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The Relationship between Attention Deficit Hyperactivity Disorder (ADHD), Level of Education and Delinquency: a Study of the Norwegian Prison population.

Relatrice
Prof.ssa Ines Testoni

Laureanda: Marcella Benoni
Matricola: 1232233

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INTRODUCTION

In recent years, several studies have focused on the analysis of prisoners and their characteristics. Several aspects have been investigated, such as the level of mental health (Hean et al., 2017), education programs carried out in prison (Manger et al., 2019; Tonseth & Bergsland, 2019) or programs for reintegration into society (Larsen et al., 2019).

This thesis aims to analyze the Norwegian prison population. Specifically, it will look for a possible relationship between attention-deficit/hyperactivity disorder (ADHD), level of education, and delinquency.
For simplicity, following within this thesis, we will refer to recidivism by meaning the number of convictions a person has had in their lifetime.

The 3 main research questions are:
1 Is there a possible relationship between the retrospective symptoms of ADHD identified by WURS-25 and the educational level of prisoners?
2 Is there a possible interaction between the retrospective ADHD symptoms identified by WURS-25 and recidivism?
3 Is there a possible interaction between participants' level of education and recidivism?

Next, the analysis will focus on the reasons prisoners report for participating or not participating in prison education to get a general picture of how people who are serving time within Norwegian prisons, perceive the system and where improvements can be made.
Therefore, this thesis will begin with a detailed explanation of these factors. The scientific literature present for each of them within the major search engines such as Google scholar, PubMed, PsycInfo and Web of Science will be explained. This will be followed by a description of the sample studied with the measures chosen for the results of our analysis. Finally, the discussion and conclusion chapters in which the results of the analysis will be brought to light by comparing them to the research questions. A final mention will be made of the limitations of the study and possible future research.

1. ATTENTION DEFICIT/HYPERACTIVITY DISORDER (ADHD)

Sir George Still was considered the father of pediatrics and is often referred to his lectures in 1902 as the first true clinical descriptions of ADHD. He argued that children who suffered from this clinically undefined syndrome, by contrast to their peers who were considered normal, failed to implement voluntary control or inhibition and had impulsive behavior (Adler et al., 2015).

Maurice Laufer and Eric Denhoff developed many clinical studies on children until they came to define for the first time the syndrome, we now call ADHD, as *Hyperkinetic Impulse Disorder*. They also defined specific criteria such as Hyperactivity, poor concentration, impulsivity, poor school performance, etc.

This definition remained for a long time until the creation of the first most widely used manual of psychiatric disorders: the Diagnostic and Statistical Manual (DSM).

Hyperkinetic Reaction of Childhood is defined as a reaction disorder in childhood and it is stated that the behavior of these children stems from the family environment in which they are placed and the neurotic conflicts they experience in childhood (Adler et al., 2015).

In DSM-II (1968) was for the first time officially included in the list of mental disorders the *Hyperkinetic Reaction of Childhood*. The definition of "reaction disorder" was dropped, until a more complete and detailed specification was given in DSM-III. With the publication of this new version of the diagnostic manual (1980) we begin to talk about "Attention Deficit Disorder" (ADD). In addition to a series of specific symptoms of the disease, it also describes the age at which the subject must develop them in order to be diagnosed, the course of the disease and the level of severity. It was presented two subtype of the disorder: ADD with hyperactivity and ADD without hyperactivity. Finally with the DSM-III-R this syndrome changed the name in "*Attention Deficit Hyperactivity Disorder*" (ADHD) as we now known, solidifying the fact that this is a unidimensional disorder where there is coexistence of symptoms of inattention and hyperactivity. Therefore, the two subtype were combined into a single disorder and just in the 1994 with the DSM-IV the symptoms were reclassified into three subtype: predominately inattentive, predominately hyperactive and a combined subtype (Buitelaar et al., 2011).

The latest version of the Diagnostic and Statistical Manual for Mental Disorders was published in May 2013. Some criteria have been changed such as the age of onset which in the latter must be between 7 and 12 years.

The division into the 3 subtypes of disorder has been maintained, each subtype is identified based on how many symptoms the person experiences of the criteria established within this manual. For the predominantly inattentive type, the individual must experience 6 or more inattentive symptoms, for the predominantly hyperactive-impulsive type 5 hyperactive symptoms are needed, and finally, for the combined type the person must have both 6 or more inattentive symptoms and 5 hyperactive symptoms. On the contrary to what one might think, given the amount of symptoms needed to diagnose the latter subtype, the combined type would seem to be the most common among both children and adults (66%) (Adler et al., 2015).

Lastly, the ADHD Not Otherwise Specified (NOS) subtype was included; this is diagnosed to those individuals who demonstrate symptoms of ADHD but do not entirely meet the criteria for one of the previously mentioned subtypes (Ramsay & Rostain, 2008).

ADHD is listed in the DSM-5 as a neurodevelopmental disorder. Within this category we can find the following disorders: Intellectual Disabilities (Intellectual Developmental Disorder), Communication Disorders, Attention Deficit/Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), Specific Learning Disorder (SLD), Movement Disorders (American Psychiatric Association, 2013).

Specifically, the definition we find of this category is:

> *Neurodevelopmental disorders are a group of conditions with onset in the developmental period. The disorders typically occur early in development, often before the child begins elementary school, and are characterized by developmental deficits that cause impairment in personal, social, school, or work functioning. The range of developmental deficits varies from very specific limitations in learning or executive function control to global impairment in social skills or intelligence.*
>
> (American Psychiatric Association, 2013, p. 35)

The DSM-5 contains clear and specific criteria for ADHD that are used today to make diagnoses.

1. Attention Deficit/Hyperactivity Disorder (ADHD)

Criteria A: The child's functioning or development must be impaired by a persistent pattern of inattention and/or hyperactivity-impulsivity

1. Inattention: Social and school activities must be impaired by at least 6 of the following symptoms persisting for at least 6 months. a. Makes distracting errors and fails to focus on details. b. Has difficulty maintaining attention especially during a lesson or game c. Has difficulty listening even in the absence of obvious distractions d. Does not complete tasks and does not follow instructions given to them e. Has difficulty organizing, especially in activities f. Fails to maintain a prolonged mental effort, feels aversion to it g. Often loses things especially those he needs to complete a task h. External stimuli are constantly distracting him i. In daily activities is often careless	2. Hyperactivity- Impulsivity: Social and school activities must be impaired by at least 6 of the following symptoms persisting for at least 6 months. a. Often wiggles in the chair and fidgets b. Fails to sit in his chair even when asked to do so c. In inappropriate situations assumes a restless attitude or jumps d. Is unable to remain quiet and play games e. Often acts as if driven by an internal restless force f. Is excessively talkative g. Does not know how to behave in a communication situation, such as not knowing how to wait his turn to speak h. does not know how to respect the timing either in games or in social situations such as queuing at the toilet i. Is intrusive towards other people

Criteria B: Before age 12, you should see the onset of some of the symptoms of inattention or hyperactivity

Criteria C: Symptoms must be identifiable in at least two contexts (home, work, school)

Criteria D: Social, school, or work functioning must be visibly impaired by the symptoms

Criteria E: Symptoms cannot be better explained by another disorder or experienced in psychotic phases

Combined type: Occurs when both criteria A1 and A2 are present in the last 6 months

Predominantly Inattentive Type: Occurs when criteria A1 is met in the last 6 months but A2 is not.

Predominantly Hyperactive-Impulsive Type: Occurs when criteria A2 is met in the last 6 months but A1 is not.

Specify the level of the severity: Slight - Moderate - Severe

Table 1 Criteria of ADHD established in the DSM-5 (American Psychiatric Association, 2013).

Several studies show that that this neurodevelopmental disorder is one of the most common within the world's population. The prevalence rate is estimated to be between 4% and 6% (Adler et al., 2015; Karlstad et al., 2017; Young & Thome, 2011). It is furthermore found that some subtypes of this disorder are more common than others. The ADHD predominant hyperactive-impulsive type is perhaps the least prevalent, indeed that less than 15% of individuals with ADHD suffer from it. Concerning the predominant inattentive subtype, the percentage is around 20%-30%. Finally, as mentioned earlier, the most common subtype is the combined subtype at 50-70%. Furthermore, this is defined as the most impairing probably due to the high comorbidity it has with other disorders and the severe school incidence for the individual (Ramsay & Rostain, 2008).

However, diagnosing ADHD in childhood can be difficult. Children experience hyperactivity and inattention; these are considered normal growth behaviors. Unfortunately, because of this many people who have the symptoms of ADHD - which then go beyond normal growth behaviors but affect as indicated by the DSM at least two areas of the individual's life (home and school) - are still not diagnosed for this disorder (Buitelaar et al., 2011). Moreover, it was previously thought that ADHD symptoms disappeared with age, but it has been shown that this is not the case. There is in fact a high persistence of symptoms, 36.6% of children who met the criteria for this disorder persist in fulfilling them even in adulthood. 2% to more than 5% of the adult population would appear to suffer from ADHD and experience more or less severe symptoms of this disorder (Ramsay & Rostain, 2008).

The biggest problem is that there is no diagnostic category or well-defined criteria for adults with ADHD. All of these people (38% of who had ADHD in childhood) who persist in having severe symptoms cannot be defined diagnostically. In the DSM-III there was a category called Residual Attention-Deficit disorder where these adults could be placed, but later in the new editions this was removed (Buitelaar et al., 2011). The importance of having clear criteria for defining an adult with ADHD is that they can then be adequately helped and given the right psychopharmacological treatment they need.

The latest version of the DSM (DSM-5) included a specification for diagnosis for older adolescents and adults. Precisely, they must experience 5, against the required 6 for children, of the symptoms listed in the manual (American Psychiatric Association, 2013).

Having clarified the diagnostic criteria with some scientific population data, the following sections will review more specific aspects of this disease to fully understand it. Being, precisely, a neurodevelopmental disorder diagnosed in pre-school age we will mainly

refer to children until we get to eventually understand the facets that ADHD takes in adulthood.

1.1. Comorbidities Disorders with ADHD

When a person is affected by two or more diseases at the same time the term 'Comorbidity' is used to indicate this. Important to highlight is that each of these present disorders may be related but are separate clinical entities that have specific psychopharmacological treatments (Pliszka, 2009).

In most mental disorders there is frequently a comorbidity. For instance, it is often found that a child diagnosed with ADHD is later diagnosed with Oppositional Defiant Disorder (ODD). After psychopharmacological treatment for ADHD the symptoms of ODD disappear on their own. This certainly leads to define that there is a relationship between the two disorders, but of what kind, it is not clear. Moreover, scientifically speaking it cannot be implied that ODD stems from ADHD. Furthermore, it is important to treat all diseases as separate entities with their own treatment pathway (Pliszka, 2009).

How to understand if someone who already has a prior diagnosis, for instance of ADHD, also has a comorbidity is an interesting point to deal with because one should not fall into the mistake of associating everything as a comorbid disorder. It has emerged from the literature that comorbidity is often associated with certain environmental, psychosocial, and genetic characteristics (Baumeister et al., 2011; Kendall & Clarkin, 1992; Merikangas & Kalaydjian, 2007; Pliszka, 2009). Therefore, 8 rules have been identified that define when a comorbidity is statistically significant and thus worthy of being treated as an associated disorder respect of a person with only one disorder.

- Referring to the DSM diagnostic criteria of a disorder, the child may be diagnosed with a comorbid disorder if it differs substantially from the diagnostic criteria of the first disorder;
- The person may have difference in term of ethnicity, sex, or social class;
- May have a difference in psychosocial factors such as poverty, crime or be exposed to assault;
- There may be difference in brain anatomy;
- There may be difference in genetic factors;
- The family experiences may be different as the environmental factors;
- There may be different clinical course and outcomes comes by this/these diseases;

- There may be a completely different response to specific treatment that usually works in a way for who has just one disease.
  (Pliszka, 2009)

Subsequent sessions will review some of the most common comorbidities found associated with ADHD.

1.1.1. School difficulties and Learning Disorders

When there are severe difficulties in the areas of reading, writing, or math, it is called a learning disorder (LD). People who are affected by ADHD do not have deficits from the point of view of intelligence, and this is very important to highlight. Furthermore, this disorder, as for the LD, has nothing to do with mental retardation, so the person's IQ is evaluated before diagnosis so as to exclude that the various school difficulties are due to this. Thus, we see a clear discrepancy between intellectual level and school performance for both ADHD and LD sufferers. (Wender, 2000).

It is commonly found a prevalence rate of this disorder is 20%-25% of the population. It is also highlighted that children with ADHD, who therefore suffer from inattention and hyperactivity, often have serious difficulties in the acquisition of skills and knowledge (Adler et al., 2015). As a matter of fact, there is a high comorbidity between ADHD and learning disorder. About 20%-39% of people with ADHD are also diagnosed with LD (Horowitz-Kraus, 2016). Mayes and Calhoun (2006) conducted a study of 949 children with a prior diagnosis and found that about 70% of the children diagnosed with ADHD also met the criteria for language disorder. From their analysis it stands out that only the association between ADHD and LD leads to such a high percentage, with other disorders such as anxiety/depression it is only about 15%. Nevertheless, many people with ADHD have difficulty academically but are not diagnosable for any LD. This perhaps be explained by attention problems or difficulty in managing emotions (Wender, 2000).

Learning Disorders are a category that belongs, as well as ADHD, to developmental disorders. Within the category of LD the following disorders are included: reading disorder, spelling disorder, and mathematics disorder (Wender, 2000).

Horowitz-Kraus in his study (2016) shown that who has ADHD+LD has many differences respect the group with just ADHD. He examined 14 children with ADHD and 14 with comorbidity with LD, all native Hebrew speakers with no differences in the two groups at the socioeconomic level, in intelligence, or in physical deficits (e.g., hearing).

Absurdly, this study shows that those with ADHD + LD have a better spectrum, use, and understanding of emotions than those with only one or the other disorder.

Another aspect that this study showed that is important to point it out is that the ADHD group read more accurately than the group with comorbidity, albeit still slower than normal. Furthermore, although this group was more accurate in reading it was difficult for them to read fluently automatically in both single word and whole sentence tests. Thus, Horowitz-Kraus (2016) concluded that even those with ADHD without comorbidity could not be considered normal readers. The focal point seems to be that the ADHD+LD group finds it more difficult to compensate for deficiencies and find strategies to succeed in normality despite the limitations brought on by the disease, as the ADHD group seems to do better.

This type of study is essential in the literature because if not properly studied and treated, children with ADHD and possible co-morbidities risk having serious long-term professional, emotional, social consequences or/and juvenile delinquency (Horowitz-Kraus, 2016).

1.1.2. Emotional and Behavior Difficulties: Conduct Disorder (CD), Oppositional Defiant Disorder (ODD)

People interact within the world around them by implementing social relationships with others. In order for these to occur, and occur effectively, there are social rules that must be followed. For instance, one must respect the basic rules of a conversation, such as not talking too much, leaving room for other participants to speak, and knowing how to respect one's turn. Two very important social rules are behavior inhibition and self-control. The first can be explained in three points: limit your behavior when you are asked to do so (e.g., at school, in class, or at work), interrupting ongoing responding, and while engaged in a task that requires self-control inhibit sources of interference.

Self-control, on the other hand, is the ability to inhibit the primary response an individual may have from a given event by attempting to moderate the response in a way that is appropriate to the environment. It is a long-term outcome behavior (Barkley, 1997).

Children, but more generally people with ADHD, have difficulty with this type of behavior regulation. So much so that some of the diagnostic criteria refer precisely to this ability to inhibit behavior (See Table 1). It is possible to notice a clear pattern that the ADHD individual engages in his or her relationships with others. Indeed, in childhood

they seem to have more annoying and teasing behavior; while as an adult he assumes a bossy attitude (Wender, 2000).

These types of children experience emotions differently than others. Sometimes they are underreacting other times overreactive. They do not seem to have difficulty in making friends, their problem lies in maintaining friendships. ADHD individuals have a low tolerance for frustration, react aggressively and disproportionately, have outbursts of anger and instability of mood.

This need to play in the way he says, if not, he doesn't play at all, or this excessive exaltation or aggressiveness that sometimes arises in him, makes it possible to distance the other children. ADHD children often report being isolated or even bullied despite the fact that the reaction of other children is only a consequence of their actions. However, this is not considered a distortion of reality, but more to what the child with ADHD actually perceives from the situation.

Clearly, all of this leads to consequences at the school level, in relationships with friends and family, and in regard to himself (Wender, 2000).

During school, especially during elementary school, children need to start learning what the rules are and stick to them. They begin to learn to write so they have to do a lot of copying exercises or dictation. All of these tasks require concentration, focus and a certain level of frustration tolerance. It is clear, therefore, that ADHD children face school with deficiencies that they must contend with in comparison to their peers.

The ADHD child tries to be liked by others in every way, but unfortunately this often backfires. Indeed, to do this he lies, brags, clowns. As the person grows up this behavior can become increasingly risky; he may start stealing, be aggressive, start fights.

At the family level, the same dynamics occur. It is normal to fight among siblings or in the adolescently phase with parents, but the ADHD child does not know how to control his instincts and outcomes, so his behavior goes beyond what can be defined as normal for these actions.

Finally, the ADHD child has low self-esteem. Self-esteem is something that is created based mostly on the reactions that others have towards us. The ADHD child often experiences avoidance by others, exclusion and judgment in response to his or her non-socially accepted behaviors. Unfortunately, however, these are behaviors that, as mentioned above, are enacted because he is unable to inhibit them, so it is an almost inevitable situation. Only after psychopharmacological treatment can changes be seen (Wender, 2000).

All of this can be exacerbated by possible comorbidity. Several studies show that there is a high rate of comorbidity between ADHD and Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD).

A study conducted by Bendiksen and colleagues looked at 107,000 children from the 'Norwegian Mother and Children Cohort Study'. 163 of these were found to fulfill the diagnostic criteria for ADHD, while 85% did not. Among children with ADHD, a comorbidity of about 40% was found for ODD and CD (Bendiksen et al., 2017).

Other studies demonstrate this existing relationship between ADHD and CD (Bonham et al., 2021; van Lier et al., 2007). It would appear that severe ADHD symptoms are then predictive of developing CD in adolescence (Whitinger et al., 2007).

So given the high possibility for children with ADHD to have a comorbidity with ODD or CD it is important to take into account that behavior problems can be displaced by this or otherwise keep under control the symptoms of aggression and behavior problems so that they do not then escalate into a comorbidity with behavior disorders.

1.1.3. ADHD and Drug use

People with ADHD often report suffering symptoms of anxiety or stress, perceived difficulty concentrating, and emotional distress. Unfortunately, it sometimes happens that people do not get treated for ADHD, do not receive the right medications or do not receive a diagnosis at all. Therefore, especially in adolescence/adulthood, these people resort to other strategies to remedy their symptoms. Substance use is an attempt by these people to do just that. Another motivation that may drive people with ADHD to use substances may be their difficulty in inhibiting behaviors and impulses, making them vulnerable to risky behaviors. In particular, the use of marijuana and alcohol are the substances most used by these individuals. Thus, substance use is defined as an ADHD-related issue. These people report being able to perform school tasks better and experience relief and reduction of physical feelings of discomfort (Ramsay & Rostain, 2008).

Furthermore, smoking cigarettes is also a frequently used behavior by people with ADHD. The onset of this behavior occurs in early age (Adler et al., 2015).

A review conducted in 2014 revealed some very interesting data. For example, one study showed that the risk of developing substance use disorder (SUD) is twice as high in individuals with ADHD. Just as it found a greater likelihood of smoking cigarettes and developing SUD for those with ADHD than those without. Finally, a study conducted through the International Institute of Health found that 38% of people using cannabis

were adolescents of both sexes. They seem to describe getting benefit for their symptoms from the use of the substance so it would be interesting to take this into consideration for possible treatment (Zulauf et al., 2014).

Furthermore, another study conducted by Wilens and colleagues, sought to investigate risk factors for developing SUD among those who have ADHD compared with those who in addition to ADHD have bipolar or conduct disorder. This analysis showed that persistence of ADHD was likely to be associated with subsequent SUD. It is therefore concluded that ADHD is an important risk factor for the development of a SUD, cigarette smoking, alcohol or drug use (Wilens et al., 2011).

Finally, it would seem that a missed diagnosis of ADHD in childhood is associated with the development of SUD with persistent antisocial behavior and poor cognitive skills (Muld et al., 2013).

Much attention should be paid to the lack of diagnosis and consequent failure to treat disorders, especially ADHD and SUD, because if not, this could translate into a negative impact on people's lives in different ways (Johnson et al., 2021).

1.2. ADHD in Adults

As mentioned in the first chapter of this thesis, in 2013, with the publication of the latest version of the diagnostic manual of mental disorders, the criteria for the diagnosis of ADHD were also included for adults.

It is indeed demonstrated that this disorder often does not disappear with increasing age, but on the contrary, there is a high persistence of ADHD symptoms in adulthood.

The DSM-5 therefore specifies that older adolescents and adults, to be diagnosed as having ADHD, must meet at least 5 of the listed criteria, against the 6 required for children, for each of the sub-criteria (American Psychiatric Association, 2013).

Several studies have found that about 60% of children with ADHD meet the criteria for a diagnosis of the same disorder in adulthood. This therefore means that about 4% of the adult population has ADHD (Anbarasan et al., 2020; Kessler et al., 2006). Unfortunately, this discovery that an adult can also suffer from this disorder is relatively recent, and many adults have not been diagnosed or treated appropriately. Thus, this fact mixed with the already more or less severe consequences of ADHD, may have led to serious complications in the lives of these individuals (Buitelaar et al., 2011).

High rates of dropout school, difficulty learning and staying focused on tasks are found among adults with ADHD. It is also pointed out that these individuals have a higher

probability of belonging to a lower middle socioeconomic status, probably also due to the implications of the symptoms in this area. Adults with ADHD symptoms report having poor skills in impulse control and in regulating their own behavior. Another bursting characteristic that is reported by these subjects is dysregulation mood. This has a very strong impact on the daily lives of these adults, can be experienced both at work and at home, and also results in low self-esteem. Mood swings are when the individual for no apparent reason has sudden changes in mood. Clearly, it may occur that individuals with ADHD have a comorbidity with mood disorders but the described mood swings are distinguishable from a mood disorder.

Finally, another characteristic noted by adults with ADHD is difficulty in organizing, especially in establishing and following schedules (Buitelaar et al., 2011; Wender, 2000). Many tools over time have been created for the diagnostic assessment of ADHD that could be used for adults and not only for children (Anbarasan et al., 2020). One of these, very important and on which we will focus in the description as it is used in this project, is the Wender Utah Rating Scale (WURS).

1.3. Wender Utah Rating Scale – WURS

In light of the fact that many adults report experiencing ADHD symptoms but never being diagnosed and given that the criteria for diagnosing ADHD in adulthood were only included with the release of the DSM-5 manual in 2013, the need was seen to create a questionnaire that could investigate these symptoms in adulthood. As a disorder defined as arising in preschool, Wender and colleagues envisioned structuring a questionnaire through which ADHD symptoms could be retrospectively investigated: The Wender Utah Rating Scale, WURS (Ward et al., 1993).

This tool investigates whether an adult had symptoms of ADHD when they were a child by asking the subject questions about their behavior during childhood (Nadeau, 1995).

During those years there was still the belief that ADHD was a disorder that only affected childhood and adolescence and that as the person grew older the symptoms would disappear. The version of the DSM that was used at the time was the third, which, in fact, did not include criteria for the diagnosis in adulthood. This led Wender and colleagues, who had the avant-garde idea that ADHD symptoms could also exist in adulthood, to invent the so-called 'Utah criteria', on which they based the questionnaire (Caci et al., 2010).

The Wender Rating Scale is defined as a five-factor model (Kouros et al., 2018). These include a childhood history of symptoms such as inattention, irritability, stress intolerance, and impulsivity. It also includes items regarding the subject's school behavior and medical history (Asbjornsen et al., 2010).

In order for there to be more reliability, it might be helpful to have contact with the parents since we are dealing with a disorder with a childhood origin. Unfortunately, it often happens that this is not possible. Adults do not always keep in touch with their parents, especially in certain situations such as incarcerated persons. Therefore, the WURS was compared with the Parent's Rating Scale. A significant, if moderate, correlation was found between the two instruments (Ward et al., 1993). Other studies have found even greater correlations (Fossati et al., 2001).

Because of these studies, it can be said that the WURS is a very reliable tool in finding early symptoms of ADHD even without consultation with the individual's parents. Shorter versions of this scale have subsequently been created. The main ones are the WURS-36, WURS-25, and WURS-k.

2. LEVEL OF EDUCATION

In order to be able to talk about the level of education, one must first frame the school system of reference, which in our case is the Norwegian one.

2.1. Norwegian Education System

State authorities are in charge of most schools and universities in Norway since the Norwegian educational system is predominantly public.

Concerning payment for education in this country there is no diversification according to family income or the number of the household etc. Indeed, education in Norway is free for everyone and at all levels (Møller & Skedsmo, 2013).

An important factor present in Norwegian education is Equity. This has 3 meanings. The first refers to the fact that there is a responsibility to provide equal opportunities for every individual to access education. The second meaning concerns the difference between students. That is, if there is a need to provide individualized treatment, it must be done. The last relates to that equity that includes the group. Individuals who do not speak Norwegian have the right to additional language instruction (Møller & Skedsmo, 2013).

The Norwegian school system can be divided into 3 parts (according to the European qualification framework levels). The first known internationally as elementary school, is called 'Barneskole' in Norwegian and includes children from 6 to 13 years old. This is followed by lower secondary school or 'Ungdomsskole' in Norwegian, for children aged 13-16. Lastly, 'Videregående skole' in Norwegian, or high school, for children aged 16 to 19[1].

Children follow a common path until they reach high school, where there is more individual choice. Indeed, here the courses available are divided into two categories: general studies programs (mathematics, social sciences, art, music, etc.) and vocational programs (construction, electricity, agriculture, etc.).[2]

All these are the mandatory and guaranteed programs for every individual in Norway, after which there may be two additional non-mandatory years and higher education (university).[3]

[1] https://www.studyinnorway.no/living-in-norway/education

[2] https://www.nokut.no/en/norwegian-education/general-information-about-education-in-norway/

[3] https://www.lifeinnorway.net/education-in-norway/

2.1.1. Norwegian Prison Education system

Regarding the prison system, the Norwegian educational program explained in the previous paragraph is unchanged, still the same even in prison. According to European legislation on imprisonment, indeed, the person's freedom must not be denied. Furthermore, the sentence the person serves must be as close to normal as possible, in other words, the person imprisoned must have the same rights and duties as any other individual. This is referred to as the 'principle of normality' and clearly implies education is involved as well (Tonseth & Bergsland, 2019).

Education is especially important and emphasized in Norway. It is seen as an opportunity for the individual to grow, a way to increase their social skills by learning values and the ability to take care of themselves in different ways. By increasing their intellectual knowledge the person is able to see the world in a different perspective, increases their skills which can then be useful in the search for a future job. Moreover, it appears that having a high level of education is a protective factor against reoffending, since having a high instructional level seems to raise employment prospects (Tonseth & Bergsland, 2019).

Norway has established an 'Import Model' in 1969 for serving the prisoners. This means that with regard to services for the reintegration and rehabilitation of the person, the prisons do not have their own staff, but these are imported from outside. Therefore educators, doctors, librarians are imported from society. This type of model has the advantage that the person already has contact with the world outside the prison, once the sentence is over, they can continue their career outside, there is greater continuity of services and there is greater interconnection and mutual understanding between the community and prisons.[4]

Therefore, the entity responsible for prison education from both a professional and financial accountability perspective is the Ministry of Education and Research.

The county governor of Hordeland (nowadays the division of counties in Norway has changed slightly. Now Hordeland is under the county of Vestland), in particular, has the responsibility for all prison education in Norway. On the practical and pedagogical side, local schools are in charge; on the administrative and academic aspects of the prisons the county authorities are in charge (Tonseth & Bergsland, 2019).

[4] https://www.kriminalomsorgen.no/informasjon-paa-engelsk.536003.no.html

Therefore, the government of Norway is particularly interested in getting reports on how the progress of prisoner education is going in order to also understand how best to invest the finances. The first white paper was written between 1990 and 1991, from there we have seen an increase in the budget. A particular spike was also recorded after the second white paper was published in 2004 (Møller & Skedsmo, 2013).

In the Law on Execution of Sentences of 2001, in the first chapter subsection 3 is specified the duty of the prisoner to participate in an activity within the prison during the course of his sentence. These activities may involve work, education, community service or reintegration programs. Only in cases of illness is the person excused from participating. The individual is paid for the service they perform, the stipend is €7.64 per day, and for those who are unable due to illness they receive €5.24 per day.[5]

Several studies show that in the Nordic countries young prisoners have a weak education. Indeed, in the Nordic countries between 7% and 16% of prisoners report not having completed compulsory school (Eikeland et al., 2009). In a review published in the 2016, the author has described that 101'600 prisoners in the academic year 2014/2015 were taking education courses in prison. 42% of prisoners said they were permanently excluded from school (Coates, 2016).

2.2. Benefits of Education

2.2.1. Human right

The education of an adult person is often a matter of little interest and highly unknown, the education of an incarcerated adult even more so. Unfortunately, too often there are questions about whether education is a privilege to be earned or a human right. This question is usually associated with people who are serving time in prison. Some conservatives believe that prisoners have not deserved to pursue their education in prison and even more that this may be a reason to risk prison security, a theory that is totally unfounded (Torrijo & De Maeyer, 2019).

Respect for autonomy, the principle of equality before the law, and the rights of the individual are core values of the prison's legal and ethical system; it is about respect for the dignity of the individual. However, there are two types of thinking underlying the approach taken in prisons. A line of thought that focuses more on imprisonment as a

[5] https://www.regjeringen.no/en/dokumenter/Act-relating-to-the-execution-of-sentences-etc-/id420593/

means of achieving crime prevention and a line of thought that looks more at the purpose of punishment. The latter indeed seeks to balance punishment with re-education and reintegration of the person into society so that they do not commit new crimes. Education in these cases is seen as an opportunity to then find work and better fit into society while avoiding the occurrence of new crimes (GröninG, 2014).

But not only that, Norwegian prisons follow a humanistic and normalcy logic. The individual's freedom in prison is partially restricted but his dignity and respect must be maintained. The deprivation of part of their freedom is not the deprivation of their rights. Education is a human right and as such must be provided to detained persons. Whoever they are and whatever they have committed, just as the principle of nondiscrimination enunciates every individual is a human being and as such has rights and duties. All those who commit actions against the laws are to be punished equally and fairly but likewise rights, such as the right to education and many others, are to be respected whether a person is serving a prison term or not.

The Education Act enforced in Norway distinguishes between school-age children (ages 6-16) and youth, adults over 16. According to this law, the former category has the right and obligation to attend lower secondary and primary education, regardless of whether they are foreigners, Norwegian citizens, or residing in Norway illegally. However, for the category of people who have passed the age of compulsory education, the right to education is reserved for only those who reside legally in Norway and will stay for more than three monts (GröninG, 2014).

Furthermore, foreigners with a residence permit in Norway or refugees for protection who are between the ages of 16 and 55 have the right and obligation to take a course in the Norwegian language; obligation that vanishes for those over this age.

The Education Act is applied equally for everyone, including prisoners. Likewise, the certificates that are obtained are of equal scope and value, regardless of whether they were obtained, outside or inside prison (GröninG, 2014).

2.2.2. Personal Benefits

We examine from the prisoner's personal perspective the benefits that education can bring them. Reintegration within society is definitely facilitated by education. Being able to submit a curriculum vitae attesting to having finished compulsory school or even having

a higher level of education can help the person find a good job and thus have a lower likelihood of recidivism (Torrijo & De Maeyer, 2019).

A study was conducted in three states (Ohio, Minnesota, and Maryland) comparing participants and non-participants in prison education to understand the impact this has on recidivism (Steurer & Smith, 2003). A total of 3170 inmates participated in the study; 3099 of them were followed with a 3-year follow-up. Specifically, the authors decided to make a distinction between re-arrest, re-conviction and re-incarceration. The results revealed that with regard to re-conviction there was a significantly lower level for the group of prisoners who took part in prison education (27%). There was also a marked decrease in re-arrest and re-incarceration (48%, 21%) compared to those who did not attend education (57%, 31%). It should be noted that inter-county differences were found. Indeed, in Maryland, prisoners who participated in education scored lower than those who did not attend education on all three measures but not at a significant level. In Ohio and Minnesota, on the other hand, significance was found in the results.

Furthermore, this study investigated the employment rate of the two groups as well (Steurer & Smith, 2003). A difference was also found with this analysis: education participants showed a slightly higher level of employment and in addition were paid more than the other group. However, the levels were not different enough to be considered significant (81.4% vs. 77.3%).

Concordant results emerged from a meta-analysis conducted on 33 studies investigating the effect of education on recidivism and employment rates (Wilson et al., 2000).

Another important aspect to note is that participating in education in prison but also, when possible, going out and attending a school outside is a humanizing factor (Brosens et al., 2019). The prisoner experiences that he is doing an activity that is part of daily life; this brings them much closer to reality and makes them more integrated into society. By doing so, the person who feels more included and involved in society automatically will have less incentive to 'ruin it' and\or breaks rules.

2.2.3. Social Benefits

In an analysis of what external benefits education brings to society, McMahon pointed out several aspects (McMahon, 2004). People's life expectancy is seen to increase according to their educational level. The person is able to achieve better social positions as well as jobs that bring a higher salary. This, not only increase life expectancy but also

the person's wellness since the person will have access to better medical care, for instance, and will definitely have less or no need for welfare. Indeed, only 0.5 percent of college graduates receive assistance through welfare, compared to 5.6 percent of people with a high school diploma. In addition, social inequality and poverty will also be thinned. Consequently, there will be lower crime rates.

Finally, another very important external benefit brought by education is the spread of technology. Thanks to technology there can be a diffusion of knowledge brought by research and development, which, for example, can lead to greater knowledge about climate change, thus also bringing environmental benefits.

2.3. Motivations to Education

We have just mentioned the positive aspects that a high level of education can bring, but it is interesting to analyze the motivations that can lead an incarcerated person to pursue education in prison. Often it is not enough for a person to know the long-term benefits that something can give them. It seems there has to be another kind of motivation.
Several theories of motivation can be found in the literature.
One of those is the so called "**Push-Pull**". According to this theory a person is moved to pursue education according to two main motivations. One is referred to as "Push", meaning the person is driven by a subjective intentionality. The individual has a desire to study for the sake of knowledge. Another motivation is called "Pull," meaning the person is driven by social causes or personal gain (i.e., the payment in the prison). These two motivations can also co-exist are not necessarily self-excluding (Manger et al., 2010).
Moreover, Daci and Rayan (2000) created the **Theory of Self-Determination**, developed by tracing different types of motivation that might underlie a person's decision to engage or not engage in an activity.
They define **intrinsic motivation** as the most autonomous form of motivation. This occurs when it is the satisfaction of the commitment itself that motivates the person to perform an activity. In contrast, when the person is driven by the desire to obtain an external reward it is referred to as **extrinsic motivation**. According to the authors there are several forms of extrinsic motivation, governed by different regulations. One form of that, which is less autonomous is governed by *external regulation*, enacted only to obtain rewards. Motivation with *regulation introjected*, rationally controlled in which the person, for reasons of pride and to avoid guilt engages in the activity. *Identified regulation,* in which the person actually understands and accepts the importance and

usefulness of what he or she must do. Up to and including perhaps the most autonomous form of extrinsic motivation, which is underpinned by an *integrated regulation* whereby people recognize the value of what they are doing as part of their life pattern, not just because of the importance of the action itself.

Eventually there can also be people who are completely **unmotivated**, where the person has a complete lack of intention (Deci & Ryan, 1985, 2013; Manger et al., 2020).

Another characteristic that could influence the decision to undertake education in prisons is the prisoner's **perceived self-efficacy**. The concept of self-efficacy is defined by Bandura (1997) as the perceived ability of the individual to succeed at the task. Therefore, it is not about the actual skills the person has but much more about the self-perception of the ability (Bandura, 2000). This is influenced by two components one internal and one external. The person therefore looks at both the physical and social complexity of the task (external component) and the cognitive processes they possess (internal component) (Roth et al., 2016).

Perceived self-efficacy is assessed and created by the individual based on previous experiences they have had in their life and the context in which they are currently embedded (Bandura & Wessels, 1994).

Therefore, if the person has experienced successful experiences, they will possibly have a high sense of self-efficacy. A person who has had a conviction for a crime might perceive this as an event of failure and therefore have a lower sense of self-efficacy. Moreover, the fact of being in prison might cause the individual to perceive the environment as less suitable for success and therefore this also lowers his sense of self-efficacy and consequently distances him from approaching a path of education (Roth et al., 2016).

However, another factor that seems to influence self-efficacy is modeling, i.e., seeing that another inmate is participating in education and perhaps succeeding in it may increase, through social persuasion as well, the likelihood that the person will approach education in prison and strengthen their perceived self-efficacy.

Clearly there are several factors that come into play in this concept, for example you may find differences between individuals in levels of self-esteem based on age, length of sentence, whether they have a diagnosis of dyslexia or ADHD (Roth et al., 2016).

2.4. Barriers to Education

Another aspect to consider when reflecting on the motivations that might drive an incarcerated person to pursue education in prison are the motivations/situations that might drive people away from doing so.

Patricia Cross identifies **3 barriers** to adult education that can relate to both general and prison education. These barriers are **institutional**, **situational**, and **dispositional**. The first (*institutional*) relate to everything from political and bureaucratic procedures to scheduling problems and lack of clear information. *Situational* barriers relate to the personal situation of the person, such as the physical environment in which to study, having time to study within daily life.

Finally, *dispositional* barriers relate to self-esteem, a person's self-efficacy and self-view (Cross & McCartan, 1984).

Manger et al., (2019) administered a questionnaire that investigated exactly these three barriers in all of Norway's prisons including only those with Norwegian citizenship. 1,475 people answered the questionnaire in its entirety. The results showed that people who expressed an intention to participate in education perceived the institutional barriers more than the group expressing an intention not to participate; exactly the opposite was true for situational barriers. No difference between the two groups, on the other hand, regarding dispositional ones (Manger et al., 2019). The importance of institutional barriers in particular over the other two barriers is also emphasized by other studies (Eikeland et al., 2009).

Similar results were found in a study conducted in Belgium (Brosens et al., 2019). This is to point it out the fact that from the literature this aspect emerges, it would not seem to be a peculiarity confined only to Norway.

Furthermore, a review was conducted to investigate the academic, social and psychological functioning of college students with ADHD. The results pointed out that people with ADHD had poorer academic performance overall and they struggle to graduate on time than peers without ADHD. Interestingly, people who report suffering from ADHD symptoms but still perform well in school are the most unlikely to receive treatment for their symptoms.

Finally, research has shown that those with ADHD are significantly more likely to use drugs, alcohol or tobacco ("study drugs").

These findings could be interesting applied to the prison setting. These in fact could be dispositional barriers to approaching education in prison: experiencing lower academic

performance than others given the disease, prisoners may feel they are failing (low self-efficacy) and therefore not continuing education (Sedgwick, 2018). Comparable results were also found in the study of Weyandt and DuPaul (2006).

It should be kept in mind that these kinds of dispositional barriers perhaps are not clearly exhibited by the prisoner because the diagnosis of ADHD, especially in adulthood, may not have been present for these people. This may lead prisoners to refer their learning problems to a level of perceived efficacy and not to an actual disorder.

Another element, that is often highlighted by various studies, is that prisoners who have a short sentence to serve (a few months) have less incentive to start education in prison. Moreover, the fact of serving time in prison makes it very difficult to continue studies, especially if the person commits recidivism. Because of this there may be an interruption of studies that will therefore delay a possible future career or may even lead the person to drop out of school permanently. This may also cause the person to start hanging out with other people who, like him, have not finished school or do not have a career. Social peer pressure is a factor that sediments this situation, increasing the risk of crime or recidivism (Eikeland et al., 2009).

3. DELINQUENCY

3.1. Prison System

We begin by giving an overview of how prisons are structured in Norway.

There are 58 operational prisons, 3600 total places in 33 prison units in all Norway. About 70% of these places are reserved for high security.[6]

Specifically, 3015 inmates were registered in Norway in 2020, including 748 in remand custody, 2116 sentenced to prison, and 151 'other'. Therefore, there was a prison occupancy rate of about 85% in 2020. Of these, 2258 are males and 139 females (the number of inmates over the year 2020 has changed slightly since this registration dates back to September 1). The highest percentages are for drug crimes (25%), sex crimes (25%) and violence (15%).

Norway has an average length of prison sentence of 7 months.

Looking at the statistics of recidivism rates, it was seen that 4509 people were released from prison in 2018 and 794 were the people who subsequently through 2020 were reincarcerated for a new crime; thus, there is a recidivism rate of 18%.[7]

In a more recent report - to get a sense of how the prison population has also changed in recent years - conducted in April 2022 shows similar data but with some variation.

The number of inmates is 3124 of which 615 are in custody. 782 of the totals are foreign nationals. Only 5.4 percent are women and only 3 under the age of 18. Therefore, the prison occupancy rate remains about 85%.

The highest percentages of crimes committed remain drug-related but there are 43% of people who have committed traffic offenses (especially drunk driving).[8]

Overall, the crime rate seems to be going down; with 400000 cases reported to the police twenty years ago, down to 300000 in 2020.[9]

3.2. Risk Factors

Research conducted on major search data base such as PubMed and Google Scholar found that the main risk factors that appear to be related to delinquency are **attention deficit hyperactivity disorder** (ADHD), **emotional regulation** and **drug use/abuse**.

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[6] https://www.kriminalomsorgen.no/straff-i-fengsel.516314.no.html

[7] https://krus.brage.unit.no/krus-xmlui/handle/11250/2991202

[8] https://kommunikasjon.ntb.no/pressemelding/nokkeltall-fra-kriminalomsorgen---april-2022?publisherId=17847130&releaseId=17933764&lang=no

[9] https://www.ssb.no/sosiale-forhold-og-kriminalitet/kriminalitet-og-rettsvesen/statistikk/anmeldte-lovbrudd-og-ofre

3.2.1. Prevalence rate of ADHD in Prison Population

The prevalence of ADHD and related problems are found to be increased in the prison population compared to estimates from the general population.

In a study conducted in Denmark (Mohr-Jensen et al., 2019), two samples of children between the ages of 4 and 15 were selected. One group had a diagnosis of ADHD and one group did not. From the results of this study, it was seen that ADHD was significantly associated with conviction and incarceration. The study also specifies that additional factors such as family and society may aggravate and influence this risk more but did not fully explain, without the influence of ADHD, the likelihood of conviction.

In a follow-up study (Philipp-Wiegmann et al., 2018) conducted for 15 years on incarcerated youth, the authors wanted to explore the impact ADHD might have on the criminality of young males. Effectively, it turned out that in people with ADHD the fact of committing recidivism happened 2.5 times faster than in people without ADHD, as well as the number of recidivisms was considerably higher.

The future research, therefore, was set on understanding how much the percentage of the population with ADHD within prisons is given the significance of association between ADHD and conviction. Thus, we now examine studies that bring this to light.

A study conducted only on Norwegian population (Anker et al., 2021) involved 629 patients from an Oslo clinic diagnosed with ADHD. Were asked them if they had ever had a criminal conviction; 25 percent answered yes. This proves that there is a large proportion of people with ADHD within prisons.

Moreover, a meta-analysis (Young et al., 2015) was conducted on 42 studies selected to understand the prevalence of ADHD in the prison population. This study looked at 15 countries to see if it could vary in outcome. They decided to divide the countries into 3 categories: North America, Europe and other countries. It was found that the percentage of people with ADHD is disproportionately high compared to the normal population (3%-5%) with inter-country differences. Europe had the highest prevalence rate of people with ADHD in prisons (about 30%), while in North America it is around 25%.

It is also highlighted that people with ADHD who have never received treatment or who have not had adequate treatment have a higher likelihood of intercurrent in a sentence and at a younger age. This is probably due to the difficulty these people have in emotional regulation (Young et al., 2015).

3.2.2. Emotional Regulation

A factor often mentioned in research but unfortunately not much explored is emotional regulation. It is clear from the literature, as explained in the section *'Emotional and Behavior Difficulties'* of this thesis, that lack of inhibition of behavior and self-control is typical of people with ADHD. As just explained, there is a high percentage of people with ADHD in prisons. Thus, we are going to look at some studies that investigate whether there may be a relationship between lack of emotional regulation and criminal behavior.

A study conducted in 2005 (Nas et al.) examined social information processing (SIP). It initially explains and defines what are the important aspects underlying this mechanism, namely emotion regulation, encoding and representation of others' emotions and their own. A comparison is then made between incarcerated and non-incarcerated adolescents, looking at their SIP and behavioral problems. This research showed that adolescent offenders generally are more aggressive, especially proactive aggression and have more problematic in externalized behaviors.

Moreover, one study sought not only to understand the relationship that may exist between emotional regulation and delinquency but also investigated whether parenting style could predict a lack in handling emotions (Rodriguez et al., 2016). A sample of emerging adults was examined, and it was found that greater ability to handle emotions was related to lower criminal behavior. However, there were not enough clear results on the association with parenting style. Future research could focus more on this way.

Lastly, we consider this article in which the authors always looked at the relationship that may exist between delinquency and emotional regulation but looked for differences between those who committed major and minor crimes (Pihet et al., 2012). The results were that impulsivity and inability to control their emotions was significantly related with those who committed minor crimes, but this was not found for those who committed major crimes.

Furthermore, a note to make about the findings brought out by this study is that they found that the rate of substance abuse in these adolescent offenders was 50%-80%.

3.2.3. Drug use

People with ADHD, as explained in Chapter 1, usually have a low level of education and a higher likelihood of using drugs or alcohol; these are all risk factors that can lead these people to commit criminal acts (Anker et al., 2021). Therefore, it might be interesting to

analyze studies dealing with precisely this relationship between ADHD, drug use and delinquency, but also more generally between drugs and delinquency.

One article deals precisely with the relationship between substance use (alcohol and drugs), ADHD and delinquency (Wilens & Biederman, 2006). A detailed description is given of all the possible relationships from which the link between ADHD and SUD (substance use disorder) may arise. It would appear that between 25% and 50% of adolescents who suffer from SUD also suffer from ADHD. ADHD, as widely described, is a neurodevelopmental disorder therefore precedes a possible development of SUD. There is, therefore, a high percentage of children who subsequent to the first diagnosis develop a second diagnosis related to substance use. This could be explained by the fact that many adolescents/young adults, self-medicate using drugs such as cannabis or alcohol. Moreover, it would seem that these adolescents are more inclined to criminal activities probably because drugs, especially when it comes to substances such as cocaine, have a high cost that not everyone can afford on a regular basis. Therefore, this causes these people to then turn to crime. Clearly, this is not the only explanation; there is a multi-factorality of causes that intersperse in a possible relationship between ADHD, drug use, and delinquency.

Furthermore, another study wanted to look more specifically at the relationship between ADHD and drug use. Indeed, it found that increased rates of substance use were true only if the person with ADHD had comorbidity with an externalizing disorder (e.g., oppositional defiant disorder, conduct disorder) (August et al., 2006).

Finally, a study that investigated only the relationship between drug use and delinquency confirmed the idea that the more addicted and the more drug use they make, the more crime they commit (Brunelle et al., 2014). A total of 726 youths were selected from addiction service registries, and as a result of the analysis in this study, it was found that there were no significant gender differences and that a history of physical abuse seemed to be related to future substance use. Again, however, as mentioned above, we cannot infer that this is a cause-and-effect relationship because there could be many other factors involved in this relationship. Nevertheless, there is confirmation precisely that the severity of delinquency is proportional to the severity of substance use.

4. METHOD

4.1. Participants

This study was executed as a survey study in all Norwegian prisons. The data used were collected in 2021 by a research group at the University of Bergen (Norway), Bergen Cognition and Learning Group, and then analyzed in 2022. Only male participants were selected. 823 incarcerated persons participated in the survey. The age of the subjects ranged from 18 to 82. The mean age was about 39 (M=39.17; Vo=37). The entire questionnaire was administered in the Norwegian language; all participants had Norwegian citizenship and were native speakers. The purpose of the study, the confidentiality of the data and privacy of the participants, the possibility of withdrawing at any time or not answering the questions were explained in the informed consent in the first page of the questionnaire. Finally, it was specified who was responsible for processing the data.

4.2. Measures

4.2.1. Questionnaire

The questionnaire that was administered for this study was 12 pages in length. On the first page, as explained earlier, was the informed consent of participation in the study. Next, some general questions were administered referring to their age, length of their sentence, educational level, whether they had ever been convicted before, or if they had ever been diagnosed with ADHD. These questions were closed-ended, almost all with 4 choices. This was followed by some shorter questionnaires that investigated the reasons why prisoners do not participate in any kind of education/training in prison or the reasons why they are participating in these programs. These had a 7-point or 4-point likert response scale. Finally, the WURS-25, a scale designed to retrospectively assess childhood ADHD symptoms in adults was included, which will be explained in the next subsection.

4.2.2. Wender Utah Rating Scale: WURS-25

One of the short versions of the Wender Utah Rating Scale questionnaire was used in this study. Specifically, it is the version with 25 items: Wender arbitrarily selected from the 61 items of the original version 25 questions from those that obtained a greater mean

difference between ADHD patients and the 'healthy' comparison group (Caci et al., 2010). This scale has a likert scale of response from 0 to 4 points.

Several studies have shown that a cutoff of 36 in the WURS-25 identifies 96% of subjects with a diagnosis of ADHD and 96% of subjects without this pathology. Or a cut off of 46 has shown to identify 86% of subjects with ADHD and 99% of 'normal' subjects (Brevik et al., 2020; Caci et al., 2010).

4.2.3. Statistical Program SPSS

We used the statistical program SPSS. Initially SPSS stood for 'Statistical Package for Social Science,' later several statistical functions were included so that it could be used for other types of science as well. The first version of this statistical program was created in 1968. Nowadays, it is one of the most widely used statistical programs due in part to its ease of use resulting from its visual graphical user interface.

We now explain some of the analyses performed on SPSS that will be used and elaborated upon later in the next chapter.

Tukey's Honest Significant Difference (**HSD**) test is a post hoc test commonly used to assess, between pairs of group averages, the significance of differences. This type of test is more conservative than the List Significant Difference (**LSD**).

Analysis of variance (**ANOVA**) is a set of statistical techniques for comparing two or more groups of data by calculating and comparing within-group variability with between-group variability.

There is a null hypothesis, which defines that the data in each group have the same origin and that the differences are due only to chance. The ANOVA tests this hypothesis by bringing in a result that can confirm this hypothesis-in which case the test will be nonsignificant-or by bringing in a result that does not confirm the null hypothesis (the test will therefore be significant). This test is found within the analysis performed with the general linear model, as well as the F test.

The Kaiser-Meyer-Olkin (**KMO**) test measures the suitability of data for factor analysis. The test measures the adequacy of sampling for the full model and for each variable in the model. **Bartlett's test** is used to test for homoscedasticity, that is, whether multiple samples come from populations with equal variances.

4.3. Statistical Procedures

Our first step in this analysis was to calculate, using SPSS statistical program, the total value that each subject obtained at WURS-25. We therefore calculated a new variable by summing the response to each item on the questionnaire. From here, we wanted to look at the frequency of this new variable to identify how many of the incarcerated people who participated reached the cut off 36. As explained earlier, the cut off of 36 has been identified in the literature as the most specific value above which the WURS-25 scale succeeds in identifying subjects suffering from ADHD symptoms.

Furthermore, there was a direct question in our questionnaire about who has been diagnosed with ADHD. There were 4 possible answers (yes, as a child; yes, as an adult; no, never; don't know). We therefore did an operationalization by combining the first two answers as general 'yes' and the last two as general 'no' to simplify the analysis. After that we made a frequency table with this new variable to see how many people had actually been diagnosed with ADHD in their lifetime.

Our analysis moved forward using dimension reduction analysis with factor variance. Thus, we included all 25 questions from the WURS questionnaire as variables. In particular we specified that we wanted to use the univariate descriptive analysis, with initial solution and as correlation matrix the coefficients option and the KMO test and Bartlett's sphericity test. We conducted parallel analyses to determine the correct eigenvalue to accept the factors, and the analysis returned 1,25 for the third factor. This gives more a more conservative, but also a more robust solution compared to using the knee of the scree plot or the eigenvalue > 1. The rotation we wanted to use is the 'Varimax'. We excluded listwise cases, i.e., we excluded cases where participants did not respond. Finally, we defined those small coefficients, precisely below .40 would not be included in the analysis.

In doing so, we asked the program to, through several rotations, identify whether there were correlations within the questions so that we could identify different factors in them. Next, having identified the factors of interest to us from the previous analysis, we used the compute variable. We used this to sum all the items that fell under each of the identified factors and divide them by the number of them, thus averaging them. To avoid confusion, we renamed them as 'components'. So having identified 3 factors within our questionnaire we eventually got 3 components that we will used as a 3 subscale of the WURS-25 in our analysis. To assess the significance of the items for each factor in the

factor analysis, it is necessary to consider the results in absolute value; the closer the values are to 1 the more correlation there is with that factor.

We can now proceed into the actual analysis of these components and how they interact with the various other variables. For instance, we decided to make a comparison between the 3 components and education level. The latter was identified through one of the questions asked of the study subjects, "What is the highest education you have completed?" (Hva er den høyeste utdanning du har fullført?).

Therefore, we proceed with a general linear model with repeated measures, we specify that we want 3 levels. Thus, we enter as dependent variables the 3 components from the WURS-25 that we just created and compare them to the level of education entered as a between-subjects factor.

The same analysis procedure was implemented but this time for the comparison between the three components and the recidivism incarceration, responses obtained to the question: "Have you been convicted before?" (Har du tidligere vært domfelt?). That type of analysis, as said before, is a general linear model is done with repeated measures by including as dependent factors the 3 components, and as a between-subjects factor the recidivism. We highlight that between the HSD and LSD we preferred to take the more conservative test to have greater accuracy in our analysis.

Moreover, since, as explained often in this paper, it would seem that ADHD is a high risk factor for recidivism we moved on to compare the scores obtained from the WURS-25 and the responses to the recidivism question.

We initially recoded the variable of total scores obtained on the WURS-25 by dividing participants who scored greater than 36 and those who scored less into two groups. We also recoded the recidivism variable by dividing into those who had no other convictions and those who had one to more than 3.

Doing a descriptive statistic, using a contingency table specifying that we wanted row %s, we looked at the interaction existing between these factors.

For the last research question, we implemented an analysis using the general linear model but this time univariate. We decided to use a univariate model since we had only two factors to compare: level of education and recidivism. We entered education level as the dependent variable and recidivism as the random variable by specifying to the SPSS statistical program that it also wanted the line graph of the analysis.

The next analysis we have decided to undertake aims to see if within one of the questions of the general questionnaire, referring to the reasons why the person does NOT pursue

education in prison, different components can be found there. According to the literature, as explained in the section "barriers to education," there are 3 main barriers. Therefore, we performed the same analysis done for the WURS-25 questionnaire: dimension reduction, with univariate analysis using KMO and Bartlett's tests; Varimax rotation was used; we determined who should be included (list wise), show coefficients greater than 0,40, As mentioned above, we consider absolute results, and excluded variables loading significantly on more than one factor.

Once the components of this questionnaire were identified, 4 different variables were created for each of them. In creating these we always did the sum of each item that fell into each component and divided by the number of items, so we averaged them. To get a more accurate value we specified to the program that we wanted numbers without decimals, rounded down or up, by placing before the average function the command "RND."

Subsequent analysis then focused on comparing via ANOVA (general linear model with repeated measures) the relationship between the 4 barriers (components) just identified - within subjects variable - and the length of the sentence - between-subjects variable. The latter was identified through our questionnaire question 'How long (unconditional) sentence do you have now?' There were 13 response in this question, and they ranged from less than 3 months to more than 10 years.

Next, we took the question from the questionnaire 'why do you take education/training during the execution of the sentence' and, via ANOVA (general linear model with repeated measures) investigated whether there was any relationship with the length of the sentence.

It should be noted that in the question about why NOT to participate in education, it was specified that only people who were not doing education could answer. As well as for the question about the reasons why they are carrying out education it was specified was only for those who are actually carrying out education in prison.

Finally, thanks to a frequency table referring to each of the 4 barriers, we went to see what component participants indicated as most incidental to their decision not to participate in education. Then each individual item was analyzed to get a clearer view of the situation with a frequency table. The same was also done for the reasons why the participants are doing education in prison.

The result of all the analyses that have been displayed in this section will be explained in the next chapter.

5. RESULTS

The first analysis explained in the section on procedures carried out in SPSS in which we looked for how many of the participants reached a cut off of 36 points showed that out of 823 respondents there were 79 missing data. Therefore, of the 744 prisoners who fully responded to the WURS-25, 49.1% scored 36 or higher. Therefore, it can be concluded that about 50 percent of the participants in this survey experienced symptoms of childhood ADHD according to WURS-25.

The frequency table created to see how many people actually had a diagnosis of ADHD during their lifetime showed that all subjects (823) answered this question. Of the respondents, 25.3 percent said they had been diagnosed with ADHD, which is perfectly in line with the literature (Anker et al., 2021; Young et al., 2015).

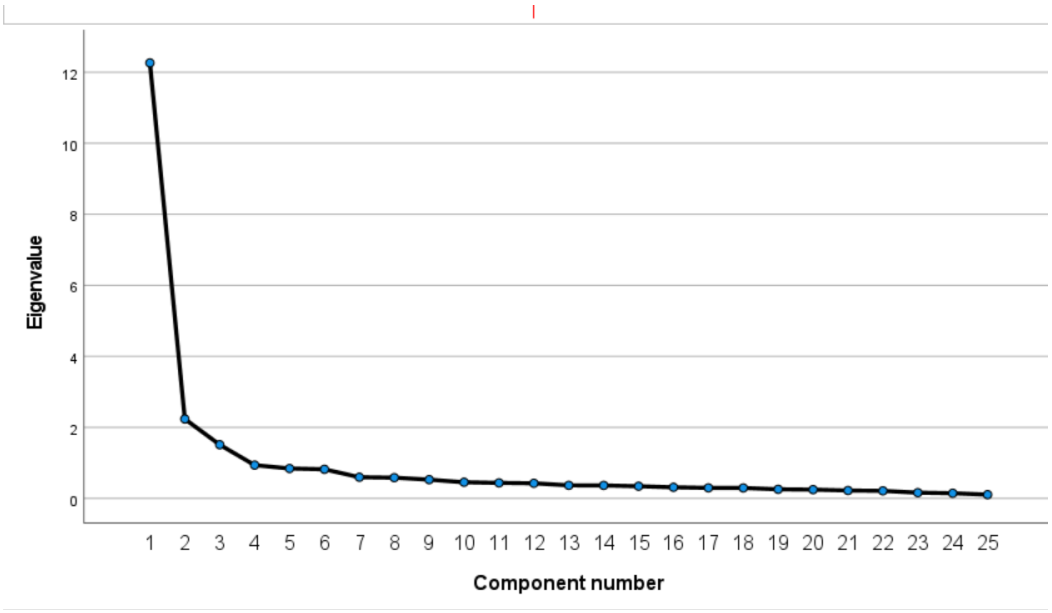
Moreover, our second analysis reported a descriptive table of the sample. We can observe that the number of subjects became 744 for the listewise command, as before.

Looking at the table of the correlation matrix, we can notice a correlation between all the questions of the instruments, even though some of these are very weak. The questionnaire was created to analyze the symptoms of ADHD, so we expected that there would be a correlation between items would be.

The value of the KMO test is .96 so it is defined as excellent, and it is advisable to do the analysis. The Bartlett's is significant so we can expect a high correlation between variables and therefore the possibility of finding different factors.

Moreover, from the scree-test we can visually observe that a knee is present at the third level, so we could assume the presence of 3 components.

Table 1. Scree-test



The analysis conducted with the rotation of variables produced 3 types of tables. We decided to used the table obtained through the rotation 'Varimax' (increase distance, reduce the correlation between the factors) with normalization 'Kaiser' (convergence for the rotation performed in 5 iterations). This choice was made because there is a clearer separation between the questions in these 3 clusters than in the other rotations.

Table 2. Rotated component matrix WURS-25

Item	COMP 1	COMP 2	COMP 3	Uniqueness
WURS5 hissing temperament	.825			.651
WURS6 outbursts of anger	.818			.790
WURS14 Angry	.807			.766
WURS12 Irritable	.702			.593
WURS18 Easy to lose control of myself	.678	.413		.780
WURS10 Disobedient to parents, rude	.664			.780
WURS15 Acted without thinking	.647	.514		.663
WURS13 Moody, fluctuating mood	.632		.440	.293
WURS22 Trouble with authorities, problems at school	.628	.447		.737
WURS19 Tendency to be or act irrational	.598	.536		.528
WURS8 Stubborn	.530			.694
WURS23 learned late		.785		.718
WURS24 Problems with math or numbers		.736		.669
WURS1 Problems with concentration		.680		.805
WURS25 Never got shown what I could do		.641		.706
WURS7 Difficulty holding on to tasks	.409	.635		.550
WURS16 Tendency to be immature	.404	.594		.551
WURS4 inattentive, daydreaming		.588		.731
WURS21 Difficult to see things from the point of view of others	.434	.486		.687
WURS2 anxious, worried			.854	.414
WURS9 Sad, Depressed			.813	.473
WURS3 nervous and restless			.798	.595
WURS11 Poor self-image			.787	.692
WURS17 Troubled by guilt and remorse			.645	.570
WURS20 Unpopular with other children		.422	.432	.578
Explain Variance **Eigen value**	25.024 6.256	20.533 5.133	18.504 4.626	64.060

It is important to note that some of the questions are loading to more than one component. It was therefore decided: that questions with a very similar correlation value in several components will be excluded from the analysis (Table 2, the value in red were excluded, item 19-20-21), while questions with a significantly higher value in one of the factors will be considered only for that component (Table 2, item 7,16,17,18,22).

From the meaning of each question we can conclude that the first component particularly relates to antisocial behavior and includes 10 items of the WURS-25 (i.e., easy of losing control of myself; trouble with authorities, problem at school, was sent to the principal), the second is composed from 7 items and concerns to possible school problems and self-efficacy of the subject (i.e., problem with math or numbers; never showed what I could do), and finally, the third factor, including 5 items, relates to the subjects' emotions (i.e., sad, depressed; not happy; anxious, worried). Thus, from now on, for simplicity, we will call the first component '*antisocial behavior'*, the second one '*school problems*' and the last one '*emotions*'.

The next analysis we conducted was aimed at measuring the interaction between educational level and the three subscales just identified from the WURS-25.

The estimate of variance is homogeneous in all conditions.

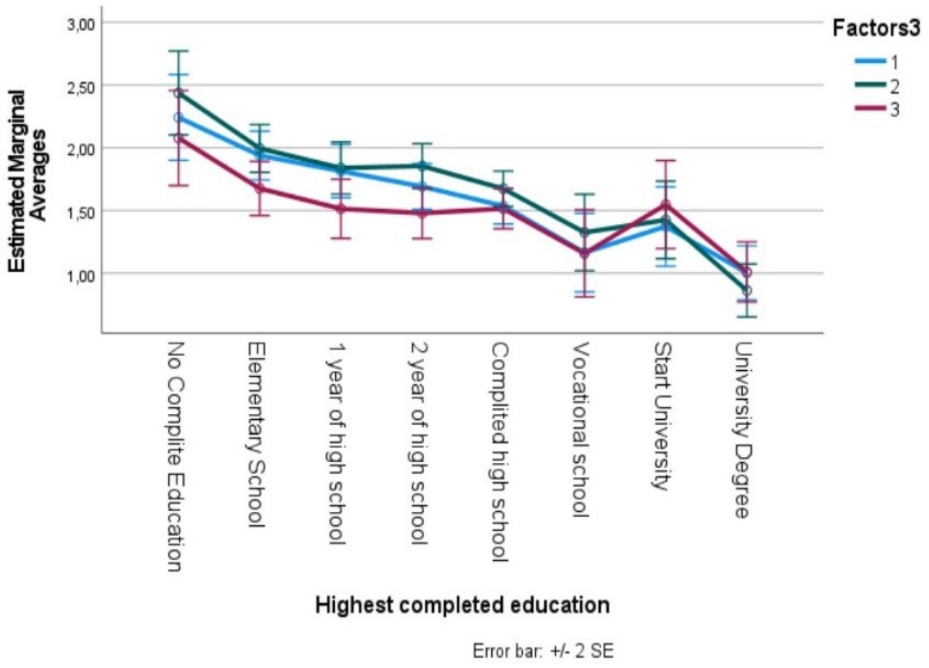
From the result of the ANOVA test, we can summarize that the effect of the three components is statistically significant despite varying the degrees of freedom (df) of the test. Indeed, if we consider the 'lower bound', the most conservative case, where the degrees of freedom is only one (because the components are 3 so the df is the number of the variables, 3, minus 1. In the most conservative way, in this case, is 3 minus 2) the effect of the 3 components still remains significant ($F_{(1, 1472)}= 9.70$, $p < .05$). Although with a smaller effect, the interaction between the components and educational level remains significant as well despite taking into consideration the most conservative degrees of freedom, which in this case is 7 degrees of freedom ($F_{(7, 1472)}=2.36$, $p < .05$).

As for the educational level variable, it is also highly significant even with only 7 degrees of freedom ($F_{(7, 736)}=12.22$, $p < .05$).

Dwelling more on the effect of the interaction between these two variables (education level, 3 components of the WURS-25) to actually understand which pairwise comparisons are responsible for the effect, we look at the 'Honesty Significant Differences Tukey test'. It emerges how the effect starts to be statistically significant when the person claims to have an educational level above the 2nd year of high school. An opposite effect, thought,

is noted in the first year of college (Table 3), especially for the emotion component, which then reverts to the previous results once they graduate.

*Table 3. Effect of Interaction: Level of Education * 3components*



The same type of analysis was conducted again but this time the purpose was to look at the interaction between the three components of the WURS-25 and recidivism.

The ANOVA shows that the statistically significant effect is present for both the 3 components ($F_{(1,\ 1478)}$=24.48, $p < .05$), recidivism ($F_{(2,\ 739)}$=24.04, $p < .05$) and the interaction of these two variables ($F_{(2,\ 1478)}$=13.35, $p < .05$). Even here, the degrees of freedom taken into consideration were the most conservative.

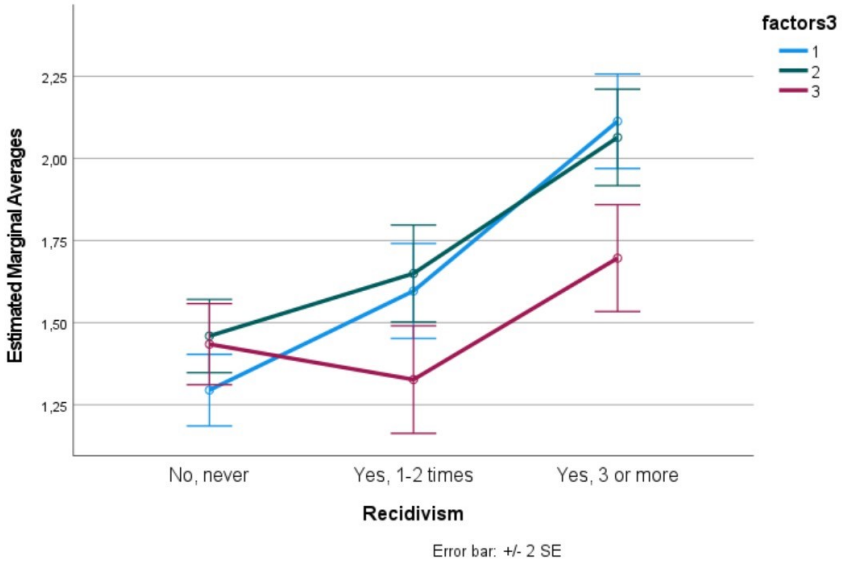
Looking instead at the HSD Tukey test to see where the effect of this interaction is actually significant. We can notice that it appears significant only in the case where the person has served more than 3 times a sentence.

Of note, the number of participants who responded that they had one to two re-convictions (218) and those who said they had more than 3 re-convictions (222) are about the same and are almost half the number of subjects (383 vs 440).

Looking at the graph in Table 4, even in this case, we can see that the trend of the emotional component is slightly different from the other two, which instead have a more

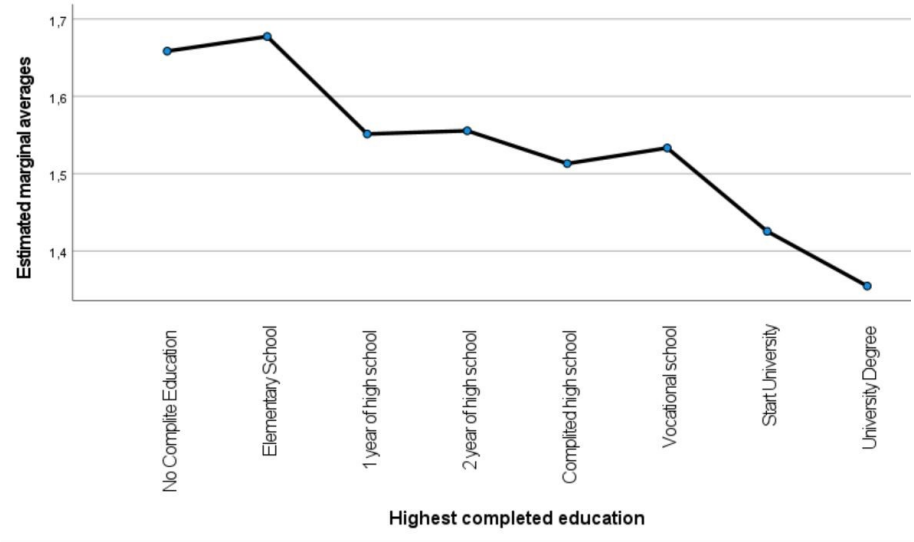
uniform trend. The emotional component while also having a statistically significant effect in the case where recidivism is greater than 3 is held lower in the effect.

*Table 4. Effect of Interaction: Recurrence * 3components*



The next analysis, a comparison of those who scored at or above the cut off and recidivists, showed that 59.7% of prisoners who suffered from ADHD symptoms according to the WURS-25 scale committed recidivism, a figure in agreement with the literature. Indeed, only 45% of those who did not reach the cut off committed recidivism. Also from the chi square test we can see that there is a strong dependence between these variables being the test statistically significant ($\chi 2 = 15.15$, $p < .001$). Therefore, we can conclude as well, that ADHD seems to be a risk factor for recidivism.

*Figure 5 Effect of Interaction: Recidivism*Level of Education*



The next analysis performed by implementing the univariate general linear model brought interesting results. Indeed, we analyzed the interaction between educational level and recidivism. The correlation between the two factors was significant although not very strong ($F_{(7, 812)}$=4.07, $p < .05$). Thus, the higher the educational level the less likely this person was to have committed recidivism.

The analysis carried out to understand whether there could be different clusters within the questionnaire, referring to the motivations on NOT participating in prison education, yielded results quite in line with the literature. Looking at the KMO test, the score is .76, an acceptable result for which we can infer that we can continue our analysis. Bartlett's test is significant so we can expect a high correlation between the variables and thus the possibility of finding different factors.

The various Varimax rotations showed that there are 4 main components of this questionnaire. It was decided to use the table obtained through 'Varimax' rotation with 'Kaiser' normalization (convergence for the rotation performed in 6 iterations). This choice was made since through this type of rotation the items of the questionnaire were better distributed in the 4 components.

To highlight, as can be seen in Table 6, two items were not placed in any of the components (items ‘A’ and ‘S’), instead item ‘T’ (Table 6, value in red) was purposely excluded from selection by us as it falls into two components with a very similar level.

The first component identified consists of 5 items and refers to dispositional barriers (e.g., I feel too old, I am not interested). The second is related to institutional barriers and consists of 7 items (e.g., there is no course option I would like, not enough information is provided). The third component is composed of 4 items and concerns personal scholastic difficulties that a person may have (e.g., difficulties in reading and writing, difficulties in math), these are separated from dispositional barriers since they may only affect some specific individuals. We decided to keep them separate so our analysis can be more specific and assess whether the reasons concern more personal disinterest or more personal school problems. Finally, the last component, consisting of 3 items, concerns situational barriers (e.g., difficulty combining work and school, finishing the sentence before the end of school). For simplicity we will refer to these 4 components as: "*dispositional barriers*," "*institutional barriers*," "*school problems*," and "*situational barriers*".

Table 6. Rotated component matrix Motives Not to participate into Prison Education

Items	Comp 1	Comp 2	Comp 3	Comp 4	Uniqueness
MOTIVNotB The offer I want does not exist		.488			.250
MOTIVNotC I do not get enough info		.660			.496
MOTIVNotD I do not understand info			.589		.367
MOTIVNotE I would rather work				.627	.647
MOTIVNotF I have enough education	.633				.555
MOTIVNotG I feel too old	.575				.391
MOTIVNotH Difficult combine work and school				.603	.464
MOTIVNotI Training condition too poor		.688			.488
MOTIVNotJ Sentence end before ending education				.568	.385
MOTIVNotK I am not interested	.748				.648
MOTIVNotL Recived advice from employees to not taking education		.461			.235
MOTIVNotM Transfer during the sentence		.537			.445
MOTIVNotN Difficulty in writing and reading			.758		.577
MOTIVNotO Difficult to concentate here			.610		.524
MOTIVNotP Education not worth the trouble	.728				.550
MOTIVNotQ Difficulty in maths			.812		.680
MOTIVNotR Lack of internet		.674			.476
MOTIVNotS Recived advice from other inmates to not to take education					.291
MOTIVNotT Too sick	.430			-.439	.474
MOTIVNotU Covid influenced education		.497			.299
MOTIVNotV Education is not helpful for me after release	.741				.556
Explain Variance	13.686	13.273	10.997	7.478	45.434
Eigen value	3.011	2.920	2.419	1.645	

The general linear model investigating the interaction between the 4 barriers to education and sentence length showed that the interaction does not have a significant level. This means that prisoners' responses do not change according to the length of their convictions.

The same analysis was developed to investigate a possible relationship between the reasons why a person in prison undertakes education and the length of the sentence. Again, no significance was found, so there appears to be no significant relationship between these two variables. These data go against the results found in the literature, which instead find a negative correlation between undertaking education in prison and length of sentence.

Consequently, we decided to investigate more specifically which barriers were percentages most indicated to be hindering prison education.

The first frequency tables examining the 4 barriers showed that most people (about 85%) stated that the first 3 barriers (dispositional, institutional, and school problems) were not the reason why they do not undertake education in prison. Regarding situational barriers, satisfaction also remains high, thus 70% of people indicate that they are not the main reason why they do not attend education. However, we can see that there is a slight increase in dissatisfaction, about 30% of people indicate this as the cause. If Norwegian prisons therefore wanted to improve one aspect of their already good prison system and help the inmates to improve their level of education, they could pay attention to the aspects investigated in the items referring to situational barriers.

From the frequency tables of each single item of why people do not undertake education in prison, we considered only the values above 30%. Thus, the items that were indicated by more than 30% of people were as follows: MOTIVNotB, MOTIVNotC, MOTIVNotE, MOTIVNotF, MOTIVNotJ, MOTIVNotO, MOTIVNotR. As can be seen from Table 6 these items belong to different components. From these last two analyses therefore, it can be concluded that the prison system could work on improving situational barriers. At the same time, however, if it wanted to act more specifically, it could look at the results of individual items and work on them.

As a final analysis, we now look at the frequency tables that investigates the individual items reported you have reasons why participants are performing education during their sentence. We selected the items that have a low percentage of people who responded with a score from 1 to 4, since the rating scale ranged from 1 as not fitting at all to 7 as fitting

perfectly. Thus, we identified only the items that actually seem to prompt participants to attend prison education (MOTIVb, c, e, g, h, k, l, q, r, t). These items generally relate to feelings of joy in learning, thinking they could have a better future because of education, or a perceived greater sense of self-efficacy in succeeding in study.

In contrast, the items that were defined as disagreeing with the participants' thinking related more to monetary reasons of salary or the fact that one had no idea why they were attending education.
This may lead to the reflection that in Norwegian prisons, the people inside doing the sentence are very clear about what the benefits are, especially the personal ones. Moreover, it can be said from their responses that they are driven by good intrinsic motivation.

We now want to bring in one final thought. When asked in the questionnaire what were the reasons why people are not attending education in prison, it was specified at the beginning that only those who are not doing education were to answer. Similarly, for the question about why people attend education, only those who were currently taking education were asked to answer. Therefore, we saw that to the first question the approximately 300 people answered and 520 did not. To the second 360 answered 460 no. Assuming that those who responded actually correspond to those who are participating in education, we can say that a little over 40% of the people are doing education in Norwegian prisons. We can also say that about 35% are not doing it. However, we cannot know why some people did not respond. Still important data to point out that will be included later in the discussion.

6. DISCUSSION

This thesis started with an explanation of what attention deficit hyperactivity disorder (ADHD) is, an overview of how education is structured in Norway and particularly in Norwegian prisons, and finally what delinquency is and how Norwegian prisons are structured. Analysis was then conducted on the data collected to verify the study's research questions. The main questions were 3:

- Is there a possible relationship between the retrospective symptoms of ADHD identified by WURS-25 and the educational level of prisoners?
- Is there a possible interaction between the retrospective ADHD symptoms identified by WURS-25 and recidivism?
- Is there a possible interaction between participants' level of education and recidivism?

Taking the first research question into consideration, we first analyzed the data obtained from the administration of the WURS-25. It appeared from the data obtained with this measurement scale, that about 50% of our participants were found to have retrospective symptoms of ADHD. This figure compared with the present literature regarding this issue seems to be growing. Indeed, several studies have shown that within prisons we usually find a rate of about 25%-30% of people suffering from ADHD (Anker et al., 2021; Philipp-Wiegmann et al., 2018; Young et al., 2015). Within our sample, however, we identified that about half of the subjects experienced these symptoms. Next, we asked subjects to state whether they had ever been diagnosed with ADHD during the course of their lives. The result was that 25% had been diagnosed with this disorder. Comparing these first results, a significant difference between them can be seen. This could be due to the fact that a diagnosis is not always made, despite the fact that people complain of experiencing the symptoms of this disorder, especially if the onset occurred in adulthood and especially if these people are within a prison system. It could also be, however, that because we used the WURS-25 as a measure this led to an overestimation of people who might meet the criteria for an ADHD diagnosis. Given also the fact to keep in mind that the WURS scale uses the Utah criteria and not the DSM criteria.

From the explanation of the symptoms and criteria used to diagnose ADHD in the analysis conducted above (American Psychiatric Association, 2013), we hypothesized that 3 clusters could be identified within the WURS-25 rating scale. Indeed, we could identify 3 components referring to antisocial behavior, school problems, and emotions. Then these

3 components were compared with the level of education to be able to see if there could be a relationship there. It would seem from our analysis that antisocial behavior and school problems gradually go down with increasing educational level. Only with regard to the emotion cluster is there a small spike at the beginning of college that then goes down after graduation. This could mean that indeed there is an interaction between ADHD symptoms and level of education (Brosens et al., 2019). This relationship brings to light two possible conclusions. The first is that as ADHD symptoms decrease people get a higher level of education, and the second is that if work is done on improving education and on increasing people's educational level, we might see a decrease in perceived ADHD symptoms. Thus, the relationship between these two variables has been demonstrated but the nature of it is unclear.

Regarding our second research question, we conducted an analysis comparing the 3 components of WURS-25 and recidivism. it was found that the interaction between these two factors was significant only for people who have 1 to more than 3 convictions. Therefore, for both antisocial behavior, school problems and emotions it would seem that these symptoms are experienced more for people who have committed recidivism. To be more precise in analyzing the nature of this relationship, we also conducted an analysis comparing who among our participants actually scored high enough on the WURS-25 to assume that they experienced retrospective ADHD symptoms with recidivism. Even here the relationship seems to be present. Thus, about 60% of those who met the cutoff on the rating scale reported having had at least one other previous conviction. This finding seems to be perfectly in line with the literature (Gordon et al., 2012; Philipp-Wiegmann et al., 2018). Indeed, it would appear from several studies that ADHD is a risk factor for recidivism.

Finally, for our third research question, we compared our participants' level of education with recidivism. Again, it seems that our analysis uncovered scientifically significant results. Therefore, the interaction of these two factors seems to be present. The higher the educational level the fewer convictions were found.

Next, our analysis also wanted to focus on the reasons our participants indicated as influential for not participating or participating in prison education. First, we identified 4 barriers to education (institutional barriers, dispositional barriers, situational barriers, and school problems). Then we decided to assess whether there was a relationship between these 4 barriers and length of sentence. From the literature, as explained earlier in this thesis, it would seem that the length of the sentence greatly influences the prisoner's

decision to participate or not to participate in education (Roth et al., 2016). Furthermore, the literature points out that usually the institutional barrier is the most problematic one, thus, the one that seems to prevent people inside the prison the most from starting an education (Eikeland et al., 2009).

Contrary to what we expected, we did not find any kind of relationship between the 4 barriers and sentence length. Therefore, we tried to investigate whether there might be a relationship between reasons for participating in education and length of sentence, again possibly explained by the literature. Instead, the interaction was not statistically present here either.

Our last analysis therefore focused on understanding which barrier our participants perceived to be most present in the Norwegian prison system. Followed by an item-by-item analysis to better understand on which points the Norwegian prison could be improved. It turned out that none of the 4 barriers had a significantly higher value than the others. If we want to be precisely, even there is not a statistical difference, it can be seen that a slight dissatisfaction was recorded regarding the situational factor, that is, situational barriers were reported to be slightly more influential than others.

We can conclude that, in general, our participants are satisfied with the Norwegian prison system. However, it could also mean that the reasons why people in prison do not carry out education are other than those investigated by us through our questionnaire.

7. CONCLUSION

We can claim that the three main research questions of this experimental study have been confirmed. The relationship between retrospective ADHD symptoms, level of education and delinquency has been demonstrated within our sample. Therefore, we can say that within a sample of people with Norwegian citizenship who are serving time in Norwegian prisons, a statistically significant interaction between the factors investigated can be found. Regarding the second part of the analysis in which we wanted to analyze the underlying motivations for choosing whether or not to pursue education in prison, we did not find results in line with the literature. This could be a favorable and positive aspect for the Norwegian prison system. Indeed, we could assume from our participants' responses that they are generally satisfied with the conditions and information of prisons in Norway.

7.1. Limits

Some limitations were identified within our analysis. Data collection and thus selection of our participants were conducted during the Covid-19 pandemic so participation in the study was slightly limited, albeit high. We questioned whether this might be a representative group of the Norwegian prison population or whether natural selection posed by the Covid-19 conditions affected this. Another limitation we feel to point out concerns the measurement tool most used for this analysis: The Wender Rating Scale (WURS-25). As explained earlier this is a retrospective scale created to investigate ADHD symptoms based on the Utah criteria. This makes it not a true diagnosis, the criteria used therefore are not those recognized by DSM5 or ICD10. Moreover, it is a self-report measurement scale that investigates childhood actions, feelings and behaviors that the subject may have forgotten or not remember accurately.

Lastly with regard to the aspect of education, it is worth noting that in Norwegian prisons the system particularly focuses mostly on give courses until upper secondary education.

7.2. Future research

From the analyses carried out in this thesis, we can identify the need to develop future analyses. For instance, as specified in the discussion chapter, the nature of the relationship between ADHD retrospective symptoms and educational level is not entirely clear. Therefore, more detailed analyses could be developed on precisely this relationship already demonstrated here. Being that the ADHD symptoms found through the WURS-25 relate to the age of school initiation, therefore preceding the period of incarceration, we can assume that these influence

the educational level of our subjects, but further analyses could better clarify this inference. The correlation we have demonstrated between retrospective ADHD symptoms and recidivism, moreover, is a very important aspect that emerged from our analysis and could lead to new research not only to demonstrate where this relationship originates and what direction it takes but also to work on it. Changing this type of interaction could benefit both the person and the country's social and prison system. Furthermore, the discovery of a statistically significant correlation between educational level and recidivism may give rise to reflection and future analysis on this phenomenon. Lastly, the study of prisoners' motivations for education provided a reason for improvement that Norwegian prisons can make to their system although, as already pointed out we can assume it is a good system.

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