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Forensic psychiatric examinations of cyber criminals in Finland: court cases from the years 2015 to 2019

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Abstract

Cybercrime has become a regular phenomenon in society. This article explores cybercrime court cases from Finland between 2015 to 2019 and has any forensic psychiatric examinations made on persons who have been convicted of cybercrime. Research data was analysed with interpretative research methodology. The study has four research questions: (RQ1) How many forensic psychiatric examinations have been conducted on cybercriminals in Finland between 2015 to 2019? (RQ2) What information about the forensic psychiatric examinations has been filed in the conviction? (RQ3) How has the cybercriminal's conviction been affected by the conducted forensic psychiatric examinations? (RQ4) Have any persons who were considered acting without sanity been sent for involuntary psychiatric treatment between 2015 to 2019? From the court documents of N=364, only 4 cases identified the mental health of the individuals was assessed, who had been convicted of cybercrime. They are all males. The forensic psychiatric examination or information relating to the mental health of the defendants in court documents lowered the sentences of the individual. There were no persons who would be declared to be criminally insane (no criminal capacity). One individual was declared by the court to be in a condition of diminished criminal capacity during the act of cybercrime. The criminal justice system and the healthcare system should prepare that forensic psychiatric examinations relating to offenders of cybercrime might increase in future because cybercrime is becoming a regular crime trend. The novelty is discussed and the study expanded understanding of the phenomena of characteristics of cybercriminals.

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1. Introduction

Cybercrime has become a social phenomenon and a problem [1], [2], [3], [4], [5]. Some people have made a lifestyle change to commit crimes in the cyber world [6]. In the past, mental health studies have been conducted on traditional criminals [7]. Historically, forensic psychiatric examinations have been conducted for violent offending [8] and in 2007 there were around less than 200 forensic psychiatric examinations [9]. In Finland, the first forensic psychiatric examinations were conducted by prison medical doctors in the 1830s [10]. Society has changed, and cybercrime has become part of everyday life. It cannot be ignored that the phenomenon of cybercrime and the phenomenon of mental health issues have some sort of connection with each other. We know that cyberbullying affects the mental health of victims for example cyberbullying has an association between moderate depression to severe depression for victims of cyberbullying [11]. Some studies have reported that psychiatrists should be aware of cybercrime potential aftermath of cybercrime on the mental health of perpetrators [12]. How about the perpetrators of cybercrime, and what issues they might have during the action of cybercrime. This raises the question: can a person of diminished criminal capacity or a person with a condition of criminally insane (no criminal capacity) commit cybercrime? The research on this topic is timely because cybercrime is shaping society and placing demands on the healthcare system to deal with people who may become criminal patients for treatment by the healthcare system.

Four research questions have been created and will be answered in this study: (first research question) Based on the conviction data from the Judicial Records Centre, how many forensic psychiatric examinations have been conducted on cybercriminals in Finland between 2015 and 2019 (second research question) What information about the forensic psychiatric examinations has been filed in the conviction? (third research question) How has the cybercriminal's conviction been affected by the conducted forensic psychiatric examination? (fourth research question) Have any persons who were considered acting without sanity been sent for involuntary psychiatric treatment between 2015 and 2019?

2. Literature review

The study uses a narrative literature review [13]. The narrative literature review aims to select the literature that can explain cyber criminals' mental state research, how mental state research influences cyber criminals' sentences, what constitutes a cybercrime, and how cyber criminology needs support from other disciplines to progress. The narrative literature review approach is discursive [14, p. 7]. Cybercrime can be defined as "the destruction, theft or unauthorised or illegal use, modification or copying of information, software, services, equipment or communications network". [15]. It can be synthesised that cybercrime is the use of technology to commit a crime [16, p. 459].

2.1. Definition of cybercrime

Cybercrimes can be classified according to their modus operandi into different categories of cyberattacks, such as unauthorised intrusions, online fraud, online theft, online pornography and online violence. [17]. Wall has proposed a classification of cybercrime based on three categories of offenders [5]. The first two offender groups relate to pre-cybercrime, where offenders use cyberspace to enhance their activities, for example by using different applications to transmit criminal activities or by exploiting new global opportunities, for example in financial fraud or scams [18]. A third group of offenders are the new generation of criminals who commit real cybercrimes that can only be committed online, such as online theft of intangible property, spam, hacking and malware, which are purely technology-dependent and could not otherwise be committed [18].

Broadly speaking, the term cybercrime covers a wide range of crimes, most of which have existed long before the term cyber was used in the context of crime [19]. Cybercrime can be characterized as an umbrella term used by

criminologists to refer to traditional crimes that are intensified by the online technology of digitalization [20] and these can be defined as computer-assisted cybercrimes [21]. The earliest cybercrimes targeted telecommunication and electronic accounting systems and were usually motivated by curiosity or the challenge to bypass security protocols [22], [23]. Cybercrime can be categorised as computer-assisted cybercrime or a crime that targets only the computer [21] or a combination of both, where a cybercriminal commits a computer-assisted crime and a cybercrime against a computer. Cybercrime has evolved with people [16, p. 459. Before cybercrime became a phenomenon, the nature of crime was different in Western countries, and since the 1990s, crime has declined in all Western countries [24] and cybercrime has been put forward as a reason for the decline in crime [25], although this hypothesis for crime reduction has been rejected by some researchers [26], that the decrease in crime is explained by an increase in cybercrime [26].

It is difficult to estimate the amount of cybercrime in the absence of proper statistics and internationally harmonised legal definitions. [27]. The challenge in measuring crime is always whether overall crime statistics can be used [28, p. 79], when not all cybercrimes are reported to the police [29]. The same challenge applies to Finland, as the overall picture of cybercrime brought to the attention of the authorities cannot be obtained by focusing only on suspected or convicted offences under Chapter 38 of the Criminal Code, as cybercrime may also be present in many other traditional forms of crime [30].

2.2. Cyber criminology cannot survive without the support of other disciplines

This article discusses about cybercrime and the mental health of cybercriminals. To get the best understanding cybercrime cannot be understood without the help of other disciplines [31, p. 860]. For example, Russia has recognised that cybercrime is a local and global issue and there is a need to conduct for example comparative criminology research [32]. Russian researchers say that the pure legal approach, which has been done in Russia on cybercrime studies no longer fits to sociological-criminological approach [32]. Cybercrime appears to face similar challenges to biology, as biology uses taxonomies to model complex living worlds and organic things [33], and without taxonomies, there is no language to describe objects of study [33]. Language by itself and without a defined context does not provide information because abstract goals must be tied to something. Mathematics is also a language [34] and therefore by itself would not give an answer to variables that have not been found, and because it is a language, it has human reasoning behind it [35].

For example, taxonomies are needed in science in order to do naming and classification, for example in the biodiversity system, and to develop new knowledge from previous knowledge [36]. Nomenclature and taxonomy overlap and have common elements that tie them together [36]. Thus, the development of taxonomies requires prior knowledge before more advanced taxonomies can be developed [37]. In order to understand cybercriminals and their state of mind at the time of committing a crime, scientific interfaces are needed to collaborate to create a theory-developing model of who commits cybercrimes, e.g., while under the diminished criminal capacity, and what kind of help they need from the health care system.

2.3. Neurological abnormalities and mental status examinations of cyber criminals

Very few studies are found in the Scopus database when searching for studies on the mental state of cybercriminals, but there are plenty of studies on mental health problems. In 2001, the World Health Organisation estimated that 450 million people suffer from mental health problems [38]. The number of mental health problems is estimated to rise by around 15% by 2020 [39]. People with neurological abnormalities such as ADHD and Asperger's syndrome are themselves victims of cyberbullying [40]. People with mental health problems or neurological abnormalities create vulnerabilities to becoming victims in the cyber world or vulnerabilities to participating in cybercrime [41]. Mental health problems have been estimated to increase the risk of becoming a victim of cybercrime [42]. Being a victim of cybercrime itself increases the risk of developing a range of mental health problems [43]. Media stereotypes that all cybercriminals are technically very skilled [44].

In the UK, the National Crime Agency has found a correlative link between autistic traits and certain types of cybercrime. [45]. There is evidence that autistic traits are associated with cybercrime, but not so much with autism itself [46]. Recent research is consistent with this claim, finding a link between autistic traits and cybercrime, but not just between autism and cybercrime [46]. It is a common belief that cybercriminals are socially awkward individuals, and they would have some sort of neurological differences [47]. There are some number of individuals who commit cybercrime crimes, and they have autistic traits [48], it is not well established that cybercrime and autistic traits would

have causality because small number of cases where autism is recognised even though the police forces report autistic traits among the cybercriminals [49]. However, autism alone does not explain the entire phenomenon of cybercrime, as the evidence is limited and anecdotal [50].

In cases of cyberbullying, a mental health investigation may be an option [51]. The assessment of culpability and mental state combines a legal perspective with a medical perspective [52], although the assessment of insanity is more of a legal concept, to which medicine provides its expert assessment [53], [54] The assessment of insanity and mental status needs to combine the knowledge of law and other necessary sciences [55]. The assessment of culpability and state of mind allows for an assessment of unknown causes that influenced the defendant's actions, where a possible mental illness may have influenced the defendant's actions at the time of the offence [55]. Conducting a mental state assessment is challenging because the forensic scientist must attempt to retrospectively reconstruct the individual's mental health at the time of the act [56] no single method of investigation is sufficient to establish an accurate finding of innocence, e.g. by using imaging alone without understanding its limitations [56].

150 years have seen changes in understanding and knowledge, but not so much in self-determination, right versus wrong and criminal liability [53]. The alternative view that human behaviour is the result of biological factors as well as influences from the social environment has not gained support in the criminal justice system [53], because it threatens the idea of free choice and the deeply rooted idea in society that people should not blame others for their own criminal choices [53]. The blame-free defence has a long history and has evolved over time [53]. Based on current understanding, the assessment of insanity should also take into account the criminal patient's control deficits [53]. Due to advances in neuroscience, the assessment of insanity needs to be improved, and the idea of voluntary behaviour should begin to be abandoned [53]. Criminally insane means a condition where an individual has a mental illness or disease which makes it impossible for an individual to know what actions of the individual are wrong or criminal [57]. "*The legal doctrine of criminal insanity concerns a criminal defendant's lack of capacity for responsible action and provides an excuse from responsibility and punishment in most countries*" [58].

3. Research method

The study uses the qualitative research method, which involves interpreting empirical data [59]. This interpretation is done through content analysis, which involves reading through the data and extracting information relevant to the research questions [60]. Then critical interpretation is made from the coded data [61]. The dataset for the research is court data (N=364) from Finland. The datasets are from 2015 to 2019. The research data is coded with NVIVO software. The coding is conducted from the court documents by selecting sentences which relate to research questions. The court documents were systematically read. When sentences which are relating to research questions is discovered, will be then coded with NVIVO. The coded cases were separated into subcategories by case 1, case 2 etc. The coded cases include information on the mental state examination, information of punishment and how much the mental state examination has affected the conviction. Moreover, one category was made "Mental state examination performed" which included sentences from all court documents of information on conducted forensic psychiatric examinations. The interpretations are made from sentences in those categories, and the interpretations are presented in the results section.

3.1. Coding frame and reasoning process for the interpretation

The coding process was conducted by doing a content analysis to the text [60]. The coding frame was done by inductive coding, and interpretation was mainly conducted in an inductive way from the coded text. All four cases were coded with an inductive approach. The coding process was inspired by the grounding theory methodology, which uses inductive analysis as a technique [62]. On the early stage of the research, I did have a view that the courts of Finland document similar information relating to forensic psychiatric examinations. During the coding process, it became clear that mental health information is not reported standardised. The information can be reported inside an explanation where the severity of the sentence is mentioned or there is exact information of the forensic psychiatric examination or a statement from a psychologist. This just confirms that my background information was biased and during the coding process, the facts were revealed from the research data. I did not have an exact theory behind the coding process, because there seems to be a minimal amount of international

research relating to the mental health of cybercriminals. Without proper theory, I decided to use an inductive coding framework.

4. Results and analysis

Next, we look at cases in which the defendant's state of health has been assessed by the judgment. The answer to the first research question is that there were 4 cases where there was some kind of mental health assessment made to the individuals who committed a cybercrime. The coding framework for cases one, two, three and four was inductive.

The answer to the second research question is that, in one of the cases, the judgment clearly stated that a forensic psychiatric examination was required (the case four). In case one, there were no forensic psychiatric examinations, but the judgment mentions a psychologist's report describing the defendant's state of health. The court judge had, on balance, decided to impose a fine on the offender, even though the offences would have warranted a suspended prison sentence. In this case, the defendant committed his offence using a computer device and the defendant used an existing program to commit a cybercrime (Table 1).

However, in the case of the defendant of case two, the factors set out in the statement of the Finnish Institute for Health and Welfare (THL) on his state of health must be taken into account in the assessment of the sentence. The defendant is a young person and was diagnosed with a neurodevelopmental disorder. This neurodevelopmental disorder potentially impaired his ability to regulate his behaviour and to understand the actual nature of his acts. His state of health must therefore be taken into account as a mitigating circumstance. The length of the trial also played a role in the case. The defendant was fined in the case. In this case, the defendant committed his offence against a computer device and the defendant used an existing program to commit a cybercrime (Table 1).

In case three, the defendant had a juvenile sanction report, which revealed information about the defendant's medical condition. His health issues affected his ability to regulate his own behaviour and to perceive the intentionality of the criminal act. This was a factor in reducing the sentence of the defendant. In this case, the defendant committed his offence by targeting and exploiting a computer device and the defendant used an existing program to commit a cybercrime and wrote malicious computer code himself (Table 1).

In case four, the defendant had made unwarranted emergency calls and had been subjected to a forensic psychiatric examination to which the prosecutor referred. The defendant had previously committed similar acts. He was found guilty by the court and because a person had the condition of diminished criminal capacity the sentence changed. In the court document, there was a clear statement that the person had acted under diminished criminal capacity. The person was given an unconditional prison sentence. The person used technology to interfere with the operation of a computer system. The case went to the Helsinki Court of Appeal and his sentence was reduced to 6 months because he was serving a second prison sentence (Table 1).

Table 1. The cybercrimes cases between 2015 to 2019 where mental assessment was made.

The case of	The judgment was handed down by	Age at the time of conviction	Gender	Number of victims	Offence years	Proposed sentence in court documents
1	Lapland District Court	41	male	1	2016	Suspended prison sentence
2	Southwest Finland District Court and Court of Appeal	22	male	6	2016,2017	Suspended prison sentence
3	Espoo District Court	17	male	50704	2012,2013	Mandatory sentence in prison
4	Hyvinkää District Court and Helsinki Court of Appeal	67	male	1	2018	8 months mandatory imprisonment

The answer to the third research question is that the mental state of the offenders was examined in 4 cases from the whole dataset (N=364), which was systematically reviewed (Table 1). In the case one, the mental status examination was not mentioned in the judgment, but the judgment mentioned information from a psychologist's report on the defendant's state of health (Table 2). In the case two, there was a reference to a THL statement concerning the defendant, which mentioned an illness that affected the defendant's ability to regulate his actions and to understand the consequences of his actions, but the defendant was not convicted as being of diminished responsibility, but the illness was considered as a reason for reducing the sentence. In the case three, a juvenile sanction report had been completed which raised the issue of the defendant's health. According to the report, the defendant had health issues that affected his ability to regulate and understand the consequences of his actions. However, the defendant in Case 3

received a suspended sentence of 2 years imprisonment. In the case four, the defendant was subjected to a mental status examination and was sentenced to imprisonment on a lesser charge (Table 2). In the case 4 there was a clear statement that the defendant was convicted with diminished criminal capacity during act.

Table 2. Summary of the mental health information in the cases and the given sentence.

The case of	Information on mental health in the court document and how mental health was examined	Actual given sentence
1	Psychologist's opinion on your state of health at the time of the act	Suspended sentence was proposed, but a fine was imposed. 60 days fine
2	THL's statement on the health status of a person with a disease that may impair his or her ability to regulate his or her activities	90 days fine
3	Health-related factors which, in addition to his age, have to some extent affected his ability to regulate his behaviour and to perceive the harmfulness of the offences, which must be taken into account as a mitigating factor in his guilt (no mental health examination was carried out and the person was not even considered to be of diminished capacity, but this was a mitigating factor).	2 years suspended prison sentence with 1 year and 3-month monitoring sentence
4	A forensic psychiatric examination was carried out.	6 months mandatory imprisonment

The answer to the fourth research question is that none of the 4 cybercriminals were sent for involuntary psychiatric treatment (Table 2). There was no female cybercriminal who would have gone through a forensic psychiatric examination. The mental health information and in case four conducted the forensic psychiatric examination only affected by lowering sentence of all four cybercriminals. It seems to be a myth between 2015 to 2019 that there were persons with conditions of criminal insanity (no criminal capacity). There were only individuals with conditions that lowered their understanding of the cybercrime they acted on and their ability to control themselves.

It can be definitely generalised that it is rare that mental health assessments are made for individuals who commit a cybercrime. This study does not reveal how the cycle and path for detecting mental health issues occurs in the criminal justice system and how the system can identify it. We only see the end-of-cycle processes where cases have arrived for the court to decide. We can generalise based on research data and research methods that it seems to be a myth that a person which considered to be psychotic or mentally ill (with no criminal capacity) could not commit cybercrime. However, a person with diminished criminal capacity can do cybercrime or a person with some sort of mental health issues.

5. Discussion

This research shows that the phenomenon of cybercrime has multiple factors which influence committing a cybercrime and perpetrators of cybercrime possess some sort of mental health issues. Obviously, it is a complex social phenomenon, why cybercrimes occur. In this study, none of the female cybercrime offenders were discovered, which would have gone through a mental health assessment and convicted of cybercrime.

5.1. Implications for research

These findings suggest that mental health assessments are less common for persons which commits cybercrimes. The mental health assessments have been conducted in some form. It is a myth, based on the data, that a person could have the condition to be completely mentally ill (criminally insane) to commit even a simple cybercrime, because committing a cybercrime requires at least the use of technology and some degree of systematicity. Thus, we have to be careful, because the mental health sector or the criminal justice system has limited capacity and might not detect everything. This might be because of the funnel process of the criminal justice system that it is unable to detect all crimes [63]. Therefore, there is a hypothetical possibility that the criminal justice system discovers an individual who has been found on forensic psychiatric examination on the condition of the mentally ill (criminally insane) and does not have the capacity in a criminal sense to understand what the individual has done. Even though it raises the question of what type of cybercrime can a person commit in such a condition. The only way to gain positive support for the hypothesis that a mentally ill person can commit cybercrime is to discover it.

Cybercrime has become part of everyday life, and this raises the question of how much cybercrime is committed by people with neurological disorders and how many have some sort of diminished criminal capacity during the act

of cybercrime, which is not recognised by the criminal justice system. This raises the question of what can be done in the healthcare sector, where there may be a need to identify people with mental health problems that underlie cybercriminal behaviour. It is clear, that mental health assessments are no longer just a matter of traditional crimes e.g. homicide, but the mental health of cyber criminals needs to be assessed during criminal justice processes.

5.2. Implications for practice

International literature shows that the underlying drivers of cybercrime are neurological abnormalities and diseases that should be treated by the healthcare system. It is worth exploring the extent to which treating neurological problems can reduce cybercrime or contribute to improving a patient's quality of life. Future research topics would include whether patients who commit more serious cybercrimes will develop severe mental health issues or become mentally ill (no criminal capacity). It would also be important to study how neurological abnormalities and environmental factors affect the ability of criminal patients and patients to regulate themselves. Finally, to create a guideline of how the criminal justice system and healthcare system should process the mental health of cybercriminals.

5.3. Limitations

The research data is from the year 2015 to 2019, which is becoming out of date. This means that we do not know how the situation changed after 2019. The mental health assessment is a sensitive document and there was a very minimal amount of information on the actual mental health assessment of the defendants in court documents. It would give more understanding of what the actual medical assessments are if exact information were read in the court documents. It leaves space for speculation about what kind of neurological differences an individual might have. Without the interpretation research method, it would be difficult to detect from court documents how health conditions are affecting offenders' ability to understand the severity of their cybercrime or affect their ability to control themself. Because of the limited amount of empirical data and cases where insanity checks are made, the interpretation generalisation has limitations and we do not know if the Finnish courts for example excluded from the health assessment even the defence of the defendant might try to get leniency sentence by medical conditions which do not have in forensic psychiatry terms credibility to claim that defendant could not fully understand their actions during the cybercrime. Still, the mental health assessments which give information that offender(s) could not fully control their actions caused that sentence was be lowered. From this study, it can be argued that it is a myth that a person can commit cybercrime with the condition of being mentally ill. Condition mentally ill means a condition in which an individual is criminally insane (no criminal capacity) and an individual has a mental illness or disease which makes it impossible for individual to know what actions of the individual are wrong or criminal [57].

Thus, it seems that person with diminished criminal capacity can commit cybercrime or person with some other health relating conditions which affect person ability to understand or control them self during the act of cybercrime. This study cannot currently answer how technically sophisticated cybercrime with all persons with diminished criminal capacity can do, because data is only from Finland and only court data. We know that not all cybercrimes are reported to police [64] and that give hypothetical possibility that some persons with diminished criminal capacity can do more sophisticated cybercrime that this study shows, because not all cybercrimes does go to criminal justice process. In addition, the international literature suggests that persons with autistic spectrum traits could be one feature of some cybercriminal [46] and person who cannot control their impulses to commit cybercrime.

5.4. Future directions

Future studies should connect different life cycles of cybercrime from different databases to get a better picture of the life cycle in the criminal justice system process. Also, the institution which conducts a mental health assessment for the actual defeats should be examined. This is needed to gain an understanding of how much diminished criminal capacity individuals actually have in cybercrimes and whether are there individuals who are declared to have condition of criminally insane and are sent to mandatory psychiatric treatment, because of convicted cybercrime. In addition, are there any female cybercrime offenders which have either diminished criminal capacity during act of cybercrime, or they have condition of criminally insane? Also, it would be interesting to see what skill level and cognition level the cybercrime offender has who has some sort of neurological abnormality or has condition of diminished criminal capacity during act of cybercrime? It would help understand what kind of cybercrimes different people can do or they

can do when they have mental health issues. Aso, it would be vital to conduct simal study with similar research questions after year 2019 and make comparison with different nations.

6. Conclusion

Between the years 2015 to 2019, there is four offenders where some kind of mental health assessment was made to convicted cybercriminals. In the case four, there was clear information that the forensic psychiatric examination was carried out by the THL. Convicted cybercriminals were male genders and no female offender have gone through mental health assessment based on court documents. It is rare that a forensic psychiatric examination is conducted for cybercriminals. The mental health assessment, information on the condition of mental health of the perpetrators and the forensic psychiatric examination affect conviction by lowering the given punishment. Based on data between the years 2015 to 2019 it seems to be myth that a person with a condition of mentally ill and therefore without no criminal capacity (criminally insane) could commit a simple cybercrime. Individual can have condition where their judgment is impaired (diminished criminal capacity) and there is some evidence on international literature that some individuals which have committed cybercrime have conditions of neurological difference.

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Data availability

The court data is not available to the public, because some of the court documents have sensitive information, which is classified to be sensitive. The research data can be requested from the Finnish Legal Register Centre by research permit.

Publication Ethics

All identifying data of cybercriminals was anonymised and their identity was respected during the research. The research data comes from other cybercrime projects and the research data was given to the author of this by Jyri Paasonen.

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