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Abstract | This review synthesises empirical studies from the past decade investigating child sexual abuse material (CSAM) production and distribution to gain insight into crime commission processes involved in these crimes. The findings highlight overlaps in risk factors for child sexual abuse and CSAM production and distribution, and possible unique risk factors specific to the latter. A substantial amount of CSAM is produced in family contexts, and there are different motivations and strategies for producing CSAM. Taken together, the findings provide important foundational information about the variety of crime commission processes involved in CSAM production and distribution, helping the development of effective prevention and intervention strategies for this increasingly prolific type of crime.

Crime commission processes in child sexual abuse material production and distribution: A systematic review

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Introduction

Recent years have seen increasing public and government concern about the production and distribution of child sexual abuse material (CSAM). CSAM is generally defined as material that depicts a child, or a representation of a child, in a sexual or offensive context, or as the subject of torture, cruelty or abuse (see, for example, *Criminal Code Act 1995* (Cth), sch 2, s 473.1). This material poses increasingly serious challenges to law enforcement agencies. Furthermore, a recent major report on CSAM production and distribution has identified a trend toward more egregious sexual content over time (Seto et al. 2018).

Child Sexual Abuse Material
Reduction Research Program

One of the difficulties in disrupting the production and distribution of CSAM lies in the technological developments that have facilitated these crimes. The proliferation of online platforms, such as internet chat rooms and social media websites, have provided offenders with more avenues for accessing and grooming victims (Wortley & Smallbone 2012). Anonymous peer-to-peer (P2P) file sharing networks and cloud storage allow offenders to distribute CSAM online with minimal risk of detection (Wortley & Smallbone 2012).

These developments have placed substantial pressures on law enforcement to develop new methods of detecting, investigating and preventing the production and distribution of CSAM. However, this depends on a detailed understanding of the decisions and processes involved in CSAM offending. Offender decision-making from a criminological perspective is based on the premise that crimes occur when potential offenders perceive that the benefits of committing a crime outweigh the costs (ie rational choice perspective; Clarke & Cornish 1985; Cornish & Clarke 2017; Leclerc & Wortley 2014). Therefore, criminal behaviour emerges from a rational decision-making process where situational-specific factors such as offender motivation, the risk of detection, the amount of effort required to successfully commit the crime, and the potential rewards influence the likelihood of offending (Clarke 1997; Cornish & Clarke 2017).

This decision-making framework provides a means of understanding the process behind the commission of different types of crime—including, in the current context, CSAM production and distribution. Empirical research exploring specific aspects of the production and distribution of CSAM has increased in the past decade. To date, however, no studies have consolidated this evidence to provide a baseline overview of what is known about different aspects of offending processes used by CSAM offenders. The aim of the current study was to address this gap by conducting a systematic review of the empirical literature on crime commission processes involved in CSAM production and distribution. The key research question guiding the review is: what is currently known in the empirical literature regarding the production and distribution of CSAM?

Methods

Search strategy

A search of relevant academic databases was conducted between 1 March and 3 April 2019 by a member of the research team. Table 1 lists the search terms used. Searched databases included:

- Informit (Australian Public Affairs Full Text, Australian Public Affairs Information Services, Australian Criminology Database, Australian Family & Society Abstracts, Health & Society Database, Humanities & Social Sciences Collection);
- ProQuest (ERIC, National Criminal Justice References Services Abstracts, PAIS Index, Policy File Index, ProQuest Central);
- Ovid (MEDLINE, PsycInfo, Social Work Abstracts);
- EBSCO (Criminal Justice Abstracts, Family Studies Abstracts, Family and Society Studies Abstracts, Violence & Abuse Abstracts, Women's Studies International);
- Web of Science (Web of Science Core Collection); and
- Google Scholar.

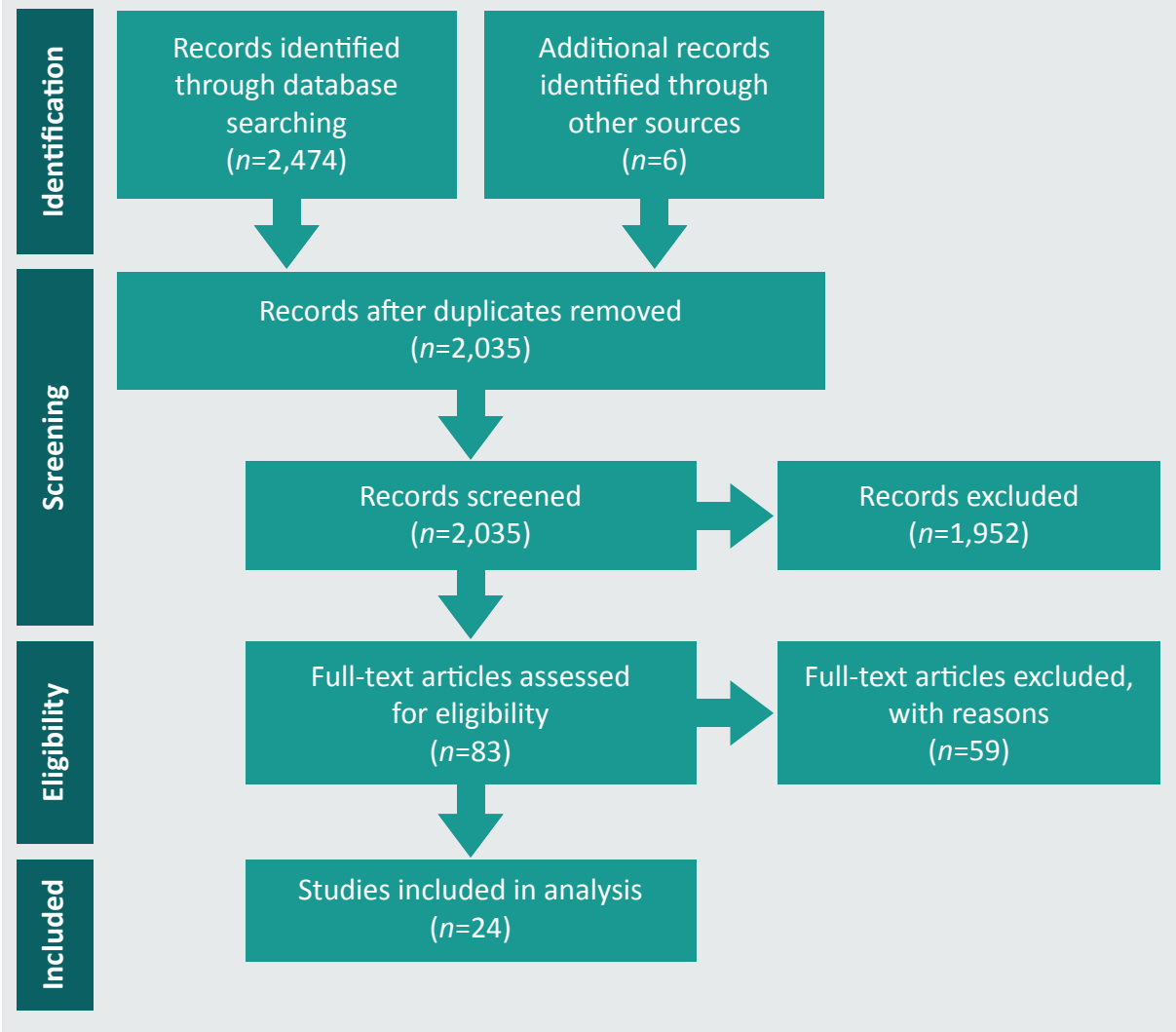
Table 1: Search terms	
Concept 1	Concept 2
Search 1	
child exploitation material	
Search 2	
child pornography	crime script*
child abuse material	creat*
child sexual abuse material	produc*
	distribut*
	disseminat*
	detect*
Search 3	
image*	online NEAR/5 grooming
photo*	sexual NEAR/5 grooming
child pornography	internet NEAR/5 grooming
child abuse material	
child sexual abuse material	
child exploitation material	
picture*	
video*	

Note: Search 3 was an independent search to locate literature on CSAM in the context of grooming. It was not possible to run this search through all the listed databases as doing so returned too many results, making the search unmanageable. Therefore, search 3 was only run through four selected databases: ProQuest, Ovid, EBSCO and Web of Science

Inclusion and exclusion criteria, and analytic method

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher et al. 2009) Statement guided the selection of studies included in the current review. The initial search produced 2,474 results (Figure 1). An additional six publications were located through other sources—one through citation chaining, five by members of the research team. This brought the total number of records identified to 2,480. Of these, 445 were duplicates and excluded. The 2,035 remaining publications were screened to determine their relevance to the research question. This led to the exclusion of 1,952 publications.

Figure 1: PRISMA flow diagram



The full texts of the remaining 83 publications were further screened for inclusion. Books, book chapters, grey-literature reports, articles in the Australian Institute of Criminology’s peer reviewed *Trends & issues* series, and articles in peer-reviewed journals that were published in or after 2010, and that emphasized either the production or distribution of CSAM, were included. Publications were excluded if they focused only on CSAM possession, did not differentiate between CSAM production/distribution and other sexual offences, or were focused on ‘sexting’ between minors. Non-English language publications, as well as publications where the full text could not be accessed, were excluded. The application of these criteria excluded 59 articles, bringing the total number of publications included in the final review to 24. A thematic analysis identified key themes related to the research question.

Results

Twenty-four studies directly addressed the research question. A summary of the key findings of each of the 24 publications is presented in Table A1 in the *Appendix*.

The analysis revealed a number of themes relating to CSAM. These included offender characteristics, victim characteristics and victim–offender relationships, characteristics of CSAM production and distribution, and the technologies used to distribute CSAM online.

Offender characteristics

Several studies highlighted demographic, psychological and social characteristics of CSAM producers, distributors and producers/distributors (eg Clevenger, Navarro & Jasinski 2016; Seigfried-Spellar 2014; Sheehan & Sullivan 2010; Wolak, Finkelhor, Mitchell & Jones 2011). Wolak, Finkelhor, Mitchell and Jones (2011) descriptively analysed 319 arrests for internet-related CSAM production. Perpetrators were typically white men in early adulthood, in employment. Clevenger, Navarro and Jasinski (2016) found that CSAM producers (as distinct from CSAM distributors) were usually aged in their 30s and often had drug and alcohol problems as well as histories of sexual and violent offences.

Sheehan and Sullivan (2010) examined four in-depth case studies and identified common backgrounds among CSAM producers that included early childhood sexual contact, being sexually victimised as a child, viewing pornography from an early age, and social isolation. They also described cognitive distortions among these individuals that helped them overcome psychological and emotional barriers to CSAM offending. Seigfried-Spellar (2014) found that individuals who exchanged CSAM over the internet more actively networked online and tended to be more extroverted than individuals who only searched for and viewed internet CSAM. However, in two studies analysing CSAM possession cases, over one-third of individuals who had been arrested for CSAM possession had also engaged in the distribution of CSAM (Wolak, Finkelhor & Mitchell 2011; Wolak, Finkelhor, Mitchell & Jones 2011).

There are also overlaps between offenders who produce and/or distribute CSAM and those who engage in contact (sexual) offending (Bickart et al. 2019; Bissias et al. 2016; Bouhours & Broadhurst 2011; Gewirtz-Meydan et al. 2018; Krone & Smith 2017; Krone et al. 2017; McManus et al. 2015; Shelton et al. 2016; Wolak, Finkelhor, Mitchell & Jones 2011). McManus and colleagues (2015) found that CSAM offenders (ie producers, distributors, and distributors/possessors) who had previously committed a sexual offence against a child were over seven times more likely to have produced CSAM than those with no previous history of contact sexual offences. Krone and Smith (2017) and Krone et al. (2017) found that the production or provision of CSAM, and being an administrator of a CSAM network, were also associated with contact sexual offending.

For some offenders, contact sexual abuse represents a necessary part of the CSAM production process (see Bickart et al. 2019; Gewirtz-Meydan et al. 2018; Krone & Smith 2017; Krone et al. 2017; McManus et al. 2015; Sheehan & Sullivan 2010). However, some producers of CSAM do so strictly online through the use of webcams, and thus do not themselves perpetrate contact sexual abuse (McManus et al. 2015). Nonetheless, a majority of victims (93%) in the study by Gewirtz-Meydan et al. (2018) reported that they experienced sexual molestation as part of the CSAM production process. Bickart et al. (2019) found that in some cases involving female perpetrators there was no direct physical contact with the victim (eg recording of CSAM-related images and videos), whereas in others contact sex offences occurred.

Victim characteristics and victim–offender relationships

Gender is a key factor related to the likelihood of CSAM victimisation (de Santisteban & Gámez-Guadix 2018; Wolak, Finkelhor, Mitchell & Jones 2011). For example, Wolak, Finkelhor, Mitchell and Jones (2011) found a majority of victims were female children and adolescents. Sheehan and Sullivan (2010) reported that ease of access to a victim, along with the perception that the victim was vulnerable, influenced offenders in selecting specific CSAM victims.

The production of CSAM most often occurs in a context where the victim is known to the offender (Bickart et al. 2019; Gewirtz-Meydan et al. 2018; Prat et al. 2014; Sheehan & Sullivan 2010; Shelton et al. 2016; Wolak, Finkelhor, Mitchell & Jones 2011). Gewirtz-Meydan and colleagues (2018) found that in more than half (52%) of cases analysed the offender was a family member of the victim, and in 41 percent of cases the offender was an acquaintance. The same study found perpetrators of female victims were more likely family members whereas perpetrators of male victims were more likely to be acquaintances. In the study by Wolak, Finkelhor, Mitchell and Jones (2011) in only about one-fifth of cases the victim and offender met online, and in less than five percent of cases the perpetrator was a stranger.

In a study of female online CSAM offenders by Bickart et al. (2019), close to three-quarters (71%) of the 70 CSAM production cases analysed involved a victim who was the offender's child, and over three-quarters involved a male co-offender (77%). Prat and colleagues' (2014) qualitative examination of two case studies of female sex offenders showed their engagement in child sexual abuse, including CSAM production, was motivated by a desire to appease their partners and keep them sexually satisfied.

CSAM production also occurs in the context of online sexual solicitation and grooming by complete strangers (DeHart et al. 2017; de Santisteban et al. 2018; de Santisteban & Gámez-Guadix 2018; Krone et al. 2017; Schulz et al. 2016; Quayle et al. 2014; Whittle, Hamilton-Giachritsis & Beech 2015; Wolak & Finkelhor 2013; Wolak, Finkelhor & Mitchell 2011). In a Spanish study, de Santisteban and Gámez-Guadix (2018) found that 6.5 percent of adolescent students reported that they had received requests from adults online for sexual depictions of themselves, and 1.1 percent of adolescents stated they had provided such material. In a study of 137 individuals who had been identified as having engaged in the online sexual solicitation of a minor, half (49.4%) reported receiving sexual photos from a minor (Schulz et al. 2016).

In the study by de Santisteban and Gámez-Guadix (2018), older female adolescents were significantly more likely than other adolescents to receive online requests for sexual images or videos. Just over 1.5 times as many girls as boys reported receiving such requests from adults (15.6% of girls vs 9.3% of boys), but almost equal proportions of boys and girls reported actual sexual interactions with adults online (8.2% of girls and 7.4% of boys). There were few overall differences in factors associated with receiving sexual solicitations from adults online and subsequently engaging in sexual interactions with adults online, but there was potentially a unique pattern of internet use that may be associated with both. They also showed that the exchange of CSAM is also a central part of the grooming process for contact sex offenders. The sharing process is thought to engender a bond with the victim, demonstrating that there is nothing inherently wrong or unnatural about sexual acts, and potentially providing material with which to blackmail the victim if they do not cooperate.

Offence characteristics

CSAM production occurs in a variety of contexts such as intrafamilial relationships, as well as online grooming and solicitation (see Wolak, Finkelhor, Mitchell & Jones 2011). The most common producer tactics identified by Wolak, Finkelhor, Mitchell and Jones (2011) involved coercion and pressure or using romance or a friendship to persuade the victim. In roughly one-quarter to one-fifth of cases, producers used alcohol or drugs to gain victim compliance or covert methods such as hidden cameras in change rooms. Only a minority of cases (less than 6%) involved the threat or actual use of violence.

Another context that has been identified as a site for CSAM production is child sex trafficking. Reid (2016) showed that sex traffickers not only engaged in the prostitution of minors but also actively created sexually explicit photos of them. In some cases, traffickers were sharing these photos on the internet or using them to blackmail the victims, as part of the overall crime commission process associated with sex trafficking. In effect, CSAM production can be used as a tool to gain control over victims to facilitate other forms of child sexual exploitation (eg prostitution). In short, not all offenders who produce CSAM do so for the purpose of selling the images.

Women's involvement in CSAM production may be characterised by different risk factors from male perpetrators, such as relationship dynamics where the woman's male partner is engaging in CSAM production and coercing her to participate, or where she is a willing co-offender (Bickart et al. 2019; Prat et al. 2014). Male perpetrators, on the other hand, have reported motivations including sexual arousal, gaining power over victims, facilitating social relationships with other offenders, and increasing their self-esteem (Sheehan & Sullivan 2010). It is often part of a broader grooming process associated with contact sexual offences. Not all offenders who produce CSAM engage in its distribution; for some, the production of CSAM is purely for personal use (Sheehan & Sullivan 2010; Wolak, Finkelhor & Mitchell 2011). Unfortunately, more specific information pertaining to CSAM distribution specifically was not uncovered in this review.

Technologies used in the online distribution of CSAM

Webpages are a key platform through which CSAM is hosted and distributed. Westlake and Bouchard (2016) identified 10 CSAM related networks comprising 4,831,050 websites by following hyperlinks on known sites. Despite the seemingly obvious risks associated with hosting CSAM on webpages, many websites with such material do not even attempt to avoid detection by masking the content or purpose (Westlake, Bouchard & Girodat 2017).

Another online platform for CSAM distribution is P2P networks (Bissias et al. 2016; Bouhours & Broadhurst 2011; Krone et al. 2017; Wolak, Finkelhor & Mitchell 2011). Bissias et al. (2016) analysed five P2P networks and estimated that in December 2014 there were around 840,000 peers sharing CSAM worldwide, with approximately three out of 10,000 internet users engaged in the distribution of CSAM across these networks. While there is evidence of international distribution of CSAM over P2P networks, much of the content may often be shared locally; Bouhours and Broadhurst (2011) found the ethnicity of CSAM victims and perpetrators often reflected the perpetrator's country of origin.

Discussion and conclusion

There is a crucial overlap between child sexual abuse and CSAM production. While the latter necessarily requires the former, the opposite is not true, and this is an important point for several reasons. There are similar individual and historical risk factors for child sexual abuse and CSAM production and distribution. Different patterns of male and female involvement in CSAM production also mirror, to some extent, gender differences in the modus operandi and motivations of male and female offenders of child sexual abuse (see, for example, Beech et al. 2009). Finally, the average age of perpetrators of CSAM production and distribution approximates the average age of adult perpetrators of child sexual abuse (mid-adulthood; Lussier & Cale 2013). However, there are also unique risk factors that may drive CSAM production aside from individual motivations specific to the abuse (sexual pleasure, power etc). Other motivations for CSAM production include profit; material can be produced with ease, without having to get involved with sex trafficking networks and organised crime, and without ever leaving the home.

It is possible that a majority of CSAM material involves victims and perpetrators who are known to one another, and often are related. Here, the production of CSAM may be motivated by a desire to consume the produced material, to share it with other offenders and gain status in offender circles, or to profit monetarily. In cases where victims and offenders are acquainted, access to victims and compliance strategies typically involve deceit and manipulation rather than violence.

In contexts where the victims and offenders are not known to one another, offenders may target children they perceive to be vulnerable in online contexts (see also Leclerc & Cale 2015). Some seek online sexual encounters or materials, others attempt in-person meetings, some use the internet specifically to meet children for the purpose of CSAM production, and others seek to purchase CSAM for their own consumption (see, for example, DeHart et al. 2017). CSAM production is perpetrated in a variety of contexts. The material is produced and distributed for commercial or non-commercial purposes and, in some cases, social purposes. Subsequently, distribution may be active or passive; the former, which arguably is the primary focus of current laws and policies, applies to those individuals who intentionally distribute material to others for some of the reasons discussed above. The latter, however, may occur when someone uses a P2P network to download CSAM content without realising that their files can be accessed by others in the network.

This necessitates unique prevention and disruption strategies because there are likely different risk factors for different CSAM production and distribution contexts. Holt, Blevins and Burkert (2010) point out that technological advancements have made it easier for offenders to go undetected, resulting in a lack of 'capable guardians' in the online context. While the results of the current review were focused on websites and P2P networks as the key sites of distribution, it is worth noting that there are many other contexts where CSAM is being shared. Other emerging technologies are changing the landscape of CSAM production and distribution (eg virtual reality, the darknet, live streaming; see Maxim et al. 2016). CSAM distribution as an offence type is ever-changing and the technology used is evolving constantly. This paper was a systematic review of published academic studies, and thus revealed a gap in research that focuses on new methods of CSAM distribution that have been reported by police and media. For example, these include distribution methods such as cloud storage, messaging apps (eg Facebook Messenger, WhatsApp) and social media platforms (Burn 2018); CSAM has even been identified on bitcoin's blockchain (Gibbs 2018).

As technological innovation continues to shape the production and distribution of CSAM, law enforcement organisations are increasingly limited in their ability to intervene (Broadhurst 2019; Bursztein et al. 2019). The rise of Tor and the darknet has given perpetrators a level of anonymity that makes investigations difficult. In addition, some law enforcement methods used to work around encryption and identify offenders may violate their legal protections (Broadhurst 2019). As encrypted communication applications such as Signal and Telegram become more popular, the challenges facing investigators dealing with CSAM cases may only increase (Broadhurst 2019). Thus, new research must focus on emerging methods of CSAM distribution and how offenders operate using these technologies.

One way to bolster prevention and intervention efforts is through crime scripting. This involves breaking down CSAM production and distribution step-by-step to systematically identify different processes through which offenders perpetrate these crimes (see Cornish 1994; Leclerc 2016, 2017). Fortin, Paquette and Dupont (2018) recently scripted the pathways from consumption of adult pornography, to consumption of CSAM, to CSAM distribution, to child luring, and eventually to child sexual abuse and CSAM production. In effect, scripts highlight heterogeneous pathways to different aspects of CSAM offending. This exercise generates two key outcomes:

- step-by-step accounts of the crime commission process related to CSAM to further our understanding of how offenders operate; and
- a framework for thinking of and applying detection, investigation and prevention strategies to disrupt these crimes.

Crime scripting boosts the capabilities of experts, online investigators and law enforcement by given them a simple framework that breaks down complex processes and stimulates thinking for crime prevention, which can lead to a reduction in CSAM.

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URLs correct as at October 2020

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Table A1: Summaries of studies included

Study	Country ^a	Sampling	Relevant findings
Bickart et al. (2019)	USA	<ul style="list-style-type: none"> • Purposive sample • 98 women serving a federal sentence for online CSAM 	<ul style="list-style-type: none"> • 71% (<i>n</i>=70) engaged in CSAM production (32% non-contact and 40% contact) • 71% of CSAM production cases involved a victim who was the offender's biological or adopted child, 77% involved a male co-offender
Bissias et al. (2016)	Multi-country	<ul style="list-style-type: none"> • Purposive sample • 5 P2P networks (BitTorrent, eDonkey, Ares Galaxy, Gnutella and Gnutella2) • 17,576 arrests for P2P CSAM 	<ul style="list-style-type: none"> • An estimated 840,000 individuals shared CSAM on identified networks in 2011, growing to 1.3 million in 2014. • 3 out of 10,000 internet users were estimated to be sharing CSAM on these networks. • Popularity of each network differed between countries. • Approximately 9.5% of individuals arrested for possession of P2P CSAM had engaged in offline contact sexual offending.
Bouhours & Broadhurst (2011)	Multi-country: Australia, Italy, New Zealand and USA	<ul style="list-style-type: none"> • Purposive sample • 103 individuals arrested for downloading/exchanging CSAM on P2P networks. Individuals were identified from a Virtual Global Taskforce database 	<ul style="list-style-type: none"> • Popularity of each P2P network differed across countries. • 60% were involved in distribution or trade of CSAM, 18.4% of these individuals also engaged in CSAM production.
Clevenger, Navarro & Jasinski (2016)	USA	<ul style="list-style-type: none"> • Nationally representative sample • 755 arrest cases (99% male) for online CSAM or sex offences from Wave 2 of the National Juvenile Online Victimization (N-JOV) study 	<ul style="list-style-type: none"> • CSAM producers and distributors were more likely than sexual exploitation of a minor offenders to be 30–39 years old, or above 50 years old, to have direct access to a minor and to have low self-control. • They were also more likely than CSAM possessors to have displayed these same low self-control behaviours.

Table A1: Summaries of studies included (cont.)

Study	Country ^a	Sampling	Relevant findings
de Santisteban et al. (2018)	Spain	<ul style="list-style-type: none"> • Purposive sample • 12 male offenders convicted of online grooming who had committed contact sex offences against the victim(s) 	<ul style="list-style-type: none"> • Solicitation and/or exchange of sexual photos was part of the online grooming process. • Some offenders requested and/or exchanged sexual photos with the victim to get them more involved in a relationship with them. • Receipt/exchange of photos was a goal of the grooming process.
de Santisteban and Gámez-Guadix (2018)	Spain	<ul style="list-style-type: none"> • Cluster sample • 2,731 adolescents 12–15 years old (48.3% male; 50.6% female) 	<ul style="list-style-type: none"> • 6.5% of respondents reported that an adult had requested sexual pictures or videos of them online, 1.1% stated they had sent photos or videos. • Female respondents were significantly more likely to receive such requests than male respondents (10.0% vs 2.8%). Prevalence of such requests also increased with age. • 2.6% were asked by an adult to engage in cybersex.
DeHart et al. (2017)	USA	<ul style="list-style-type: none"> • Convenience sample • 200 CSAM offenders' online communications with undercover investigators 	<ul style="list-style-type: none"> • Four groups of CSAM offenders identified: (1) cybersex-only offenders, (2) offenders who engaged in cybersex and also attempted to schedule a meeting, (3) offenders who only engaged in scheduling, and (4) buyers of child sex. • Differences in the proportion of offenders who sought explicit photos of victims were found, with the second group having the highest proportion of such offenders (48%).

Table A1: Summaries of studies included (cont.)

Study	Country ^a	Sampling	Relevant findings
Gewirtz-Meydan et al. (2018)	USA	<ul style="list-style-type: none"> Convenience sample 133 adult survivors of CSAM production (33% male; 64% female; 2% transgender) 	<ul style="list-style-type: none"> Majority of survivors (83%) were 12 years old or younger when their victimisation began. For 52% of survivors, the offender was a family member, for 41% the offender was an acquaintance. Only 1% had met the offender online. Male survivors were more likely to report acquaintance offenders, female survivors were more likely to report familial offenders. 93% reported that sexual molestation was part of CSAM production. In 74% of cases, the offending had gone on for over a year. 48% stated that the illegal images were given to or shared with other persons.
Krone & Smith (2017)	Australia	<ul style="list-style-type: none"> Convenience sample 152 subjects of AFP investigations of online child sex offences 	<ul style="list-style-type: none"> Engaging in the provision of CSAM, having an index offence conviction for CSAM production, having a history of CSAM production charges, and having a CSAM offending networking role were associated with contact offending
Krone et al. (2017)	Australia	<ul style="list-style-type: none"> Convenience sample 152 subjects of AFP investigations of online CSAM related offences 	<ul style="list-style-type: none"> 86.8% of CSAM was produced in a domestic environment. 50.0% was produced in a public place, 44.1% in a commercial or professional studio environment. Majority of offenders did not use secure online communications. Those who did used web-based or internet service provider email services, and anonymisers.

Table A1: Summaries of studies included (cont.)

Study	Country ^a	Sampling	Relevant findings
McManus et al. (2015)	UK	<ul style="list-style-type: none"> • Stratified opportunistic sample • 244 males convicted of CSAM offences 	<ul style="list-style-type: none"> • Individuals with prior CSAM conviction and child sexual abuse conviction (dual offenders) were more likely to have produced CSAM than non-contact CSAM offenders. • Production by dual offenders was more likely to involve ‘hands-on production’. • Production by non-contact offenders was more likely to involve use of a webcam. • No significant group difference in CSAM distribution was found.
Prat et al. (2014)	Canada	<ul style="list-style-type: none"> • 2 forensic psychiatric case reports of female child sex offenders. Both cases involved CSAM offending. 	<ul style="list-style-type: none"> • One case involved CSAM production by a wife and husband. Victim was a girl the couple regularly looked after. • One case involved a woman who possessed CSAM and who also sexually abused her children. Husband was a co-offender. • Authors argue women’s offending was motivated by a desire to do what their spouses wanted and to keep them sexually satisfied.
Quayle et al. (2014)	Multi-country: Italy and UK	<ul style="list-style-type: none"> • Purposive sample • 14 male online grooming offenders 	<ul style="list-style-type: none"> • Qualitative results revealed that CSAM was part of the online grooming process. Offenders reported exchanging photos with victims and leveraging their online relationship to solicit photos from them or to get victims to appear on webcam. • Some offenders also stated that the victim had produced the images of themselves of their own accord.

Table A1: Summaries of studies included (cont.)

Study	Country ^a	Sampling	Relevant findings
Reid (2016)	USA	<ul style="list-style-type: none"> • Purposive sample • 43 cases involving the sex trafficking of a female minor by a non-relative, and 10 social service providers 	<ul style="list-style-type: none"> • Results showed that sex traffickers were not only prostituting victims but were also creating CSAM images of them. • In some cases, the images were shared on the internet without the minor's consent, and there was also evidence that traffickers used the images to blackmail minors.
Schulz et al. (2016)	Multi-country: Germany, Finland and Sweden	<ul style="list-style-type: none"> • Convenience sample • 2,828 internet users (49.3% men, 50.7% women) 	<ul style="list-style-type: none"> • 4.8% of respondents reported that they had engaged in the online sexual solicitation of a minor. Of these, 49.4% reported receiving sexual photos as an outcome of solicitation, and 26.6% stated that cybersex had occurred. • Neither victims' gender nor the way in which respondents were recruited into the study (ie recruited via websites with paedophilic content vs recruited via general websites) significantly affected the likelihood of either of these outcomes occurring.
Seigfried-Spellar (2014)	Multi-country: USA, UK, Australia and Canada	<ul style="list-style-type: none"> • Convenience sample • 273 internet users (142 male, 125 female) 	<ul style="list-style-type: none"> • 16 out of 273 internet users had consumed CSAM • Exchangers of internet CSAM scored significantly higher on extroversion than searchers/viewers. • Significant positive correlation between seriousness of CSAM offending and conscientiousness.

Table A1: Summaries of studies included (cont.)

Study	Country ^a	Sampling	Relevant findings
Sheehan & Sullivan (2010)	UK	<ul style="list-style-type: none"> • Convenience sample • 4 men convicted of manufacturing CSAM 	<ul style="list-style-type: none"> • 2 of the 4 interviewees had produced CSAM of their child/children. • 1 produced CSAM of the child of a friend. • 1 produced CSAM of children unknown to him. • Risk factors for offending included: early childhood sexual contact, experiencing childhood sexual victimisation, social isolation, accessing pornography at an early age, experiencing cognitive distortions, overcoming emotional barriers to offending, and having sexual fantasies of children from a young age. • Ease of access to victim, and a perception that the victim was vulnerable, influenced victim selection. • Manipulation techniques were used to gain access to victims and to make victims feel responsible for their victimisation. • Interviewees also engaged in other forms of sexual offending. • Motivations for producing CSAM included: sexual arousal, gaining power and control over victims and other offenders, facilitating social relationships with other offenders, and increasing self-esteem. • Not all shared their content.
Shelton et al. (2016)	USA	<ul style="list-style-type: none"> • Convenience sample • 251 online CSAM cases (100% male) 	<ul style="list-style-type: none"> • 10% (<i>n</i>=26) had engaged in CSAM production. 25 of these individuals had also committed a contact offence. • The victim–offender relationship in 54% of production cases was familial. 29% were acquaintances, and 21% had met online.

Table A1: Summaries of studies included (cont.)

Study	Country ^a	Sampling	Relevant findings
Westlake & Bouchard (2016)	Multi-country	<ul style="list-style-type: none"> • Snowball sample • 10 CSAM-related networks comprising 4,831,050 websites (hyperlinks from seed CSAM-related websites were followed to identify other related websites) 	<ul style="list-style-type: none"> • Two large CSAM networks and several smaller networks were identified. • The majority of communities were focused on boys as opposed to girls and had non-explicit as opposed to explicit sexual material, with images as their main distribution medium. • Community characteristics were not affected by seed websites' characteristics.
Westlake, Bouchard & Girodat (2017)	Multi-country	<ul style="list-style-type: none"> • Snowball sample • 634 websites connected through hyperlinks to a CSAM website 	<ul style="list-style-type: none"> • Manual observation of the websites successfully identified 31 of the 33 websites with CSAM images, suggesting that most CSAM-related websites did not make much effort to mask their content and purpose. This did not appear to affect the survival of websites with CSAM images over 14 months. • The most common mediums of CSAM were images and videos, with the latter either being directly hosted on websites, or embedded on them.
Whittle, Hamilton-Giachritsis & Beech (2015)	UK	<ul style="list-style-type: none"> • Convenience sample • 3 offender–victim dyads from 3 online grooming cases 	<ul style="list-style-type: none"> • Offenders and victims had differing perceptions about whether the solicitation of sexual photos/videos had taken place and, if so, who had initiated it. • In one example, one offender reported that no such solicitation had taken place, while the victim reported that the offender had initiated it. • In another example, the offender stated that no such solicitation had taken place while the victim stated that she had initiated it. • In the last dyad, the victim reported that the offender had initiated the solicitation, while the offender stated that they had both initiated it.

Table A1: Summaries of studies included (cont.)

Study	Country ^a	Sampling	Relevant findings
Wolak & Finkelhor (2013)	USA	<ul style="list-style-type: none"> • Stratified national sample • Arrests for internet-related sex crimes in 2009 that involved online sexual communications (143 cases involving offenders who met their victims online (online meeting offenders), 139 cases involving offenders who knew victims in-person before offence (know-in-person online offenders)). Data were drawn from the N-JOV study. 	<ul style="list-style-type: none"> • 47% of online meeting offenders and 58% of know-in-person online offenders had engaged in CSAM production. Many of these cases appear to involve situations where the offender had requested sexual images from the victims (47% of online meeting offenders and 50% of know-in-person online offenders).
Wolak, Finkelhor, Mitchell & Jones (2011)	USA	<ul style="list-style-type: none"> • Nationally representative sample • 319 arrests for CSAM production—122 from Wave 1 (July 2000–June 2001), 197 from Wave 2 (2006). Data were drawn from the N-JOV study. 	<ul style="list-style-type: none"> • Offender was typically known to the victim (approx one-third of the time), or a face-to-face acquaintance (approx one-third of the time). • Approx one-quarter of cases involved an offender the victim had met online. • In about 5% of cases the offender was a stranger or pimp. • Most cases also involved contact sex offending. • Tactics used by offenders included the use or threat of violence, coercion, or pressure, the use of romance or friendship, giving the victim substances, covertly producing CSAM, providing victims with money or other items, and blackmailing victims with produced CSAM images. • Approx one-quarter had distributed the CSAM they produced. • Most victims were girls aged 6–17 years. • Most offenders were male, aged 26 years or over, white, employed full-time, and in possession of other CSAM they had not produced.

Table A1: Summaries of studies included (cont.)

Study	Country ^a	Sampling	Relevant findings
Wolak, Finkelhor & Mitchell (2011)	USA	<ul style="list-style-type: none"> Nationally representative sample 5,385 arrests for internet-related CSAM possession (429 from 2000–2001, 605 from 2006). Data were drawn from the N-JOV study. 	<ul style="list-style-type: none"> 33% of CSAM possessors from 2000–2001 and 39% from 2006 had distributed CSAM. 31% from 2000–2001 and 38% from 2006 had distributed CSAM over the internet. 93% of CSAM possessors in 2006 who used P2P networks were CSAM distributors.

a: Studies were classified as ‘multi-country’ if they drew on samples from more than one country, or if they involved an analysis of online webpages/networks that could be accessed across multiple countries

Note: AFP=Australian Federal Police; CSAM =child sexual abuse material; N-JOV=National Juvenile Online Victimization; P2P=peer-to-peer

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