found that while young males reported higher lifetime rates of undifferentiated exposure to adult pornography than young females (93% vs 62%), they reported a dramatically lower rate of unintentional exposure (7% vs 42% for females).

Only Sabina, Wolak and Finkelhor (2008) specifically investigated young people’s exposure to images of CSA in the US. Though somewhat dated, as the survey was conducted in 2006, it demonstrates relatively high rates of exposure to CSA images (15.1% of males and 8.9% of females). About half of the 10–12-year-olds and one-quarter of 13–17-year-olds in each of the three waves of the Youth Internet Safety Surveys in the US reported being distressed by unwanted exposure to online adult pornography.

**Receiving online sexual requests**

Lifetime prevalence of receiving wanted and unwanted online sexual requests generated by self-report victimisation surveys was 25% (Kerstens and Stol, 2014) – 28% (Mohler-Kuo et al., 2014) for females and 10% (Mohler-Kuo et al., 2014) to 25% (Kerstens and Stol, 2014) for males. The 12-month prevalence of young people living in Western countries for receiving unwanted online sexual requests was 14% (Wachs et al., 2016) to 19% (Montiel, Carbonell and Pereda, 20016) for females and 5% (Helweg-Larsen, Schütt and Larsen, 2012) to 8% (Montiel, Carbonell and Pereda, 2016) for males.

Young females are between two and three times more likely than young males to receive unwanted online sexual requests and to be targeted by online groomers (Helweg-Larsen, Schütt and Larsen, 2012; Montiel, Carbonell and Pereda, 2016). A third of the young people who reported receiving sexual requests received requests monthly or more frequently (Growing Up with Media study).

Children younger than 11 rarely received online sexual requests (Karayianni et al., 2017), but prevalence was found to increase consistently from early to late adolescence before declining in
early adulthood (post-18) (Baumgartner, Valkenburg and Peter, 2010; Karayianni et al., 2017; Growing Up with Media study and Youth Internet Safety Surveys). There is some evidence to suggest that the age-related increase in prevalence is more evident among young women than young men (Baumgartner, Valkenburg and Peter, 2010).

Between 1% and 6% of sexual requests involved an invitation to an offline meeting (Mitchell, Finkelhor and Wolak, 2003). The prevalence of requests for online meetings increases slightly with age of the young person. Approximately 3% of young people who had been groomed online had met the perpetrator offline. About a third of young people who had been groomed and met the perpetrator offline reported experiencing contact CSA at the offline meeting.

Schulz et al.’s (2016) respondents to a self-report perpetration survey in Finland, Germany and Sweden stated that when they had sexualised conversations with young people aged 14–17 years the young person had engaged in online sexual activity. However, this had occurred in only 1.1% of cases when they had met young people under the age of 14.

Findings from responses given by victims and survivors on self-report surveys in the US provide some tentative findings on the prevalence of male and female perpetrated online sexual requests. While most victims and survivors responding to the US Youth Internet Safety Survey (Mitchell, Finkelhor and Wolak, 2003) reported that they believed the person sending them online sexual requests was male, a small but not insignificant proportion thought the sender was female. However, as the level of seriousness of the online communication increased, the proportion of perpetrators believed to be females decreased:

- A third of young people who had received an unwanted sexual request believed the sender was female.
- A quarter of young people who were asked to meet someone sending sexual requests offline believed that the sender was female.

The number of identified images of CSA

Project Arachnid is a new automated web-crawler tool developed by the Canadian Centre for Child Protection to detect images and video based on confirmed digital fingerprints of illegal material. It is reported to have detected over 5.1 million unique web pages hosting images of CSA over a six-week period from its processing over 230 million web pages.

In 2014 the INHOPE reporting management system found that 89,758 URLs contained images of CSA, a 63% increase from 2013. In 2013, some 54,962 URLs contained images of CSA, a 47% increase on 2012’s figure of 37,404.

Commercial CSA images

INHOPE distinguishes between commercial or non-commercial hosting of images of CSA. There has been a steady growth of non-commercial hosting compared with commercial hosting. In
2014, 91% of images of CSA were hosted for non-commercial purposes, up from 87% in 2013 and 82% in 2012.

In 2016 the IWF deemed 5,452 (9.5%) of the 57,335 identified web pages containing images of CSA to be commercial in nature, a 62% decrease from the previous year (14,708 web pages). The IWF believes this decrease demonstrates that perpetrators have developed methods to avoid being discovered by the authorities by shifting to disguised websites. This theory is supported by the increase in the number of disguised payment methods (Bitcoin wallets) that have been identified, which permit access to commercial providers of images of CSA. In 2015 just four websites were found to accept Bitcoin wallets, but this figure increased to 42 in 2016.

The duration accessibility of images on the internet

While there is a popular understanding that once something is on the internet it will be ever present, Hurley et al.’s (2013) study suggests that this view might be inaccurate. The authors found that while over 80% of files believed to contain CSA images were available for more than one day, only 30% were available for more than 10 days and just 5% were available for more than 100 days.

Generalisability of international evidence to the English and Welsh contexts

Generalising from self-report victimisation surveys

As there is a paucity of victimisation surveys in the UK, it is pertinent to explore the feasibility of extrapolating an estimate of UK prevalence rates from robust surveys conducted in other countries. Livingstone et al. (2014b) warn that several factors inhibit reliable cross-country comparisons of young people’s risks in using the internet: differences in parenting and the potential supervising or monitoring of internet use, internet regulatory frameworks and the level of broadband penetration. Comparisons have been drawn between the UK and other European countries looking at these differences.

Hasebrink’s (2014) analysis of the 2010 EU Kids Online survey looks at several factors that might inform whether generalisations can be made from studies in other European countries and applied to the UK. She concludes that children in advanced European countries start to use the internet at a younger age, use a broader range of online services and tools, tend to have a higher level of internet safety skills, but are simultaneously at greater risk online than children in less advanced European countries. It therefore appears that the findings from the Scandinavian countries and the Netherlands might be generalised to the English and Welsh contexts. However, Helsper et al.’s (2013) distinguished different countries by assessing children and young people’s use of the internet, their experiences of risk and harm, and their parents’ or guardians’ tendency to mediate their internet use in each one. They found significant disparities in young people’s internet experiences between the Scandinavian countries and the UK, and
that young people in Scandinavia encounter higher rates of online sexual risks than those in other European countries. To date, no analysis exploring similarities or differences in young people’s internet use and parenting behaviours between the UK and the US has been undertaken so the extent to which findings from the US are transferable to the UK context is unknown.

Generalising from self-report perpetration surveys

Only one self-report perpetration study (Hollis and Belton, 2017) gathered data directly from the UK, however it was conducted with young people recognised as engaging in harmful sexual behaviour and therefore the findings cannot be interpreted as representative of young people more generally.

There has been no known comparative analysis of factors associated with the tendency towards online CSA perpetration between different counties as there has with factors associated with victimisation. Consequently, it is difficult to determine the extent to which it is justified to generalise from studies in other countries to the English and Welsh contexts.

Gaps in existing literature

Overall, there are currently considerable gaps in knowledge in assessing the extent of online-facilitated CSA, particularly in the UK.

Type of offences where there is limited information

There are key gaps in knowledge related to several types of offence that can be considered under the umbrella of online-facilitated CSA. The following offences are often excluded from analysis in a UK context and under-explored in the international studies examined: all aspects of commercial CSE, sextortion, online sexual activity that is live-streamed or recorded (rather than conversations and sexts), covertly produced images of CSA, and engaging with (including producing) pseudo-images of CSA.

The gender profile of offenders

There is also a lack of analysis of the gender of those who perpetrate online-facilitated CSA. There is an overriding assumption that the offenders are predominantly men, especially in the police data on suspects and convictions. However, the findings drawn from self-report victimisation surveys and perpetration studies suggest that a small but significant proportion of perpetrators making online sexual requests and grooming online are women.

The quantification of young people who appear in images of CSA

Legal issues prevent researchers from studying images of CSA and there are resource demands on law enforcement, so in attempting to quantify this aspect of online-facilitated CSA the focus
has been on the numbers of perpetrators and images, rather than the number of victims. This information is potentially available in the evidence gathered from collections of images seized when suspects are investigated.

Self-report victimisation studies

There is currently no dedicated victimisation survey that captures the full range of online-facilitated CSA of children and young people in England and Wales. While UK samples have been included in the two pan-European surveys (the EU Kids Online and the Net Kids Go Mobile studies), the questions related to online CSA were very limited in scope.

This REA has identified no studies that explore the prevalence of sexting or the different stages of risk associated with online sexual requests and grooming in the UK.

The youngest children included in any of the victimisation surveys conducted in Western countries are aged 9 and most surveys that explore 12-month prevalence rates include only the experiences of those aged 12 years and over. This is a significant limitation as children appear to access the internet and use mobile phones at increasingly younger ages, and thus the experiences of this group of people are missing from the calculations. The exclusion of younger children in surveys exploring topics such as sexual abuse largely stems from ethical considerations over researching with children in general and particularly when researching sensitive topics such as sexual abuse.

As there are no standard tools for measuring the different forms of online-facilitated CSA, it is difficult to draw comparisons between countries or cohorts of young people. Indeed, the extent of the heterogeneity currently found between estimates is likely to be partly driven by the lack of standard tools (Barth et al., 2013) and research protocols (e.g. the context in which the data are collected and the period of reporting).

Self-report perpetration data

As with victimisation studies, there is currently no perpetration survey with young people that captures the full range of online-facilitated CSA of children and young people in England and Wales. Although Hollis and Belton (2017) focus on the UK this study does not allow for generalisation to the wider population of young people. Other studies do not include data from England and Wales or the broader UK, although these findings may be cautiously generalised to England and Wales.

The questions asked in self-reported perpetrator surveys are limited in scope, focusing on unwanted sexual solicitations or contact with others. Online-facilitated accessing, downloading, distributing or producing CSA images, for example, are not captured in these studies, and behaviours associated with commercial CSE and extortion are rarely explored.
Only one study has explored the prevalence of the harmful consequences of online sexual communications and grooming for the young people who are targeted (e.g. sent sexualised images, enticed into engaging in online sexual activities, or enticed into having offline meetings with online contacts where contact CSA is committed).

Additionally, the perpetrators’ perceptions of the ages of the people they target have not been systematically recorded so it is impossible to know if their actions truly equate to forms of online-facilitated CSA.

The data presented from these studies are limited in scope and comparability, and do not provide information about the full range of online sexual abuse behaviours nor the frequency of perpetration differentiated by gender or age of the victims.

Crossover between image-related and contact CSA

None of the studies identified in this REA analysed data by gender of the participant or offender and thus it is currently unknown whether the prevalence of crossover is similar between male and female perpetrators.

No reference was made in the studies of the nature of the image-related CSA offence (e.g. viewing, downloading, exchanging or producing) and the relationship with contact CSA offending) or the type of image viewed (whether computer-generated pseudo-images of CSA or images depicting the abuse of real young people) and the rate of crossover.

The individual studies all focused on crossover offending for offences related to images of CSA leading to contact offending. It is therefore important that the findings are not over generalised and described as the level of risk posed by ‘online’ or ‘internet’ sexual offenders. While there is a paucity of studies examining crossover in relation to engaging in online sexualised conversations or attempted grooming, and the likelihood of concurrently engaging in contact offences, crossover rates may well be higher between these two types of offending.

Only one study (Hollis and Belton, 2017) reported on crossover offending in England and Wales. It was based on conviction data, so greatly under-estimated the co-occurrence of these two types of CSA offending.

Final thoughts

This review has identified significant gaps in the current understanding of the scale of online-facilitated CSA. There is a particular lack of evidence for England and Wales, which restricts the accurate assessment of the scale of online-facilitated CSA in these countries.

Data collected by Childline, CEOP and the NSPCC in response to freedom of information requests to the 43 police forces in England and Wales about sexual offences against children involving an online aspect provide useful insight into the incidence of online-facilitated CSA. However, the figures are likely to be biased by changes in public awareness, police performance...
targets and the willingness of people to report incidents or seek help, and are not reliable to compare change in incidence over the years of data collection.

Much of the evidence considered as part of this review focused on quantifying the number of people engaging with images of CSA, although some of these crimes are not related to direct victims (albeit still capturing illegal activity). For example, almost a quarter of images of CSA are produced through covert means without the victim’s awareness, and a growing proportion of images are computer-generated pseudo-images.

There has been considerable focus on prevalence figures for online sexual requests, but far less emphasis has been placed on estimating prevalence of online sexual grooming, particularly in a way that differentiates the potential risks from the harms encountered.

Examination of the official crime statistics that give the gender profile of perpetrators of online-facilitated CSA offences would lead to the assumption that the overwhelming majority of perpetrators are male. However, the findings from self-report studies examining online sexual requests and grooming show that a sizeable minority of perpetrators, between a quarter and a third, are female. While the self-report surveys that have identified this gender composition have not been conducted in the UK, if applied to the UK these findings have significant implications for interventions and treatment of perpetrators.

The findings from the self-report perpetration studies, particularly those that ask about undetected offending, highlight that the rate of crossover between image-related and contact offending is considerably higher than is estimated from studies focusing on adjudicated offences. This has implications for both risk assessment and management of individuals identified as perpetrating image-related offences and for safeguarding considerations for children and young people.

Findings in the REA have offered some sense of reassurance that the online world is relatively safe for most young people. This is partly because parents and young people are increasingly familiar with online risks and how to manage them, and the efforts of organisations such as CEOP, the IWF, the NSPCC and Barnardo’s to enhance the safety of the online spaces that young people frequent.


*Cox Communications* (2009). *Teen online and wireless safety survey: cyberbullying, sexting and parental controls*. Produced in partnership with the National Centre for Missing and Exploited Children.


Gallagher, P. (2016). Number of people accessing child abuse images feared to have doubled in three years. inews, 13 October. [Online]. Available at: https://inews.co.uk/essentials/news/health/thousands-seek-help-child-abuse-images-online/.


