



# **COMBATING ONLINE CHILD SEXUAL ABUSE MATERIAL**

AN EXPLORATIVE STUDY OF SWEDISH  
POLICE INVESTIGATIONS

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Online child sexual abuse material (CSAM) is a growing problem that transcends geographical borders. In order to improve cooperation between international law enforcement, knowledge concerning the jurisdiction, procedure and issues with investigations in different countries is needed. This study aims to provide information on the Swedish context by (a) exploring how the Swedish police work with investigations of online CSAM, and (b) identifying potential challenges. The research questions have been answered by qualitative interviews with law enforcement personnel. Systematic text condensation revealed that there is a significant difference in the procedure between the police regions and that four major problems face the police. First, the police are dependent upon digital forensic experts but have limited access to their expertise and other resources due to the crime not being prioritised. Second, Internet Service Providers are not required to save their users IP-addresses, which complicates identification of the suspect. Third, a holistic perspective within the police is required. Investigators should work with all sexual crimes against children and not just CSAM, in order to be able to see reoccurring elements in the identification process. Four, there is a lack of public knowledge concerning CSAM that affects the resources and number of cases the police receive. The Swedish police is currently creating regional cybercrime centres in an attempt to create a national strategy for computer-related investigations. The implications on the victim identification process and development of treatment for offenders are discussed, as well as future directions. Clearer guidelines are needed.

*Keywords:* Child sexual abuse material (CSAM), Information and Communication Technologies (ICT), Internet, Investigation, Police, Sweden

## **PREFACE**

Researching this topic have been insightful and interesting. However, it has also been extremely disturbing at times and has opened my eyes for the incredible suffering some of these children are exposed to. I can understand why someone would want to look the other way and not read about the subject. Nonetheless, more public awareness is needed if we are to ever combat child sexual abuse material. I would like to take the opportunity to point out that this type of material is, in most cases, a documentation of sexual abuse of a child, and that the distribution and possession of the material continues to violate the child. It is further a fast-developing area where new technologies lead to more disturbing ways of abusing children. It is therefore my hope that the area will receive more attention from the public, governmental officials and academics in the future.

I would like to express a big thank you to all the law enforcement personnel who took the time to participate in this study. Your experience and knowledge have taught me a lot and I am deeply impressed by your commitment to helping these children. I would also like to thank my supervisor Marie Väfors Fritz, for advising and encouraging me during the process and for not losing patience with me. I would further like to thank Marie Eneman at the University of Gothenburg for giving me initial contact information and a first insight into the subject. Finally, I would like to thank my friends and family who has proofread and listened to me as well as provided me with well needed breaks. It has been greatly appreciated.

Malmö, May 2019

## **LIST OF ABBREVIATIONS**

CEOP	Child Exploitation and Online Protection command
CSAM	Child Sexual Abuse Material
CSP	Cloud Service Provider
ECPAT	End Child Prostitution, Child Pornography and Trafficking of Children for Sexual Purposes
GDPR	General Data Protection Regulation
IIOC	Indecent Images Of Children
ICT	Information and Communication Technologies
INTERPOL	International Criminal Police Organisation
IRC	Internet Relay Chat
ISP	Internet Service Provider
ISÖB	Internetrelaterade Sexuella Övergrepp på Barn/Internet related sexual abuse on children
NCMEC	National Center for Missing and Exploited Children
NC3	Nationellt CyberCrime Centre/National CyberCrime Centre
NOA	Nationella Operativa Avdelningen/National Operations Department
NGO	Non-Governmental Organisation
P2P	Peer-to-peer
RC3	Regionalt IT-brottscentrum/Regional CyberCrime Centre
TOR	The Onion Router

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# 1. INTRODUCTION

Material that depict children being sexually abused, sometimes referred to as child pornography, is considered by many as a disturbing offence. Media reporting of this material have become more frequent (Wells, Finkelhor, Wolak & Mitchell, 2007). In 1998, members of *The Wonderland Club* from 13 countries was arrested. To obtain membership in the club, everyone had to supply 10.000 images depicting sexual abuse of children (Bright & McVeigh, 2001), and more recently news reported about one offender possessing one million sexual abuse images (Di Salvo, 2015). The acts of viewing, downloading and distributing this material might not directly abuse the children, but causes harm by creating a demand. The material also represents a record of the abuse (Carr, 2003; Taylor & Quayle, 2003) and any distribution of it can be considered a new violation of the child (Beech, Elliott, Birgden & Findlater, 2008; Gillespie, 2005).

Child sexual abuse material (CSAM) have existed throughout history in different forms (Jenkins, 2001). A few decades ago the commercial exchange was limited by logistic and economic boundaries, and was often conducted via post (Eneman, 2005; Jenkins, 2001). The advent of information and communication technologies (ICT) and expansion of the Internet, radically altered the availability of CSAM (Eneman, 2006; Quayle, 2009; Wolak, Finkelhor & Mitchell, 2011). Viewing, collecting or distributing it have become inexpensive, anonymous and low-risk (Berson, 2003; Cohen-Almagor, 2013; Eneman, 2005; Taylor & Quayle, 2003).

Combating cybercrimes pose specific challenges and is not solely the responsibility of state-controlled police (Jewkes & Yar, 2008). Monitoring the Internet have become a pluralistic endeavour, involving Non-Governmental Organisations (NGOs) as well (Jewkes & Andrews, 2005). Law enforcement is increasingly cooperating with Internet Service Providers (ISPs) in various countries. In Sweden, ISPs use filtering techniques to deny users access to webpages blacklisted by the police (Eneman, 2010). Other organisations include global interest groups such as the Child Exploitation and Online Protection command (CEOP) and the US-based National Center for Missing and Exploited Children (NCMEC). NCMEC provides a worldwide CyberTipline that receives anonymous tips from the public concerning illegal material (Wolak, Mitchell & Finkelhor, 2003).

Multiple issues face law enforcement when investigating online CSAM including the amount of data, requirement of technical expertise and the identification process (Jewkes & Andrews, 2005; Stol, 2002). The crime further transcends geographical borders, creating a demand for international cooperation. Such cooperation face issues concerning differentiating and incompatible legislations (Eneman, 2005; Graham, 2000). Although law enforcements need to have knowledge about other countries' jurisdictions and procedures to be able to cooperate, there is often misinformation between countries, leading to mistrust and faulty cooperation. Information regarding how the police work in different countries is therefore needed (Stol, 2002). However, few studies concern investigations of online CSAM.

## 1.1 Aim and significance

Due to the limited research on investigations of online CSAM in various countries, this thesis strives to explore the subject from a Swedish context. Although the first World Congress against Commercial Sexual Exploitation of Children was held in Sweden in 1996, CSAM has become a crime of low priority in the country (End Child Prostitution, Child Pornography and Trafficking of Children for Sexual Purposes [ECPAT], 2011) and Swedish research on CSAM is severely lacking. This could be particularly problematic considering the rapid technological development, causing the context and nature of the crime to constantly change, creating new challenges for law enforcement (Eggestein & Knapp, 2014). It is therefore important to expand and update the knowledge on these investigations. By examining it from a Swedish context, the thesis also contributes to the knowledge needed about procedures in different countries.

The purpose of this thesis is twofold. Firstly, it aims to provide information on and explore how Swedish police officers work when investigating online CSAM. Secondly, it aims to explore any potential challenges the investigators face when conducting investigations of this material, what technical expertise they have access to, and if any potential issues correspond with previously identified problems in other countries.

## 1.2 Research questions

How are investigations of CSAM practically conducted by the Swedish police?  
What problems do the police experience when conducting investigations of CSAM?  
What needs to be done in order to improve the investigations?

## 1.3 Terminology and definitions

*Pornography* generally refers to consensually publicly distributed recordings of sexual acts between adults, which is accepted in many countries (Frangež et al., 2015). The term *child pornography* is therefore criticized for equalising the crime with adult pornography, minimizing the seriousness of the offense by implicating that it is voluntary, even though children can never consent to the sexual act or its depiction, and normalize what is in fact child sexual abuse (Cohen-Almagor, 2013; ECPAT International, 2016). In 2016, the Interagency Working Group in Luxembourg therefore adopted the ECPAT International advice of the use of the term *child sexual abuse material* (ibid.).

However, the term *child pornography* is still commonly used (Frangež et al., 2015), it is for instance the terminology used in the Swedish legislation (SFS 1962:700, 16:10 §). While *child sexual abuse material* will henceforth be used, some material in this thesis might therefore use the term *child pornography*. However, it is important to note that these terms all refer to the same serious offense of the sexual abuse and exploitation of children online.

### 1.3.1 Child

Defining what constitutes a child in relation to CSAM provides particular challenges. The age of sexual consent differs internationally (Cohen-Almagor, 2013), for instance, it is 16 in the UK (Sexual Offences Act, 2003) and Canada (*Criminal Code*, 1985), but 15 in Sweden (SFS 1962:700, 6:6 §). However, the age of consent does not always correspond with the age of a child for the purposes of production and possession of CSAM (Eneman, 2005). In the UK, a child is

someone below the age of 18 (Kloess, Woodhams, Whittle, Grant & Hamilton-Giachritsis, 2019; United Nations, 1989), while the Swedish legislation defines a child as “a person whose puberty development is incomplete, or when it can be discerned from the image or from the circumstances around it, is under 18 years old” (SFS 1962:700, 16:10 §; as translated by Eneman, 2005, p. 34). This definition is problematic since the perceived puberty development becomes determinative of a child. An individual below the age of 18 is not legally considered a child if they can be perceived to be 18 years or older in the material (Eneman, 2005). Defining *child* with psychological or biological criteria might open for subjective interpretations. There are, for instance, cultural differences in the meaning of maturity (Rodman, 1990) and individual variation in pubertal development (Gowers, 2005; Marshall & Tanner, 1969, 1970). It has been argued that the definition of a child should correspond with the age of sexual consent because individuals who are legally able to consent to have intercourse with their partner should be allowed to willingly take or possess intimate material of each other (Gillespie, 2005). While this can be considered logical, a *child* will in this thesis be defined as an individual under the age of 18. This definition is chosen due to the variation in age of sexual consent and the challenges for international cooperation such a definition would cause. The age of 18 is also in correspondence with the recommendations of the Council of Europe (2007) and UNs child convention (United Nations, 1989).

### 1.3.2 *Child Sexual Abuse Material (CSAM)*

Definitions of CSAM also differ internationally. While in some countries referred to as indecent images of children (IIOC), the terms concern sexual depictions of children and the Council of Europe (1993) defines it as any sexual audio-visual depiction of children. The Swedish legislation criminalises viewing, possessing, distributing, and producing the material. For the purpose of this thesis, CSAM is defined as any visual and non-visual material that depicts children who appear to engage in some kind of sexual situation or activity. The word *situation* is key since CSAM does not have to involve children being physically sexually abused by an adult but can also include naked children posed in a sexualized way (Sheldon & Howitt, 2007; Taylor & Quayle, 2003). However, if such material depicts real children, it does, in most cases, represent a recording of a serious criminal offense (Cohen-Almagor, 2013; Sheldon & Howitt, 2007). Online CSAM further involves the use of ICT as a tool.

## 2. BACKGROUND

To be able to explore how the Swedish police work with CSAM and potential challenges, it is necessary to review the prevalence of CSAM, the organisational structure of the police and previously identified challenges.

### 2.1 Prevalence

Little is known about the amount of online CSAM. Difficulties with estimating the prevalence concerns the estimated number of unknown cases (Bryce, 2010; Martin & Alaggia, 2013), nature of the offense, classification, and distribution (Bryce, 2010; Kloess, Beech & Harkins, 2014; Wolak et al., 2011). Number of reported exploitations are largely dependent on the victims' awareness. Characteristics of some parts of the grooming process (the process of the

perpetrator gaining the child's trust for the purpose of sexual exploitation) can be similar to online relationships and natural processes of sexual experimentation, making it difficult for children to recognize the problem (Bryce, 2010). Studies concerning the prevalence further use different sources. One study indicated that arrests for possession of CSAM in the US increased from 1,713 to 3,672 between 2000–2006 (Wolak et al., 2011). While arrest rates are poor indicators of the true prevalence (Martin & Alaggia, 2013), other sources also indicate increases. A law-enforcement agency in the UK, the CEOP, received 5,812 reports of suspicious online behaviour in 2007–2008 and 6,291 in 2009–2010 (Kloess et al., 2014), and the number of reports submitted to the Canadian Tipline for reporting online sexual exploitation of children increased from 7,846 in 2008 to 37,352 in 2015 (Canadian Centre for Child Protection, 2016).

These numbers need to be considered with caution. Proactive police work targeting CSAM have increased which could explain the increase in arrests (Wolak et al., 2011), and legal definitions varies significantly between different countries, complicating international comparisons (McManus & Almond, 2014). The size and changing nature of the Internet further complicates any estimations of the prevalence (Sheldon & Howitt, 2007).

## **2.2 Technologies used by offenders**

ICT is often wrongly presented as one homogeneous technology (Kling, Rosenbaum & Sawyer, 2005). However, different types of ICT such as Internet Relay Chat (IRC) and Peer-to-Peer (P2P) are used in various ways by online sex offenders (Eneman, 2006; Sheldon & Howitt, 2007).

### **2.2.1 Internet Relay Chat**

According to Eneman (2006), CSAM can be easily found on the Internet in IRCs which is used at some point by a majority of offenders. IRC is a communication tool that allows anonymously immediate interactive exchange of text messages and files between users through a chat box or chat rooms (Rosen, 2011; Simpson, 2000). IRC are used by offenders to communicate with each other, contact potential victims, and access and distribute CSAM (Eneman, 2006; Sheldon & Howitt, 2007).

### **2.2.2 Peer-to-peer**

Newer academical studies on how and where CSAM is distributed is lacking. Some reports of NGOs such as NetClean (2016) indicate that P2P have become more prevalent and a major source of the material. A P2P-network connects users' computers directly. By connecting users' computers to a central computer, available files on their hard drives becomes visible for other users that can request a download. The central computer then connects the users' computers with each other, making direct file sharing possible (Eggestein & Knapp, 2014; Sheldon & Howitt, 2007). P2P is an efficient and easy way to distribute and access large volumes of CSAM (Eggestein & Knapp, 2014; Eneman, 2006).

### **2.2.3 The Onion Router**

While little is known about the extent of CSAM on the darknet, it is a likely source since it provides a high degree of anonymity (NetClean, 2016). The darknet is hidden sections of the Internet that can be accessed through software, the most common being The Onion Router (TOR). By randomly bouncing the

communication around in a global network of relays, TOR hides the location of the user, the sites they visit, defends against network surveillance and helps overcome censorship (Cohen-Almagor, 2013; Ghappour, 2017; Messier, 2017). While it is a great tool for protection of human rights since it can maintain free speech and privacy in authoritarian states (Ghappour, 2017), it also facilitates the secure distribution of CSAM (Cohen-Almagor, 2013).

#### **2.2.4 Cloud computing and Social media**

There is further a lack of knowledge concerning newer markets, including live-streaming, cloud computing and social media (NetClean, 2016). CSAM have been found on platforms such as Google+ and Facebook, which are used by offenders to contact potential victims (Egglestein & Knapp, 2014). Cloud services are further increasingly used by offenders to store and distribute illegal content (Shariati, Dehghantanha & Choo, 2016), including CSAM (NetClean, 2016).

Cloud computing is the access to services such as storage and applications over the Internet (Eggestein & Knapp, 2014). The service is run by virtual machines, owned by the Cloud Service Provider (CSP), using volatile data. This data is unsustainable without power, meaning that if the virtual machine were to be terminated or lose power, the data would be permanently erased, posing particular difficulties for investigations of online CSAM (Eggestein & Knapp, 2014).

### **2.3 Previous research on challenges**

Other main challenges in cloud forensics (the extraction of digital evidence from the cloud) concerns the determination of what material belongs to whom and the dependence upon CSPs. Material from different users can be found at the same cloud server, creating difficulties in connecting specific data to particular offenders (Eggestein & Knapp, 2014). The CSPs further control the data, making the investigators dependent on them to acquire it. This is particularly problematic considering that cloud applications usually involve several CSPs located in different countries with differing jurisdictions (Ruan, Carthy, Kechadi & Crosbie, 2011).

#### **2.3.1 Jurisdiction and cooperation**

Considering the cross-border nature of CSAM, multiple jurisdictions often becomes involved. General principles of jurisdiction apply to crimes involving CSAM, meaning that the crimes are subject to legislation of the territory where it takes place (Gillespie, 2011) and webpages are further subject to the legislation of the countries where they are hosted (Jewkes & Andrews, 2005).

The fact that some countries lack legislations concerning the issue, and that existing legislations and definition of CSAM differs between countries, complicates international cooperation (Eneman, 2005; Jewkes & Andrews, 2005; Stol, 2002) since it causes law enforcements to spend excessive amount of time on finding a compatible modus operandi (Jewkes & Andrews, 2005; Jewkes & Yar, 2008).

#### **2.3.2 Identification and classification**

Just as the legal definitions of a child and CSAM varies internationally, the perception of these terms can differ nationally. It has proven difficult to determine whether the material depicts a child and if it can be classified as CSAM (Kloess et

al., 2019). By interviewing investigators involved in 34 CSAM-cases in the US, Wells et al. (2007) found that officers sometimes struggled with ascertaining whether images fit the legal definition of CSAM and determining the age of seemingly prepubescent children. Considering the small number of cases and the age of the study, its validity and relevance could be questioned. However, similar results were found in a more recent study. By letting coders from the UK code thousands of images, Kloess et al. (2019) studied the level of agreement concerning the materials' nature and the child's age. They found low interrater reliability among borderline images. Complicating factors included variations in puberty development, non-visibility of the victims' body parts, attempts to make the victim appear older, and ambiguity of the context (for example family photos of naked children). To determine if the setting was indecent, coders examined if the context implied secrecy (for instance if the material was created in a hotel room) or a sexual focus, such as the use of adult lingerie (ibid.).

The issue lies in determining the offender's motivation from the examination of the material (Kloess et al., 2019). While existing studies concerning this are few, it is logical to assume that determining the age of the child and the nature of the material without further information is difficult. Considering the international origin of CSAM, and the high level of knowledge of CSAM in the UK and the US, these results can most likely be generalized to other countries investigating CSAM.

### *2.3.3 Requirement of technical expertise*

Investigations of CSAM can further be hindered by the requirement of particular technical expertise, for example concerning encryption, volatile data and algorithms (Eggestein & Knapp, 2014). There is also an ongoing growth of seized data and investigating it is a time-consuming task. Extracting useful information from the extent of data further requires a deeper understanding of it (Quick & Choo, 2014).

However, according to research in the Netherlands, police officers investigating CSAM lack technical skills, and the organisation of the police fail to adequately support the officers in their work (Stol, 2002). According to Stol, specialised units should assist the districts with complex investigations. However, only a few districts have sufficient technical knowledge, leading to the specialised units spending a large amount of time on relatively simple actions (ibid.).

Similar issues were identified in England and Wales. Jewkes and Andrews (2005) stated that police officers lacked specialised technical training, and that the police consisted of different forces with inconsistent structures, ultimately complicating cooperation.

## **2.4 The Swedish police organisation**

The Swedish police consist of one Police Authority with seven police regions with overall responsibility for the work within the area. The regions consist of 27 police districts comprising 95 local police areas (Polisen, 2018). Although investigations are usually conducted by the local police areas and the districts, the police regions are responsible for the co-ordination and investigation of crimes that requires specialised skills or technologies (ibid.).

The agency is further divided into seven national departments including the National Operations department (NOA). NOA is responsible for international and national police cooperation, to assist the police regions in investigations requiring particular expertise, and to co-ordinate investigations of organised crimes, including online CSAM (Polisen, 2018). However, the Swedish police is currently undergoing changes relating to cybercrimes. A national cybercrime centre (NC3) have been established at NOA that serves as supportive expert, collaboration partner, and the national contact point (Johansson & Welin, 2015). Furthermore, regional cybercrime centres (RC3s) are being created in each police region, that will work and support the regions with different cybercrimes. Some regions have further chosen to create groups that deal specifically with investigations of Internet related sexual abuse of children, so called ISÖB-groups (Å. Berggren, personal communication, May 24, 2019).

### **3. METHODOLOGY**

This thesis adopts a qualitative method in order to understand and provide reliable information on the aim of the study. A qualitative approach was chosen since it seeks to answer *why* and *how* and to gain a deeper understanding of the issue rather than trying to generalise the result (Lakshman, Sinha, Biswas, Charles & Arora, 2000).

#### **3.1 Data collection**

The data collection was conducted with individual, semi-structured interviews. Using an interview guide (see appendix 2), the relevance to the subject were maintained, but also allowed for some flexibility. Adapting the questions in relation to the respondent's answer by asking follow-up questions, skipping or adding some questions during the interview allowed for more deepened answers (Galletta, 2013; Lantz, 2013). The questions were open-ended and formulated in a way as to avoid them being leading. The interviews were conducted face-to-face or per telephone depending on the respondent's preference. Those conducted face-to-face took place at the respondent's workplace as requested by the respondent. The interviews varied between 31–56 minutes, were conducted in March–April 2019 and recorded and transcribed word for word. Since the respondents are Swedish, the interviews were conducted and transcribed in this language. The information letter, consent form, interview guide, and quotations in the results were then carefully translated to English by the author.

#### **3.2 Sample selection**

The thesis adopts a targeted sampling method which is aimed at finding relevant individuals (Bryman, 2011) and were chosen to create compliance between the research questions and the participants' characteristics. The key individuals were investigators currently working with CSAM. A snowball sampling was further the strategy used to acquire participants. A first interview was made through contacts within the police that gave contact information to group leaders in three other police regions who then directed me to relevant personnel. In total, seven individuals from NOA, RC3, police regions without any cybercrime groups, and ISÖB-groups from four police regions were recruited.

### **3.3 Methodological considerations**

When conducting qualitative studies, it is important to consider the role of the researcher and possible preconceptions (Kvale & Brinkmann, 2014). My pre-understandings of the subject were the knowledge gathered when previous research was studied. The researcher can also be seen as being in a superior power position since they control the questions and interpretation of the result (Karnieli-Miller, Strier & Pessach, 2009). Semi-structured interviews with open-ended questions were used to influence this power imbalance by giving the respondents the possibility to somewhat control the interviews through their answers. This power imbalance might also have been counterbalanced by the respondents being the experts in the situation.

Furthermore, face-to-face interviews have generally been regarded as superior to telephone interviews, where the main issues are considered to be the loss of contextual data, depth and visual cues (Novick, 2008), and is regarded as less suitable for sensitive questions (Groves, 1979). Despite this, the combination of interview methods is not perceived to have caused any negative impact on the result. Considering that the questions did not concern any sensitive personal matter to the respondents, the methods created the same nuances in the answers. There were further no differences identified in regard to the duration, content and depth between the methods.

The reliability refers to the trustworthiness of the study and the consistency. Considering that the result is dependent upon the character of the researcher in qualitative interviews, transparency concerning methodology and process of analysis is important (Leung, 2015) and is therefore included in this section.

Finally, the validity concerns the appropriateness of the methodology, data, and process in relation to the aim of the study (Leung, 2015). This could be affected by how the respondents perceived the questions and the subject. It is for example possible that the respondents were worried over how their answers might influence their work, resulting in them trying to convey a more favourable image of the police. To avoid these issues, the respondents were guaranteed anonymity and confidentiality. The validity further concerns the data analysis as discussed in the next section (*ibid.*).

### **3.4 Data analysis**

The transcripts were analysed using systematic text condensation with the purpose of identifying meanings, patterns and themes in the data (Braun & Clarke, 2006) and was conducted in accordance with the recommendations by Malterud (2012).

The interviews were transcribed and double-checked against the audio to ensure accuracy. They were then read several times in order to become familiarised with the data. Initial ideas were coded by extracting short segments of data, or meaning units, that were of interest. An initial five themes were identified in relation to the research questions that were then reconsidered and adjusted into three themes. The transcriptions were then systematically reviewed, and the meaning units were cut out from the printed transcripts and sorted into groups from the identified themes. Commonly identified subjects received a code or a descriptive label. Cutting out the meaning units and physically move them between different themes simplified the process of revising the codes. After the initial coding phase, the codes were sorted and combined into broader themes.

Some structures or levels of themes eventually started to emerge that were then refined and checked against the supporting data in order to make sure that they accurately captured the meaning units within them. The themes were matched against the entire data set to see if they reflected it as a whole in order to assure the validity. This resulted in some themes being discarded, others merged or divided into more themes, resulting in four final themes. Finally, the themes were refined and captured before being presented to the reader. By going over and sorting the meaning units in the themes, the “story” of each theme became apparent, making it possible to relate them to each other and capture the story of the entire data.

### 3.5 Ethical considerations

Some ethical principles need to be considered in all research, including informing the respondents about the aim of the study, that it is voluntary and that they can terminate their participation at any time. They further need to give their consent to participate, and the data need to be treated with confidentiality, meaning that anonymity should be guaranteed, and that the data should be stored so that unauthorized individuals cannot get access to it (Bryman, 2011; Kvale & Brinkmann, 2014). Finally, the data should only be used for the purpose of the study (ibid.). After taking part of the information letter, the respondents gave their written consent (see appendix 3 and 4). Confidentiality was achieved by the secure storage of recordings and transcriptions, and the use of codes instead of names from the beginning of the transcription process. However, it is also important to consider any potential harm that can come from the study (Kvale & Brinkmann, 2014). While providing reliable information on the procedure is essential, the thesis should not benefit offenders by indicating how they might alter their modus operandi to decrease the risk of detection. Some information concerning the identification of the offender, victim or geographical place have therefore purposefully been left out in the presentation of the results.

## 4. RESULTS

The systematic text condensation resulted in four main themes (see table 1).

Table 1. Themes and main results

Themes	Abstraction
1. Procedure	See <i>average investigative process</i> flow diagram (appendix 1)
2. Practical challenges	Legislation and lack of resources
3. Organisational improvements	The requirement of a holistic perspective and centralised competence
4. View of the crime	“ <i>[I]f you view every case as a potential case of assault with an actual physical plaintiff, then you would not be able to make it low-priority</i> ”

### 4.1 Procedure

According to the respondents, the material generally reaches the police in two ways. The police receive tips from the public, for example from companies, parents, or computer technicians. However, a majority of the material comes from

NCMEC where companies such as Google, Facebook and Instagram are required to report suspicious material in their systems. NCMEC trace the material and send the report to law enforcement in the country of origin. In Sweden, the report is sent to NOA who scans the material and forwards it to the police region where the suspect resides. The region then owns the case throughout the investigation. However, if several police regions are involved or if there is any international connection, NOA becomes the department responsible for the investigation.

The investigators in the regions are involved in different aspects of the investigation, including surveillance, the police raid, interrogation, examining the material and testifying in court. After digital devices have been seized by the police, digital forensic experts recover all the material. The material is then turned over to the responsible officer who examines and evaluates the nature of it before writing a review protocol including a description of the volume and nature of the material. The officer finally testifies in court where they demonstrate a representative collection of the material.

While investigators in the police regions conduct a majority of the investigative work, cases involving Swedish citizens who travels abroad and commit sexual abuse against children, and any crime preventive work is placed on NOA, including blocking webpages, cooperation with the financial sector, and the placement of faked files;

*[W]e create faked files that we place in P2P-networks that are named after famous, or similar names that paedophiles search for [...] but in those files are instead information regarding that it is illegal and that we have the means to track their IP-address.*

#### **4.1.1 Process of analysis**

When working with the material, the police use a screening software connected to different databases. Each identified material receives a hash value, a unique fingerprint that is uploaded into international and national databases. The screening software scans the hash values of the material against registered hash values in connected databases. If the material has already been identified, the police are notified and receive the information.

However, not all material is previously identified. When searching for self-produced material, the investigators use their own preferred scanning techniques, including scanning the file names, file sizes, camera model, and attached data such as GPS-information. If the officers believe that the suspect has produced the material, they further scan the suspect's phone and chat logs in order to identify contacts with potential victims.

## **4.2 Practical challenges**

Practical challenges related to the investigations can be divided into two groups: legislation and resources.

### **4.2.1 Legislation**

Identifying a suspect is complicated by the requirement of an IP-address. In order to attain an IP-address, the police are dependent on the ISPs. However, some ISPs are unwilling to share information regarding their customers. More importantly, the investigators express it troublesome that the Data Retention Directive have

been declared invalid, meaning that ISPs are no longer required to store citizens' telecommunication data. At the time the police contact the ISPs, the data is no longer in storage;

*Since the EU made the Data Retention Directive invalid some companies does not give us any information while some are still very cooperative. It differs between that we might not get any information, or that they save the IP-addresses for five days up to six months.*

Legislation further complicates investigations of cloud-based CSAM. While the respondents from the police regions express a lack of knowledge concerning cloud-based investigations, they explain that the Swedish police are not allowed to access any cloud-based storage on the suspect's devices without a warrant which is difficult to get due to the low penal value. The respondent from NOA further explains that accessing information about what material belongs to whom is difficult due to the anonymity, and that the General Data Protection Regulation (GDPR) complicates accessing information regarding who owns the domain that delivers the cloud service.

#### 4.2.2 Resources

However, the respondents stress that changing the legislation will not help without increased resources. The investigators are dependent upon the digital forensic experts to conduct an initial analysis and limitation of the material before it is forwarded to them. This is complicated by the fact that digital forensic experts within the police are few and prioritise other types of crimes regarded as more serious, causing long waiting times for investigators of CSAM. The amount of material is a further issue. Although the cooperation with NCMEC is described as valuable, some respondents express concern over the amount of reports received from NCMEC, last year they received 12.000 reports;

*[A]ccording to American law, these companies are obligated to report suspicious material to NCMEC [...] So they send out tons of reports and not only about child pornography.*

Examining all the data is a time-consuming task that impacts the classification and identification process. Classifying the material's nature and the age of the child is already complicated by that some material is blurred or in low resolution. Investigators also need to consider that they have to testify in court and present material that they have classified as CSAM. The amount of data might therefore cause borderline material to be discarded;

*[W]ith the amount of material that you have, say that you have three seconds on each image. If you have looked at it for three seconds and you are still unsure, throw that image away.*

While all respondents express a wish to spend more time identifying the children, the amount of data and lack of time make it impossible to study each material in detail to identify the child. Any attempt at identification is only made when something in the material stands out.

Moreover, the respondents experience that P2P and the darknet are the most common distribution methods among serious offenders but that there has been an

increase in social media, self-produced material and live-streaming. In the latter an individual purchase the act of an abuse from someone in another country who live-stream themselves sexually abusing a child, allowing individuals watching to direct the abuse by sending text comments. Although the respondents experience that P2P and the darknet are most common, the majority of the material comes from NCMEC and social media. While the investigators in the police regions express a wish to work more preventively with these distribution methods, NOA is the only department that have the hardware required to conduct surveillance on P2P. The main obstacles on NOA is expressed to be the Data Retention Directive, and personnel resources.

### **4.3 Organisational improvements**

Changes to the organisation of the police can also contribute to increased efficiency. Such improvements can be divided into two themes: database and a holistic process.

#### **4.3.1 Database**

Newly identified material should always be shared with the national database at NOA. However, the procedure is complicated, sometimes resulting in material being stored in local databases up to six months before being shared;

*The material is sent manually to NOA and manually out to the regions [...] but the police is not that technically developed yet. And that has a lot to do with security. We cannot use the Internet in the normal way, we need to build the network ourselves.*

However, the police are currently developing a network that will interconnect the police regions, allowing for direct access to the national database. According to the respondents, this is a necessary change since it will decrease the risk of double work, but the process is slow.

#### **4.3.2 A holistic process**

Only a few regions have created their RC3s. Other regions still place the crime under departments that lack knowledge regarding CSAM and the procedure of investigation. The respondents express concern over some regions dividing the examination of the material and investigative work between different personnel. This is considered an issue since it results in a loss of the holistic perspective needed and the possibility to see patterns between different criminal cases. This is further mentioned in relation to the identification process that requires a centralised competence;

*You have to see patterns when you work with it and that is why it is important to not only work with child pornography but with all sex crimes against children. We might be able to see [...] "I remember a chat I read last week where he talked about a girl that had a tattoo like that one or a ring like that one in that image". [...] You cannot just give me an unknown child and nothing else and expect me to be able to identify her. It is a question of building this puzzle.*

Having all sexual crimes against children, such as grooming or other types of sexual abuse, placed on the same group of investigators can therefore increase the

efficiency when conducting investigations of CSAM and is considered an important starting point for future investigations.

However, there are still differences between regions that have gone through the changes. The different RC3s will support the regions in relation to all computer related crimes, including Internet related sexual abuse of children (ISÖB-crimes). Some RC3s also have a specific ISÖB-group only working with those type of crimes. While the repositioning of the crime and the creation of RC3s is made in an attempt to improve the investigation of different cybercrimes, the organisational structure of the police regions and their responsibility can be an obstacle;

*The guidelines are not rules because each region is self-governing, but the guidelines from NOA on how sexual crimes against children should be investigated, maintain that it should be one group that work with the entire package, meaning all sexual crimes committed against children on the Internet, including child pornography [...] and that is the model that we have followed but I know that it looks very different in other regions.*

Although the respondents are positive towards the changes, they express that the instructions from NOA should be regarded as requisites instead of recommendations. They would also prefer clearer guidelines regarding the procedure of the investigations, what is expected from each police region and what education should be required.

Moreover, even though the police are reorganising, the respondents have to adapt to an undeveloped judicial system. While the nature, distribution methods and amount of CSAM have changed dramatically over the last decades, the Swedish courts still refer to sentences from the early 1990s when determining the penalty, creating an incongruency between the current nature of the crime and the penal value.

#### **4.4 View of the crime**

This is closely linked to the view of the crime, which underpins most of the issues related to the investigations.

##### **4.4.1 Priority**

The respondents do not consider CSAM a prioritised area in the police. That the crime is placed under ‘crimes against public order’ in the penal code is considered to affect the perceived seriousness and importance of the crime. The lack of plaintiffs is further described as the reason for its low penal value and as a cause of concern;

*The sanction is so low [...] you view it as an act of criminal possession and not a crime of assault. [...] But if you view every case as a potential case of assault with an actual physical plaintiff, then you would not be able to make it low-priority.*

*It causes the preliminary investigator to think “a crime against the public order, no plaintiff, it can wait”.*

That it is viewed as a crime of possession and that the gravity of the crime is determined by the amount of material and not the nature of it, further impacts the planning of the investigations. Therefore, sifting through the copious amount of material becomes the main task. A majority of the investigators and digital forensic experts also work with other types of sex crimes against children that might include a physical plaintiff, meaning that those crimes are prioritised. This is also stated as a reason for why some police regions still fail to investigate CSAM.

Many of the respondents are hopeful that the re-organisation will help but also stress that it is unlikely to be enough since an increase in resources is dependent upon a change of perspective.

#### 4.4.2 A social issue

The problem of CSAM thus need to be considered on a societal level. Research concerning paedophiles were described as necessary and a concern for the taboo surrounding paedophilia were expressed;

*we do not have any treatment for them. It is really common that they say to us that "I do not want to, I am glad that you came, I cannot stop. I mean I cannot go to the health centre and say 'Hi, I am a paedophile'. No, neither would I.*

Education of the public and government were considered an important factor for the prevention of CSAM, where a lack of knowledge concerning the fact that it is often sadistic rapes of children or infants, were believed to exist.

This lack of knowledge concerning the serious nature of the material and that distribution of it is illegal, was also emphasised as contributing causes to the extent of the issue. Although some respondents stress that there is a consensus regarding the denouncement of the crime, they also experience an increase in cases from NCMEC where CSAM is distributed on social media as a warning for paedophiles or as joke between youths. The material is shared without consideration for the meaning of the content, resulting in an increase of cases without premeditation, which takes away resources from the identification process. The respondents would therefore like to see more education for children to teach them what can be found on the Internet and how they should act.

## 5. DISCUSSION

The study aimed to examine how Swedish police work with investigations of CSAM and what potential issues they experience. The result revealed that investigations of CSAM are still a relatively underdeveloped area within the Swedish police. While some police regions have developed a well-structured procedure, others are lacking resources and the knowledge to investigate it. However, the creation of RC3s is an attempt to minimise those differences.

The results further indicate that the Swedish police face challenges in accordance with previous research, but that there are specific challenges related to the organisational structure of the police. There are four major problems. Firstly, and

in accordance with problems related to the police in the Netherlands (Stol, 2002), England and Wales (Jewkes & Andrews, 2005), the Swedish police lack sufficient access to technological expertise. More digital forensic experts, or more technical knowledge among investigators in general, is needed, as well as better hardware and more experience with surveillance.

Secondly, a more holistic perspective in the organisational structure that allows the investigators to see patterns between different types of sexual crimes against children is necessary. As such, the guidelines regarding the establishment of an ISÖB-group in each region needs to be regarded as requirements. Moreover, the result indicate that the investigators proceed with caution with borderline images. While this corresponds with Kloess et al. (2019) and Wells et al. (2007), they found that that problems with identifying the age of the child and the nature of the material without any further information were the reason for discarding borderline material (ibid.). While the result of this study emphasises the testimony in court and the lack of time as the main reason, the result does indicate that surrounding information is necessary when examining the material.

However, and thirdly, it is not enough to change the structure of the police. Throughout the interviews, the overarching and recurrent theme is the view of the crime and that CSAM should be considered a social issue. A main issue is the low priority of the crime. The result indicates that the lack of a physical plaintiff, placement in the penal code and the low penal value are connected to an underlying lack of understanding regarding the nature of the crime throughout the judicial system. Furthermore, a system where the penal value impacts the priorities within the police and what crimes resources are spent on, need to be updated. Studies indicate that the amount of the material is increasing (McManus & Almond, 2014; Kloess et al., 2014; Wolak et al., 2011). The result of this study also demonstrates a change in distribution methods and that the sexual abuse has become more serious. Considering that the nature of the crime is rapidly changing, it could be questionable to base the judicial system and penal value on research and sentences that are outdated.

All the respondents stressed that they wanted to spend more time identifying the children in the material. However, the result showed that the view of the crime as a crime of possession contribute to the examination of the material taking up more time than the identification process. As such, the current system could be accused of finding convictions for possession and distribution more important than helping the children.

Moreover, the result indicated that there is a lack of knowledge among the public concerning CSAM and the fact that it is illegal to distribute it. This might be explained by the discomfort the subject raise, ultimately creating an unwillingness to learn more. However, CSAM need to be considered a social issue in order to increase the understanding, and education of both children and parents is crucial. Finally, the taboo surrounding discussions of paedophilia and potential treatments are not helping the children exposed to the sexual abuse.

Fourthly, the legislation causes issues in relation to retrieving information from ISPs and CSPs and identifying suspects. The result showed that ISPs in Sweden no longer are required to save IP-addresses. Even if the ISPs save the data for a limited amount of time and are willing to cooperate, too much time have usually

elapsed before the police contact them. While the fact that the collaboration is voluntary is an issue related to the legislation, it also highlights what Jewkes and Yar (2008) stressed, namely that the law enforcement is unable to combat CSAM on their own. It could be argued that the ISPs need to consider their responsibility in monitoring the service that they provide, and that it therefore also can be related to the view of the problem as a social issue.

The result further reflects research regarding distribution methods that have identified P2P as the most common method (Eggestein & Knapp, 2014; Eneman, 2006; NetClean, 2016), that there is an increase in the use of social media (Eggestein & Knapp, 2014) and live-streaming, but that little is known about the extent and use of the darknet and cloud services (NetClean, 2016). Some issues in relation to investigations of cloud computing concern the dependence upon CSPs and legislation (Eggestein & Knapp, 2014). The respondents emphasised identical problems while expressing concern over issues in relation to online international search of premises, and legislation regarding users' confidentiality.

During the interviews it was evident that NOA has more knowledge concerning the different distribution methods and better qualifications to work with them than the police regions. While this is in accordance with the expert function of NOA, the lack of education and resources expressed by the respondents indicate that the knowledge might not always reach the regions. Considering the organisation of the police, it is not illogical that resources are not spent on distributing knowledge to the police regions that they might not have use for. However, the system where all the preventive work is conducted by NOA might result in material from particular distribution methods being overlooked, specifically P2P and darknet where the more serious offenders can be found. The preventive function might therefore need to be expanded, either by increasing NOAs resources or by distributing some of it to the RC3s.

Although previous research indicates that problems in relation to international cooperation and legislation is a common feature in investigations of CSAM (Eneman, 2005; Jewkes & Andrews, 2005; Stol, 2002), none of the respondents mentioned this as an issue, including the one respondent from NOA. However, as evident through the interviews, NOA is solely responsible for all international contacts and in order to answer any questions in relation to cross-border investigations, more respondents from NOA would be necessary.

## **5.1 Limitations**

The sample of the study was small, and some police regions were not represented, which complicates the generalizability to all police regions. More importantly, the snowball sampling method might have caused a skewed result. There is a risk that respondents have directed me to other investigators well-versed in the subject and who the respondents believed to have extensive knowledge of interest to the study, ultimately excluding investigators from regions where CSAM is still an unprioritized crime. As such, a participation or non-response bias might be present, resulting in an overestimation of the efficiency in the investigations. Although this might be the case, respondents from all the different stages of organisational development were included, meaning NOA, RC3, ISÖB-groups and the police regions. Many of them had further worked with investigations of CSAM before the development of the RC3s, and therefore had some experience and knowledge of the issues in less developed regions. Additionally, in their

study, Kloess et al. (2019) found that the sensitive nature of the subject complicated the access to respondents who had the acquired competence and who were willing to participate. This was only partly the case in this study. While the number of law enforcement personnel working with these types of investigations in Sweden is low, affecting the number of available respondents, the majority of individuals contacted were positive towards the aim of the study and were willing to participate considering the need for more research regarding the subject.

The result supports previous research claiming that the lack of time is one of the biggest issues in relation to the extent of the data and that it is constantly growing (Quick & Choo, 2014). Furthermore, there was an absence of results concerning technical issues in the investigations relating to different distribution methods. This could be considered a result in itself that indicates that there is a need for more technical knowledge among the average investigator, or a better cooperation with the digital forensic experts on an organisational level. However, in order to answer questions regarding the increased efficiency of the extraction process, and to adequately answer questions related to technical issues, interviews with digital forensic experts would have been necessary.

## **5.2 Future directions**

The Swedish police now need to focus on developing ISÖB-groups in each region. It is also important to develop a victimological perspective, and to give the children exposed to the sexual abuse a voice.

Future research would benefit from including more participants from NOA and police regions where it is still a crime of low priority. It would further be beneficial to interview digital forensic experts in order to identify issues from their perspective and compare their knowledge of CSAM with other investigators'.

Moreover, interdisciplinary research is needed, combining both law and criminology in order to understand how to combat online CSAM and how to improve national and international cooperation. It is crucial to address the taboo surrounding paedophilia and to discuss potential treatments for offenders in order to help both them and future victims. Furthermore, the result indicates that offenders may commit a variety of sexual crimes against children. Research concerning patterns between different types of crimes committed by offenders may contribute to recognising the need for a holistic approach.

## **6. CONCLUSION**

This study investigated the procedure of and challenges in relation to Swedish investigations of CSAM. The result indicates that the Swedish police need better access to technological expertise, that the low priority of the crime is due to its low penal value and the lack of a legal plaintiff, that legislation concerning the cooperation with ISPs and CSPs need to be improved, and that more public awareness regarding paedophilia and the nature and extent of the material is needed. However, an initiative to establish specific centres and groups dealing with CSAM and other cybercrimes have been launched.

Considering the borderless nature of the crime, it is also important to increase the knowledge regarding how different law enforcement work with this issue in order to improve the cooperation between countries. It is further important to understand the factors that impact the priority within the police organisation and that combatting online CSAM is not only the responsibility of the law enforcement agencies. The problem needs to be regarded as a social issue and receive more attention from the public and governmental officials in order for it to become more prioritised. As such, academics have a great responsibility to conduct more research concerning the issue of CSAM in order to ultimately help the children exposed to the sexual abuse. Resource allocation priorities by decision makers and law enforcement agencies is further needed.

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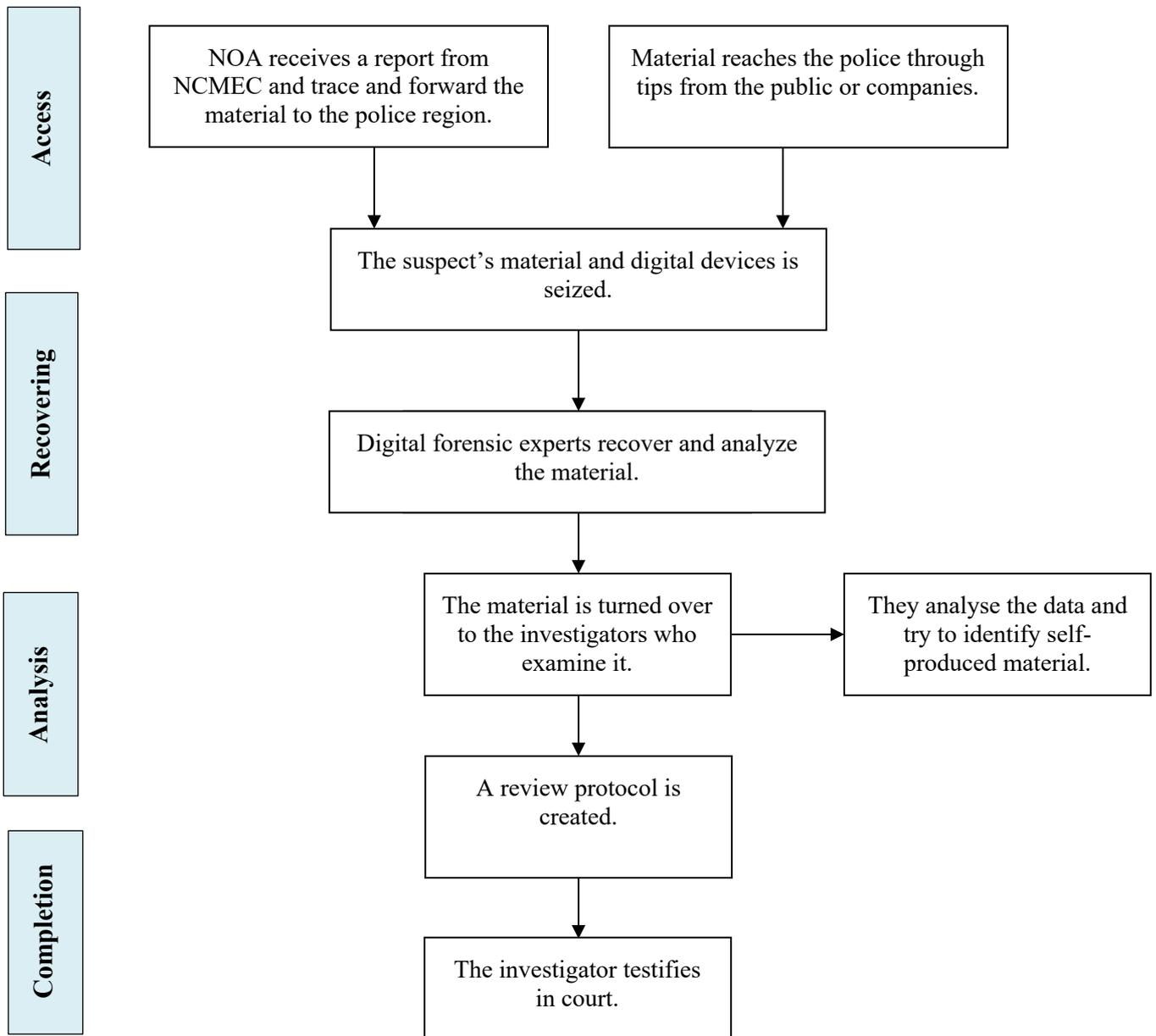
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# APPENDIX I

## Average investigative process-flow diagram



## **APPENDIX II**

### **General interview guide**

1. Could you start by describing your role in investigations of online child sexual abuse material?
2. How long have you been working with it?
3. How did you begin to work with it?
4. What type of education is required for Swedish police officers in order to work with these types of investigations?
5. Has the work procedure changed during the last years?
6. What aspects of the investigations do you spend the most time on?
7. What distribution methods do you experience is the most common?
8. How do you work with the different methods?
  - a. Is there one that you more with? Why?
9. Do you experience that the distribution methods have changed?
  - a. What do you think that depends on?
10. How do you cooperate internationally?
11. What do you experience are the biggest challenges or obstacles with investigations of child sexual abuse material on the Internet?
12. Are there different challenges in relation to:
  - a. Different distribution methods?
  - b. The police organisation?
  - c. The legislation?
  - d. International cooperation?
  - e. Anything else?
13. What do you think could contribute to hinder the distribution and downloading of this type of material?
  - a. Are there any resources that need to be developed or that you consider lack completely that would be beneficial?
14. What do you think needs to be done in order to improve the investigations of online child sexual abuse material or to make them more effective?
15. Is there anything else you would like to add?

### **Interview guide: police regions**

1. Are there any units that work specifically with online child sexual abuse material?
2. Do you work in different ways in different regions?
  - a. Are there any national guidelines for the procedure?
3. How do you work in your region?
4. How do you cooperate with:
  - a. Other regions?
  - b. NOA?
5. Who has the general responsibility?
6. How do you normally get in contact with child sexual abuse material?
  - a. How do you cooperate with ISPs?
7. How do chose what material to focus on?
  - a. Are there any software that can help you with that?
8. How do you proceed when you have got in contact with new material?
9. What happens to new material?
  - a. Is it always shared with the national database?
  - b. Are there any local or regional databases?

10. How do you work to identify the victims in the material?
11. How do you work to identify the suspects in the material?
12. What resources do you have access to?
  - a. Is there any collective expertise to access?
  - b. If you need technological assistance in an investigation, can you receive it? How?
  - c. Do you receive continuous education? By whom?

**Interview guide: NOA**

1. What is NOAs role in investigations of online child sexual abuse material?
  - d. Who has the general responsibility?
2. How do you collaborate with the police regions?
3. How do you assist them?
4. How do you work with the identification process?
  - a. Is there a database to access in order to be able to identify children?
  - b. Is there a database to access in order to see if the material is part of another investigation?
  - c. If no, is it something that you think should exist?

## APPENDIX III

<b>Information</b>	
<b>Project title:</b> Combating online child sexual abuse material: An explorative study of Swedish police investigations	<b>Date:</b> 250219
<b>Study manager:</b>  Cecilia Johansson  <b>Your e-mail</b>  cecilia_johansson@outlook.com	<b>Studying at Malmö University, Faculty of Health and Society, S-205 06 Malmö, Phone +46 40 665 70 00</b>  <b>Education:</b> Master programme in Criminology  <b>Level:</b> Advanced

My name is Cecilia Johansson and I have a bachelor's degree in psychology. I'm studying criminology at advanced level and I'm now conducting a study as a part of my education at Malmö University.

The purpose with the study is to interview law enforcement personnel that work with online child sexual abuse material in order to get a picture of their work, and what potential problems that might occur in investigations of this type of material.

Since the nature of the crime transcends geographical borders, cooperation between law enforcements becomes important. Knowledge about other countries jurisdictions and procedures is therefore needed. However, even though there is a general consensus of the seriousness of the crime, few studies concern the investigations in different countries. With this study, I therefore want to expand on and update the knowledge within a Swedish context.

The thesis will be based on literature and interview data. I aim to interview 3-5 individuals that work with child sexual abuse material through contacts within the police force. The interview will take approximately 45-60 minutes. It is important that the interview can take place in an uninterrupted environment, at a time and place by your choosing. The interview will, with your permission, be recorded and transferred to text.

Your participation in the study is completely voluntary. You can stop participating at any time without any explanation.

I strive to guarantee confidentiality in the study in that no unauthorised person may have access to the material. The material is stored so that only I who write the thesis has access to it. In the reporting of the results in the form of a degree project paper at Malmö University, the respondents will be unidentifiable, and it will not be possible to link the results to any specific individual. The majority of the results will be reported at a group level. The thesis will be uploaded to a database at Malmö University. All the material from the interviews will be destroyed after the thesis have been approved and you will have the opportunity to receive a copy of the thesis when it is done.

**Hereby, are you willing to participate in this study?**

If you have any questions or need further information, please feel free to contact me

*Cecilia Johansson*  
cecilia\_johansson@outlook.com  
073-0246149

## APPENDIX IV

### Informed consent

<b>Project title:</b> Combating online child sexual abuse material: An explorative study of Swedish police investigations	<b>Datum:</b> 250219
<b>Study manager:</b> Cecilia Johansson  <b>Your E-mail</b> cecilia_johansson@outlook.com	<b>Studying at Malmö University, Faculty of Health and Society, S-205 06 Malmö Phone +46 40 665 70 00</b>  <b>Education:</b> Master programme in Criminology <b>Level:</b> Advanced
<b>I have been verbally informed about the study and read the accompanying written information. I am aware that my participation is voluntary and that I, at any time and without explanation, can withdraw my participation.</b>	
<b>I hereby submit my consent to participate in the above survey:</b>	
<b>Date:</b> .....	
<b>Participant's signature:</b> .....	