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Prison and the brain: Neuropsychological research in the light of the European Convention on Human Rights

Sjors Ligthart
Tilburg University, The Netherlands

Laura van Oploo
Tilburg University, The Netherlands

Jesse Meijers
Vrije Universiteit, The Netherlands

Gerben Meynen
Utrecht University, The Netherlands; Vrije Universiteit, The Netherlands

Tijs Kooijmans
Tilburg University, The Netherlands

Abstract

Prison is by its nature a deliberately impoverished environment, with few physical, mental and social activities. Various studies have shown negative effects of an impoverished environment on animal as well as human brain functions. A recent study in a Dutch remand prison showed that brain functions connected with self-regulation decline after 3 months of imprisonment. Reduced self-regulation appears to be a risk factor for recidivism. In this article, we examine the legal implications of these neuropsychological findings in a European context. Firstly, we analyse these results in the light of the principle of rehabilitation as interpreted in case law of the European Court of Human Rights. Secondly, we explore how the neuropsychological insights could be relevant in the context of the prohibition of torture, inhuman and degrading treatment (Article 3 of the European Convention on Human Rights (ECHR)). We argue that if the impoverished prison

Corresponding author:
Sjors Ligthart, Department of Criminal Law, Tilburg Law School, Tilburg University, Warandelaan 2, Tilburg 5000 LE, The Netherlands.
E-mail: s.l.t.j.ligthart@uvt.nl

environment hampers rehabilitation, states are positively obliged to take appropriate measures to counter these effects. Ultimately, negative effects on brain functioning by impoverished prison environments could even raise an issue under Article 3 ECHR. Furthermore, we argue that neuropsychological insights have to be taken into account when establishing the threshold according to which the European Court on Human Rights judges prison conditions. We conclude that in the light of these considerations further research on the neuropsychological effects of the prison environment is required.

Keywords
Prohibition of ill-treatment, neuropsychology, neurolaw, European Convention on Human Rights, principle of rehabilitation, detention, prison conditions

Introduction

Prison is a deliberately impoverished environment. Regardless of the imposed regime or security level, it entails physical, mental and social inactiveness of detainees. Various studies have depicted the negative effects that an impoverished environment has on both animal and human brain functions, especially the latter within the context of nursing homes.[1] A recent study in a Dutch remand prison that housed pretrial inmates investigated the potential negative effects of the impoverished prison environment on a detainee's neurocognitive functioning. In line with these studies and earlier hypotheses, this study showed that brain functions for self-regulation (self-control and planning) declined after 3 months of imprisonment.[2] Most detainees will re-enter society, but when this occurs, they face challenges such as finding housing, employment and not relapsing back into old habits such as drug use, theft or aggression. In overcoming these challenges and successfully reintegrating into society, the former detainee clearly has to rely on neuropsychological functions such as impulse control and planning.[3] Reduced self-regulation appears to be a risk factor for recidivism.[4] Notably, since the general prison population seems already to have problems with self-regulation, prison could *further* deteriorate brain functions, which could hamper resocialization and increase the risk of recidivism.[5] In contrast, studies have shown that enriching an environment – with more physical, mental and social activities – could positively influence self-regulation.[6] Several questions come to the fore. For instance, can these

1. For example, K.M. Volkers and E.J.A. Scherder, 'Impoverished Environment, Cognition, Aging and Dementia', *Review Neuroscience* 23(3) (2011), p. 260.
2. J. Meijers, J.M. Harte, G. Meynen, et al. 'Reduced Self-Control after 3 Months of Imprisonment; A Pilot Study', *Frontiers in Psychology* 9 (2018), p. 1. See also R. Umbach, A. Raine and N.R. Leonard, 'Cognitive Decline as a Result of Incarceration and the Effects of a CBT/MT Intervention: A Cluster-Randomized Controlled Trial', *Criminal Justice and Behavior* 45 (2018), p. 31.
3. J. Meijers, J.M. Harte, F.A. Jonker, et al. 'Prison Brain? Executive Dysfunction in Prisoners', *Frontiers in Psychology* 6 (2015), p. 1.
4. M. Hancock, J.L. Tapscott and N.S. Hoaken, 'Role of Executive Dysfunction in Prediction Frequency and Severity of Violence', *Aggressive Behavior* 36(5) (2010), p. 338.
5. Meijers, Harte, Jonker, et al. 'Prison Brain? Executive Dysfunction in Prisoners'.
6. C.H. Hillman, K.I. Erickson and A.F. Kramer, 'Be Smart, Exercise Your Heart: Exercise Effects on Brain and Cognition', *Nature Reviews Neuroscience* 9(1) (2008), p. 58; L. Petrosini, P. De Bartolo, F. Foti, et al. 'On Whether the Environmental Enrichment May Provide Cognitive and Brain Reserves', *Brain Research Reviews* 61(2) (2009), p. 221.

neuropsychological findings have consequences for the way (prison) authorities should deal with detainees? Which legal principles are relevant in this respect, and could these neuropsychological insights influence the way in which the European Court of Human Rights ('the Court'/ECtHR) interprets and explains these principles? These questions are examined in this article within the European legal context.[7]

To that end, we use a legal dogmatic research method. In applying this method, we use recent neuropsychological insights in order to substantiate our (legal) arguments in two ways. First, we approach recent neuropsychological research findings from a legal perspective and argue that, in the light of both the obligation to rehabilitate convicted offenders and the prohibition of ill-treatment, neuropsychological insights (could) give reason to further facilitate rehabilitation by preventing unwanted harmful side effects of detention. Secondly, we explore how these *neuro-psychological* insights could further shape the meaning and scope of the *legal* principles of rehabilitation and the prohibition of ill-treatment.

The outline of the article is as follows. In the second section, we discuss the impoverished environment in European prisons on the basis of general prison standards with reference to the findings of the European Prison Observatory and reports of the Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT). In the third section, we consider the neuropsychological effects of impoverished environments in more detail and explain why this broader research domain is relevant to prison environments. In the fourth section, we briefly describe the content and scope of the principle of rehabilitation and the prohibition of ill-treatment and the way in which the Court explains both legal principles. In the fifth section, we consider the legal implications of (potential) neuropsychological effects of imprisonment in the light of the principle of rehabilitation and the prohibition of ill-treatment. We conclude with a summary and some recommendations in the sixth section.

Ultimately, we argue that European states, in shaping prison environments, are positively obliged to take into account neuropsychological insights that show that impoverished prison environments (could) hamper rehabilitation. Furthermore, we argue that these neuropsychological findings give good reasons for the Court to refine its threshold according to particular prison conditions that are '(un)acceptable'.

Detention environments in Europe: A generic overview

The essence of a custodial sentence lies in the deprivation of freedom. Translated to prison standards, this means a custodial sentence should be minimally invasive. This idea is embodied in legislation produced by national legislatures. This is illustrated in Dutch penitentiary law, which states that a detainee will not be subjected to any restrictions other than those necessary with regard to the purpose of the deprivation of liberty or in the interests of order or safety within the institution (Article 2 para 4 of the Dutch Penitentiary Principles Act).[8] The standard prescribing that prison sentences should be minimally invasive can also be traced back to international legislation and

7. For the implications of the neuropsychological findings with regard to rehabilitation in the US legal context, see J. Lobel and H. Akil, 'Law & Neuroscience: The Case of Solitary Confinement', *Daedalus Journal of the American Academy of Arts and Science* 147(4) (2018), pp. 61–75. See for the Netherlands, S.L.T.J. Ligthart, L.E. van Oploo, J. Meijers, et al. 'De Nederlandse Detentieomgeving en het Resocialisatiebeginsel: Implicaties van Neuropsychologisch Onderzoek', *Nederlands Juristenblad* 692(14) (2018), pp. 924–930.

8. See also Article 15 para 4 of the Dutch Constitution.

regulations, such as the International Covenant on Civil and Political Rights (see in particular Articles 7 and 10). In conjunction with the principle of resocialization, the principle of minimal restrictions implies 'normalization:' life in prison must, as much as possible, resemble life in a free civil society, as described in Article 5 of the European Prison Rules (EPR): 'life in prison shall approximate as closely as possible the positive aspects of life in the community'. Similarly, rule 5 para 1 of the Mandela Rules (MR) states that 'the prison regime should seek to minimize any differences between prison life and life at liberty that tend to lessen the responsibility of the prisoners or the respect due to their dignity as human beings'. Although the EPR and MR are both 'soft-law' and therefore are not legally binding, they still play an important role for the CPT and international courts like the ECtHR, as a way of interpreting binding norms in international law, such as the International Covenant on Civil and Political Rights and the European Convention on Human Rights (ECHR).[9]

How does the principle of minimal restrictions reflect the internal regulations and living conditions in European detention centres, especially with regard to physical, mental and social activities, which are all relevant in the context of an enriched environment? How prison environments could or should be enriched is relevant, because if neuropsychological findings show that an *impoverished* environment hampers rehabilitation, there might be legal reasons to *enrich* prison environments (see the fourth and fifth sections). Rule 4 of the MR states that in the prospect of resocialization, prison administrators should offer detainees a range of differentiated activities. The EPR uses the term 'balanced programme of activities' and explains in detail what it should consist of, with an emphasis on work, education, exercise and recreation.[10] However, because of the 'soft-law' character of the EPR and MR, the way in which physical, mental and social activities are implemented in national penitentiary systems depends heavily on legislation and regulations that are produced at a national level, as well as the interpretation of these rules in daily practice by detention centres.

According to the information provided by the European Prison Observatory, an Italian NGO that investigates the conditions of national prison systems, the amount of time detainees spend outside their cells varies throughout Europe.[11] In general, prison conditions depend to a large extent on the detention regime that applies within a certain institution, or more specifically to a particular individual.[12] In some countries, rules regarding out-of-cell-activities are nationally regulated, while in others it depends to a large extent on the internal rules of a specific institution.[13]

9. D. van Zyl Smith and S. Snacken, *Principles of European Prison Law and Policy* (Oxford: Oxford University Press, 2009), p. 7; D. Abels, *Prisoners of the International Community. The Legal Position of Persons Detained at International Criminal Tribunals* (The Hague: Asser Press, 2012), pp. 33, 41; *Vinter and others v. UK* App nos 66069/09, 130/10 and 3896/10 (European Convention on Human Rights (ECHR), 9 July 2013) [115]–[116]; *Harakchiev and Tolumov v. Bulgaria* App nos 15018/11 and 61199/12 (ECHR, 8 July 2014) [264]; *Murray v. The Netherlands* App no. 10511/10 (ECHR, 26 April 2016) [101]; J. de Lange, *Detentie Genormeerd. Een Onderzoek naar de Betekenis van het CPT voor de Inrichting van Vrijheidsbeneming in Nederland* (Oisterwijk: WLP, 2008).
10. Article 25.1 European Prison Rules (EPR).
11. The project is financially supported by the Criminal Justice Programme of the European Union. Available at: http://www.prisonobservatory.org/ (accessed on 2 July 2019).
12. As is the case in the Netherlands, were detainees may also be placed in an individual regime, Article 19 Dutch Penitentiary Principles Act.
13. S. Marietti, *Prison Conditions in Italy* (European Prison Observatory, detention conditions in the European Union, 2013), p. 23.

Notable is the difference reported in various countries between national or internal regulations and the actual implementation of these rules within institutions.[14]

The same is true for the amount of activities available for detainees. As Koulouris and Aloskofis describe in their report on Greek prison conditions, '[d]espite the legal provisions stipulating the entitlement of all prisoners to education, vocational training, organized physical exercise and recreational activities, in reality, only a small number of prisoners have the opportunity to engage in organized meaningful activities of this kind'.[15] This is also repeatedly pointed out by the European CPT.[16] From an Italian perspective, Marietti describes how the quality and quantity of the offered activities depend on various factors, such as 'the good will of the warden, the dedication of the operators, the attitude of the local institutions, the presence of volunteers and cooperatives', which results in a situation where some institutions have many well organized activities, while detainees residing in other institutions have nothing to do and mainly watch television in their cells.[17]

Another important factor that influences the prison regime is whether one is detained in the context of an imposed prison sentence or in the context of pretrial detention. In several European countries, pretrial detainees have less activities and spend more hours in their cells, because they have no access to the same privileges associated with serving a sentence.[18] In a recent report, the CPT stated that remand prisoners are

> frequently subjected to an impoverished regime [. . . and] various types of restrictions (in particular as regards contacts with the outside world), and in a number of countries, certain remand prisoners are held in solitary confinement by court order (sometimes for prolonged periods).[19]

According to the CPT, some European countries show better results when it comes to providing a meaningful programme of activities. For example in Norway, the CPT describes a 'generally positive impression of the regime offered to prisoners'.[20] The same is true for the Netherlands, where the basic regime provided to prisoners is described by the CPT as 'generally good'.[21] However, this does not take away the large amount of time detainees spend in their cells – doing virtually nothing – amounting to approximately 18 h a day, which can increase to 23 h a day.[22]

14. See, for example, Poland and England: P. Kładoczny and M. Wolny, *Prison Conditions in Poland* (European Prison Observatory, detention conditions in the European Union, 2013), p. 24; A. Silvestri, *Prison Conditions in the United Kingdom* (European Prison Observatory, detention conditions in the European Union, 2013), p. 23.
15. N.K. Koulouris and W. Aloskofis, *Prison Conditions in Greece* (European Prison Observatory, detention conditions in the European Union 2013), p. 24.
16. *Greece* (2017, 25) CPT 19, 34; *Greece* (2016, 4) CPT 7, 41; *Greece* (2014, 26) CPT 42.
17. Marietti, *Prison Conditions in Italy*. See also *Italy* (2017, 23) CPT 30.
18. CPT, *26th General Report of the CPT* (Strasbourg: Council of Europe, 2017, 5), pp. 33–35. See also I. Bieber, C. Buzatu, Z. Moldova and N. Novoszádek, *Promoting the Reform of Pre-trial Detention in CEE-FSU Countries – Introducing Good Practices* (Budapest: Hungarian Helsinki Committee, 2013), pp. 17–18; A. Maculan, D. Ronco, F. Vianello and A. Edizioni, *Prison in Europe: Overview and Trends* (Rome: European Prison Observatory, 2013), p. 43; Asociación Pro Derechos Humanos de España, *The Practice of Pre-Trial Detention in Spain* (Research report, October 2015), p. 12.
19. CPT, *26th General Report of the CPT*, p. 31.
20. *Norway* (2011, 33) CPT 20.
21. *The Netherlands* (2017, 1) CPT 22. Still, the CPT noticed that more educational programmes could be offered, especially to prisoners with long sentences.
22. *Norway* (2011, 33) CPT 22, 29; *The Netherlands* (2017, 1) CPT 25, 26, 39; Ligthart, van Oploo, Meijers, et al. 'De Nederlandse Detentieomgeving en het Resocialisatiebeginsel', p. 924, 926.

Such physical and mental inactivity clearly results in an impoverished environment.[23] In other words, even in the countries where – according to the CPT – things are going 'generally well', prison by its nature constitutes an impoverished environment due to diminished physical, mental, social activities and challenges.[24] The question arises whether neuropsychological findings according to which brain functions decline in impoverished environments – with few or nearly no physical, mental and social activities – require the CPT to adjust its judgement about European prison regimes, especially if detainees spend 18–23 h a day in their cells. Before we examine this question in the fifth section, we will first consider the neuropsychological effects of impoverished environments in more detail in the following section.

Impoverished environments: Neuropsychological research

Self-regulation entails the capacity to show autonomous goal-directed behaviour: making a plan, working towards a goal, selecting relevant pieces of information while suppressing irrelevant information and distractions, switching to a different plan when needed, all the while regulating emotional impulses.[25] In neuropsychology, the functions that are at the base of self-regulation are called executive functions, such as working memory, sustained attention, impulse control, planning and cognitive flexibility. The prefrontal cortex of the brain is crucial for self-regulation and executive functions. In the prefrontal cortex of people that display antisocial behaviour, structural and functional differences have been found. In a meta-analysis, a large number of brain imaging studies show that specific areas of the prefrontal cortex are less developed or less active in people displaying antisocial behaviour compared to healthy controls.[26] A similar large meta-analysis found that antisocial groups perform worse on neuropsychological tasks measuring specific executive functions, such as attention, working memory and impulse control, with the largest effect size in the criminal subgroup.[27]

The prefrontal cortex and, thus, self-regulation and executive functions are sensitive to environmental influences.[28] An enriched environment, consisting of physical activity, cognitive challenges and social interaction, positively influences the prefrontal cortex and self-regulation, especially impulse control.[29] According to a large body of animal studies, an impoverished environment with (nearly) no physical, social and mental challenges negatively influences this brain area and self-regulation, which appears also true for *people* in impoverished environments, as was suggested by the findings in nursing homes.[30] Even more than nursing homes, prison inherently leads to reduced autonomy and meaningful social interactions, a sedentary lifestyle and few cognitive challenges (see the second section). A recent study in a remand prison in the Netherlands that housed pretrial inmates that spent 16–20 h per day in their cells found a decline in executive

23. *Norway* (2011, 33) CPT 22, 29; *The Netherlands* (2017, 1) CPT 25, 26, 39.
24. Maculan, Ronco and Vianello, *Prison in Europe: Overview and Trends*.
25. A. Diamond, 'Executive Functions', *Annual Review of Psychology* 64 (2013), p. 135.
26. Y. Yang and A. Raine, 'Prefrontal Structural and Functional Brain Imaging findings in Antisocial, Violent, and Psychopathic Individuals: A Meta-Analysis', *Psychiatry Research* 174(2) (2009), p. 81.
27. J.M. Ogilvie, A.L. Stewart, R.C.K. Chan, et al. 'Neuropsychological Measures of Executive Functions and Antisocial Behavioral: A Meta-Analysis', *Criminology* 49(4) (2011), p. 1093.
28. Petrosini, De Bartolo, Foti, et al. 'On Whether the Environmental Enrichment May Provide Cognitive and Brain Reserves'.
29. Hillman, Erickson and Kramer, 'Be Smart, Exercise Your Heart: Exercise Effects on Brain and Cognition'.
30. Volkers and Scherder, 'Impoverished Environment, Cognition, Aging and Dementia'.

functions after only 3 months of imprisonment.[31] More specifically, the participants, tested within 1 week after arrival, and retested after 3 months of imprisonment, performed worse on neuropsychological tasks measuring attention and impulse control. It is hypothesized that this decline in executive functions is due to the impoverished prison environment.

Self-regulation and executive functions are crucial for a successful return to society.[32] For example, ex-prisoners need to be able to make a plan to find a house and an income (attention, planning), adjust their plan when needed (cognitive flexibility, working memory) and resist temptations and control their emotions (impulse control). An enriched environment may improve these functions[33] and, subsequently, enhances the odds for ex-prisoners to return successfully to society. However, most prisons can currently be characterized as impoverished environments, thereby further reducing self-regulation. How successful reintegration into society should be facilitated from a *legal* perspective is discussed in the following section.

A legal framework: The obligation to rehabilitation and the prohibition of ill-treatment

Introduction

The primary aim of this article is to explore the possible implications of impoverished prison environments for the principle of rehabilitation and the prohibition of torture, inhuman and degrading treatment and punishment ('ill-treatment', Article 3 ECHR), that is, how the empirical effects of impoverished prison environments could refine the interpretation of these legal principles, and whether (and how) these legal principles provide compelling reasons to enrich prison environments. In order to do so, this section analyses the way in which the principle of rehabilitation plays a role in ECHR case law (see 'The principle of rehabilitation: A positive obligation' section). Furthermore, it shortly sets out the general meaning and scope of the prohibition of ill-treatment (see 'The prohibition of ill-treatment: A negative obligation' section).

The principle of rehabilitation: A positive obligation

The Grand Chamber of the ECtHR in the context of Articles 3 and 8 ECHR has acknowledged that a prison sentence pursues different goals. In this regard, it has (regarding life imprisonment sentences) repeatedly considered that while punishment remains one of the important aims of imprisonment, the emphasis in European penal policy is now on the rehabilitative objective of imprisonment, particularly towards the end of a long prison sentence.[34] The Court defines rehabilitation as the reintegration of a convicted person into society in order to, among other things,

31. Meijers, Harte, Meynen, et al. 'Reduced Self-Control after 3 Months of Imprisonment.
32. Hancock, Tapscott and Hoaken, 'Role of Executive Dysfunction in Prediction Frequency and Severity of Violence;' T. Seruca and C.F. Silva, 'Recidivist Criminal Behaviour and Executive Functions: A Comparative Study', *The Journal of Forensic Psychiatry & Psychology* 26 (2015), p. 699.
33. Hillman, Erickson and Kramer, 'Be Smart, Exercise Your Heart: Exercise Effects on Brain and Cognition;' Petrosini, De Bartolo, Foti, et al. 'On Whether the Environmental Enrichment May Provide Cognitive and Brain Reserves;' Meijers, Harte, Jonker, et al. 'Prison Brain? Executive Dysfunction in Prisoners'.
34. *Dickson/UK* App no. 44362/04 (ECHR 4 December 2007) [75]; *Vinter and others v. UK* (ECHR, 9 July 2013) [115]; *Murray v. The Netherlands* (ECHR, 26 April 2016) [10]. See also *Harakchiev and Tolumov v. Bulgaria* (ECHR, 8 July 2014), [264].

prevent reoffending and thus ensures the protection of society.[35] Emphasis on rehabilitation and reintegration has become a mandatory factor that the member states need to consider when designing their penal policies.[36] States have a duty to provide prisoners with a real opportunity to rehabilitate themselves.[37] The Grand Chamber considers this to be a *positive obligation* to secure prison regimes with the aim of rehabilitation and enables (life) prisoners to make progress towards their rehabilitation.[38] This obligation is one of means, not result. Actual resocialization should be achieved through prisoners fostering of personal responsibility.[39] Ultimately, each prisoner is responsible for his own (successful) reintegration into society. However, prison conditions and regimes need to make it possible for (life) prisoners to reintegrate.[40] Recognizing rehabilitation as a positive obligation makes it possible to legally enforce rehabilitative facilities and enables courts to intervene in cases of administrative reluctance.[41] In the light of the neuropsychological insights as discussed in the third section, the question arises about how member states should foster personal responsibility and facilitate rehabilitation, if the prison environment and its conditions in itself hamper the detainee's responsibility and rehabilitation? This question is discussed in the fifth section.

In the literature, it is argued that the positive obligation of rehabilitation is based primarily on the principle of respect for human dignity.[42] In this context, Meijer suggests that

> [r]ecognising rehabilitation as a positive obligation – grounded in human dignity – is important, because it makes clear that rehabilitation is at all times to be taken into account and cannot be set aside by other concerns such as the effectiveness of rehabilitative efforts and prison authorities concerns such as cuts or staff shortage.[43]

According to this approach, the possible fact that the impoverished prison environment hampers reintegration cannot set aside the positive obligation to facilitate rehabilitation. On the one hand, this means that since neuropsychological research has found that important brain functions for rehabilitation decline after 3 months of imprisonment, the (prison) authorities should make more of an effort to facilitate rehabilitation: firstly, they need to restrict the negative (neuropsychological) effects of imprisonment, and secondly, they must facilitate prisoners becoming 'better people' than before they went to prison. On the other hand, this means that the threshold of whether states comply with their positive obligation of rehabilitation should be heightened. After all, since we

35. *Murray v. The Netherlands* (ECHR, 26 April 2016) [102].
36. *Khoroshenko v. Russia* App no. 41418/04 (ECHR, 30 June 2015) [121]; *Hutchinson v. UK* App no. 57592/08 (ECHR, 17 January 2017) [43]; *Murray v. The Netherlands* (ECHR, 26 April 2016) [104].
37. *Harakchiev and Tolumov v. Bulgaria* (ECHR, 8 July 2014) [264]; *Murray v. The Netherlands* (ECHR, 26 April 2016) [104].
38. *Murray v. The Netherlands* (ECHR, 26 April 2016) [104]. See, on this topic, S. Meijer, 'Rehabilitation as a Positive Obligation', *European Journal of Crime, Criminal Law and Criminal Justice* 25 (2017), p. 145; P.H.P.H.M.C. van Kempen and W. Young, 'Obligations and Means to Prevent Reoffending: Introduction, Context and Conclusions', in P.H.P.H.M.C. van Kempen and W. Young, eds., *Prevention of Reoffending* (Cambridge/Antwerp/Portland: Intersentia, 2014), pp. 14–18.
39. *Harakchiev and Tolumov v. Bulgaria* (ECHR, 8 July 2014) [264].
40. Op. cit., [265].
41. Op. cit.
42. Meijer, 'Rehabilitation as a Positive Obligation', pp. 145, 161. See also *Murray v. The Netherlands* (ECHR, 26 April 2016) [101]; *Vinter and others v. UK* (ECHR, 9 July 2013) [113].
43. Meijer, 'Rehabilitation as a Positive Obligation', pp. 145, 161.

know that facilitating rehabilitation requires more effort than we thought, the Court should also positively oblige member states to take all the efforts needed. As we argue in the fifth section, refining this threshold based on new scientific insights coincides with the Court's case law regarding the principle of human dignity ex Article 3 ECHR and the way the Court interprets this principle in the light of present-day conditions.

Facilitating rehabilitation is also ingrained in several international instruments, such as the EPR, which despite their non-binding character, are highly valued by the Court in interpreting Article 3 ECHR.[44] For instance, Rule 6 EPR states that all detention shall be managed so as to facilitate the reintegration into free society of persons who have been deprived of their liberty. Rule 102.1 EPR prescribes that the regime for sentenced prisoners shall be designed to enable them to lead a responsible and crime-free life. The EPR solidifies these principles by providing rules regarding important issues that shape the prison environment, like physical and social activities, education, work and the quality of food.[45] For instance, Rule 27.3 EPR stipulates that an integral part of prison regime must include the promotion of physical fitness, providing adequate exercise and recreational opportunities. Furthermore, according to Rule 28.5 EPR, every prison shall have a library for the use of all prisoners, adequately stocked with a wide range of both recreational and educational resources, books and other media. Rule 26.6 EPR states that prison authorities shall strive to provide sufficient work of a useful nature. These examples of the EPR (also) emphasize that prison authorities need to actively promote and facilitate the rehabilitation of all prisoners.[46]

The prohibition of ill-treatment: A negative obligation

Article 3 ECHR states that 'no one shall be subjected to torture or to inhuman or degrading treatment or punishment'. This contains an absolute prohibition, from which no derogation is allowed, even in times of war or other public emergencies, as underlined in Article 15(2) ECHR. According to the Grand Chamber,

> the philosophical basis underpinning the absolute nature of the right under Article 3 does not allow for any exceptions or justifying factors or balancing of interests, irrespective of the conduct of the person concerned and the nature of the offence at issue.[47]

Neither the fight against terrorism, nor the fight against organized crime can justify state conduct which is prohibited by Article 3 ECHR.[48] Even in life-saving situations, no derogation shall be made.[49]

Whether a specific treatment or punishment falls within the scope of Article 3 ECHR depends on the level of severity of the treatment or punishment: it has to attain a minimum level of severity.

44. *Vinter and others v. UK* (ECHR, 9 July 2013) [115]–[116]; *Harakchiev and Tolumov v. Bulgaria* (ECHR, 8 July 2014) [264]; *Murray v. The Netherlands* (ECHR, 26 April 2016) [101].
45. Rules 26.1–28.7 and 22.1–22.6 EPR.
46. *Harakchiev and Tolumov v. Bulgaria* (ECHR, 8 July 2014) [264]. According to the Court, this view is fully consonant with Article 10(3) of the International Covenant on Civil and Political Rights, which states that the essential aim of treating prisoners shall be their reformation and social rehabilitation.
47. *Gäfgen v. Germany* App no. 22978/05 (ECHR, 1 June 2010) [107].
48. *Selmouni v. France* App no. 25803/94 (ECHR, 26 July 1999) [95]; *Aydin v. Turkey* App no. 23178/94 (ECHR, 25 September 1997) [81].
49. *Gäfgen v. Germany* (ECHR, 1 June 2010) [107].

This means that the pain, (mental) suffering and/or humiliation involved must go beyond the inevitable element that is connected with a given form of legitimate treatment or punishment.[50] Whether this minimum threshold has been attained is relative and depends on the specific circumstances of that case, such as the physical and mental effects of the treatment or punishment, its duration and, in some cases, the sex, age and state of health of the victim. Other relevant factors include the purpose of the treatment or punishment, together with its intention or motivation.[51]

Treatments and punishments that attain a minimum level of severity, and therefore breach the prohibition, could, according to Article 3 ECHR, be qualified as degrading, inhuman or torture, which are all prohibited. However, Article 3 ECHR does not explain what these different types of treatments and punishments consist of, but these categories have been operationalized in the Court's case law. According to the Grand Chamber, a treatment or punishment is degrading if it 'humiliates or debases an individual, showing a lack of respect for, or diminishing, his or her human dignity, or when it arouses feelings of fear, anguish or inferiority capable of breaking an individual's moral and physical resistance'.[52] Treatment or punishment can be considered to be inhuman if it was 'premeditated, was applied for hours at a stretch and caused either actual bodily injury or intense physical or mental suffering'.[53] Torture consists of a 'deliberate inhuman treatment causing very serious and cruel suffering'.[54] Especially, degrading and inhuman treatments and punishments seem to be relevant in the Court's case law regarding detention conditions and treatment of detainees.[55]

Conclusion

In this section, we briefly discussed a positive and negative obligation, which both have far-reaching implications for the way that states shape their prison environments. The principle of rehabilitation obliges member states to provide prisoners with prison regimes and conditions that enable them to foster personal responsibility and facilitate their rehabilitation. According to the prohibition of ill-treatment, states are prohibited to shape prison environments in a way that causes humiliation and (mental) suffering, which attain a minimum level of severity. In the following section, we discuss the legal implications of impoverished detention environments and their possible neuropsychological effects in the context of the principle of rehabilitation and the prohibition of ill-treatment.

Discussion

In the previous sections, we described the impoverished character of prison environments and the way in which such an environment could negatively influence the brain functions that are

50. *Ireland v. UK* App no. 5310/71 (ECHR, 18 January 1978) [163].
51. *Gäfgen v. Germany* (ECHR, 1 June 2010) [88].
52. *Svinarenko and Slyadnev v. Russia* App nos 32541/08 and 43441/08 (ECHR 17 July 2014) [115].
53. *M.M.S. v. Belgium and Greece* App no. 30696/09 (ECHR 21 January 2011) [220].
54. *Aydin v. Turkey* (ECHR, 25 September 1997) [82].
55. D.J. Harris, M. O'Boyle, E. Bates, and C. Buckley, *Harris, O'Boyle & Warbrick: Law of the European Convention on Human Rights*. 3th ed. (New York: OUP, 2014), pp. 262–270; B. Vermeulen and H. Battjes, 'Freedom from Torture and Other Inhuman or Degrading Treatment or Punishment (Article 3)', in P. van Dijk, F. van Hoof, A. van Rijn, et al., eds., *Theory and Practice of the European Convention on Human Rights*. 5th ed. (Cambridge: Intersentia, 2018), pp. 410–416.

connected with self-regulation. We also explained that self-regulation is crucial for a successful reintegration into society, and that the (further) reduction of self-regulation contains a risk factor for recidivism and therefore (could) hamper rehabilitation. In this section, we discuss these findings, alongside taking a view on the principle of rehabilitation of the ECtHR.

Member states have a positive obligation to secure prison regimes with the aim of rehabilitation and enable inmates to make progress towards their rehabilitation. However, the effects of an impoverished detention regime, coupled with unsatisfactory material conditions, according to the Court can seriously damage a prisoner's reforming potential.[56] Current impoverished prison environments could hamper a prisoner's progress towards rehabilitation, because crucial brain functions for self-regulation deteriorate during the period of detention.[57] In such a situation, where the prison regime or the conditions of detention hamper rehabilitation, the existence of a positive obligation that facilitates rehabilitation is crystal clear.[58] Meijer suggests that '[t]his requires positive state action to promote rehabilitation, which means a state effort to prevent and neutralize the unwanted harmful side effects of incarceration'.[59] While impoverished detention environments could potentially reduce self-regulation and hamper rehabilitation, enriched environments may improve self-regulation and therefore facilitate resocialization.[60] Therefore, by enriching prison environments, member states could meet their positive obligation, which flows from the principle of rehabilitation.[61] According to Meijer, it follows from the Court's case law that the principle of rehabilitation remains vague and that states should determine on a case-by-case basis, what a proper opportunity of rehabilitation as a minimum level of protection implies for a specific detainee.[62] The outcomes of the study of Meijers and others with the potential of follow-up research on the implications of detention environments for self-regulation[63] could change this view and give more substance to the minimum level of protection in this regard. This empirical research suggests that an impoverished detention environment may hamper rehabilitation. And if specific forms of enrichment improve self-regulation and facilitate resocialization, it is reasonable to require state effort to prevent the obstruction of rehabilitation by implementing enrichment strategies.

However, perhaps not all states are willing to change their penitentiary policies in this respect, which raises the question of what legal consequences could follow for states who neglect enrichment or even further impoverish prison environments. More specifically, could such negligence or state action raise an issue under Article 3 ECHR? As we outlined in 'The principle of rehabilitation: A positive obligation' section, the positive obligation to facilitate rehabilitation through

56. *Harakchiev and Tolumov v. Bulgaria* (ECHR, 8 July 2014) [266].
57. Meijers, Harte, Meynen, et al. 'Reduced Self-Control after 3 Months of Imprisonment'.
58. *Murray v. The Netherlands* (ECHR, 26 April 2016) [104]; *Harakchiev and Tolumov v. Bulgaria* (ECHR, 8 July 2014) [266].
59. Meijer, 'Rehabilitation as a Positive Obligation', pp. 145, 150.
60. Hillman, Erickson and Kramer, 'Be Smart, Exercise Your Heart: Exercise Effects on Brain and Cognition;' Petrosini, De Bartolo, Foti, et al. 'On Whether the Environmental Enrichment may Provide Cognitive and Brain Reserves;' Meijers, Harte, Jonker, et al. 'Prison Brain? Executive Dysfunction in Prisoners'.
61. See for arguments against *mandatory* neuro-rehabilitation C. Bublitz, '"The Soul is in the Prison of the Body" – Mandatory Moral Enhancement, Punishment & Rights against Neuro-rehabilitation', in D. Birks and T. Douglas, eds., *Treatment for Crime: Philosophical Essays on Neurointerventions in Criminal Justice* (New York: OUP, 2018), pp. 289–320.
62. Meijer, 'Rehabilitation as a Positive Obligation', pp. 145, 161–162.
63. Meijers, Harte, Meynen, et al. 'Reduced Self-Control after 3 Months of Imprisonment'. See also Umbach, Raine and Leonard, 'Cognitive Decline as a Result of Incarceration and the Effects of a CBT/MT Intervention'.

certain prison conditions and regimes seems to be based on the principle of respect for human dignity.[64] In the case of *Murray v. The Netherlands*, which concerned a complaint about life imprisonment in the context of Article 3 ECHR, the Grand Chamber considered that, as a relevant principle,

> it would be incompatible with *human dignity* – which lay at the very essence of the Convention system – forcefully to deprive a person of his freedom without striving towards his rehabilitation and providing him with the chance to regain that freedom at some future date.[65]

Showing a lack of respect for, or diminishing an individual's human dignity can be degrading and therefore violates Article 3 ECHR, if a minimum level of severity has been attained.[66] In cases regarding prison conditions, the Court states, as a general principle, that it cannot be said that detention in a high-security (and therefore even more impoverished) prison facility, be it on remand or a serving sentence, in itself raises an issue under Article 3 ECHR.[67] The State must nevertheless ensure that prisoners are detained in conditions which are compatible with respect for his human dignity and adequately secure their health and well-being.[68]

Eventually, impoverished prison environments could raise issues under Article 3 ECHR. For instance, in the case of *Harakchiev and Tolumov v. Bulgaria*, the applicants (both life prisoners) complained, among other things, about the prison regime. According to this regime, the applicants had to remain in their cells for 21–22 h a day, while not being able to interact with other inmates. The Court mentioned that although the applicants were not subjected to complete isolation, it cannot be overlooked that both applicants were kept under such an 'impoverished regime' for extended periods of time (12 and 14 years, respectively). Under such circumstances, isolation should be justified by particular security reasons. Automatic segregation and isolation of certain (categories) of detainees, such as life prisoners, may in itself raise an issue under Article 3 ECHR, especially if no comprehensive activities outside the cell or stimulus inside the cell are available.[69] In *Savič v. Latvia*, the applicant, also serving a life sentence, shared a cell with another inmate for certain periods of time, but was nevertheless segregated from the rest of the prison population. The Court stated that

> automatic and thus arbitrary segregation of life-sentenced prisoners from the rest of the prison population and from communication among themselves, in particular in circumstances in which no comprehensive out-of-cell activities or in-cell stimulus are available, may raise an issue under Article 3 of the Convention.[70]

The cases of *Harakchiev and Tolumov v. Bulgaria* and *Savič v. Latvia* concerned detention conditions of life prisoners. Life imprisonment is in many relevant ways different from temporal prison sentences. However, segregation and lack of comprehensive out-of-cell-activities and/or in-

64. Meijer, 'Rehabilitation as a Positive Obligation', pp. 145, 161.
65. *Murray v. The Netherlands* (ECHR, 26 April 2016) [101] (emphasis added). See also *Vinter and others v. UK* (ECHR, 9 July 2013) [113].
66. *Svinarenko and Slyadnev v. Russia* (ECHR 17 July 2014) [115].
67. *Savič v. Latvia* App no. 17892/03 (ECHR, 27 November 2012) [129].
68. *Savič v. Latvia* App no. 17892/03 (ECHR, 27 November 2012) [130].
69. *Harakchiev and Tolumov v. Bulgaria* (ECHR, 8 July 2014) [204].
70. *Savič v. Latvia* App no. 17892/03 (ECHR, 27 November 2012) [139].

cell-stimulus do not only concern life prisoners. For instance, in several cases regarding temporal detention in a special prison regime for dangerous detainees in Poland, the Court recalled that all forms of solitary confinement without appropriate mental and physical stimulation are likely to have damaging effects in the long term, which would result in a deterioration of mental faculties and social abilities, which can cause serious distress and mental suffering and therefore violates Article 3 ECHR.[71] The Grand Chamber considers prolonged isolation undesirable in the light of Article 3 ECHR, especially where persons are detained on remand.[72]

However, in several European countries, remand prisoners are segregated from other prisoners, having less activities and spending more hours in their cells.[73] In some countries, remand prisoners are even locked up in their cells for up to 23 h per day, which is unacceptable according to the CPT.[74] The CPT therefore pleads for the implementation of comprehensive prison regimes with out-of-cell activities.[75] In this context, it notes that

> [t]he aim should be to ensure that remand prisoners (as well as sentenced prisoners) are able to spend a reasonable part of the day (i.e. eight hours or more) outside their cells, engaged in purposeful activity of a varied nature (work, preferably with vocational value, education, sport, recreation/association).[76]

As stated in the second section, prison environments can be impoverished, notwithstanding their qualification as 'generally good' by the CPT. It is unlikely that such detention regimes will attain a minimum level of severity and violate Article 3 ECHR. However, in this context, it is interesting that the Court approaches the ECHR as a living instrument and interprets it in the light of present-day conditions,[77] in which context the Court also takes into account the EPR and MR and, sometimes, the mental effects of imprisonment.[78] As a consequence of this interpretation method, the threshold for the minimum level of severity has been lowered by the Court in recent years.[79] New neuropsychological insights like the study by Meijers and others could or maybe even should influence the way in which the CPT and the Court approach impoverished prison environments that are currently qualified as 'generally good'.

Conclusion

Prison regimes provide limited physical, mental and social activities and are therefore by their nature impoverished environments. This is especially true in regard to the detention of specific categories of detainees, like prisoners on remand. A large body of animal studies and recent

71. See, for example, *Piechowicz v. Poland* App no. 20071/07 (ECHR, 17 April 2012) [173]–[178]; *Horych v. Poland* App no. 13621/08 (ECHR, 17 April 2012) [98]–[130].
72. *Ramirez Sanchez v. France* App no. 59450/00 (ECHR, 4 July 2006) [120]. See also *Ensslin, Baader and Raspe v. Germany* App nos 7572/76, 7586/76 and 7587/76 (ECHR, 8 July 1978) [109].
73. CPT, *26th General Report of the CPT*, pp. 31, 33–35. See also Bieber and others, *Promoting the Reform of Pre-trial Detention in CEE-FSU Countries*, pp. 17–18; Maculan, Ronco and Vianello, *Prison in Europe: Overview and Trends*; Asociación Pro Derechos Humanos de España, *The practice of Pre-Trial Detention in Spain*.
74. CPT, *26th General Report of the CPT*, p. 34.
75. Op. cit.
76. Op. cit.
77. *Tryer v. The United Kingdom* App no. 5856/72 (ECHR, 25 April 1978) [31].
78. See, for example, *Piechowicz v. Poland* (ECHR, 17 April 2012) [173]–[178]; *Horych v. Poland* (ECHR, 17 April 2012) [98]–[130].
79. Harris, O'Boyle, Bates, et al., *Harris, O'Boyle & Warbrick*, p. 237.

neuropsychological research in a Dutch prison provide a new perspective on these environments. It suggests that an impoverished prison environment could further negatively influence (important brain functions for) self-regulation of detainees. However, self-regulation is crucial in order to successfully rehabilitate into society. Therefore, an impoverished prison environment could ultimately obstruct a prisoner's progress to rehabilitation.

Firstly, we have argued, in this article, that if the prison regime or conditions hamper rehabilitation, a positive obligation exists for member states to facilitate rehabilitation, for instance through preventing and neutralizing unwanted harmful side effects of detention. After all, designing or maintaining prison environments, which obstruct a prisoner's prospects of rehabilitation, does not meet with the positive obligation to secure prisons with the aim of rehabilitation and facilitate prisoners to make progress towards their resocialization. Furthermore, we have argued that the threshold of whether states comply with the positive obligation of rehabilitation should be heightened. Since neuropsychological research shows that facilitating rehabilitation requires more efforts than we thought, the Court should also positively oblige states to take all the efforts needed.

Secondly, we explored some possible implications of impoverished detention environments and their neuropsychological effects for the prohibition of torture, inhuman and degrading treatment ex Article 3 ECHR. Segregation and isolation of certain (categories) of detainees may raise an issue under Article 3 ECHR, especially if no comprehensive out-of-cell activities or in-cell stimulus are available. Whether a specific complaint attains a minimum level of severity will ultimately depend on all the circumstances of the particular case. Since the Court interprets Article 3 ECHR in the light of present-day conditions, the threshold of the minimum level of severity could be influenced by new neuropsychological insights that expose the possible effects of impoverished prison environments.

In conclusion, neuropsychological findings should be taken seriously. In our view, their potentially far-reaching implications for detention in Europe require at least further research in this area to assess the consequences of an impoverished environment in more detail and to determine how negative effects – as far as they exist – could be alleviated by *enrichment programs*. Moreover, we believe that states should be interested in the potential neuropsychological effects of their sanctions. In fact, we would argue that in line with the positive obligation to facilitate rehabilitation, research in this area should be initiated by member states of (the Council of) Europe.

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ORCID iD

Sjors Ligthart https://orcid.org/0000-0001-6458-4058