universität wien

MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

"Legal Thinking Meets Neuroscience: A Cognitive Science Perspective on Moral and Legal Responsibility"

verfasst von / submitted by

Ioana-Cristina Siserman-Gray

angestrebter akademischer Grad / in partial fulfilment of the requirements for the degree of

Master of Science (MSc)

Wien, 2018 / Vienna 2018

Studienkennzahl lt. Studienblatt	A 066 013
Studienrichtung lt. Studienblatt / degree programme as it appears on the student record sheet:	Masterstudium Joint-Degree Middle European Interdisciplinary Master's Programme in Cognitive Science
Betreut von / Supervisor	Prof. Dr. Olga Markič
Mitbetreut von / Co-Supervisor	Assist. Prof. Dr. Toma Strle

Table of Contents

ABSTRACT

In recent decades, several research studies related to new advances in neuroscience have challenged the notion of free will. More precisely, this research has called into question the notion of free will by proposing a more deterministic conception of agency, according to which our actions and behaviour are determined by structural features of the brain. Naturally, this research has generated numerous debates in the academic community, but none more important, in our opinion, than the debates surrounding an individual's moral and legal responsibility.

The study discusses in an interdisciplinary manner the impact of neuroscience on free will and how the methods and tools of neuroscience can help in assessing the moral and legal responsibility of an individual. The study theoretically and empirically addresses two major issues. First, it evaluates whether there is sufficient scientific research to support the idea that free will has been challenged by the advancements in neuroscience. Secondly, it assesses the beliefs of legal practitioners from three countries (Austria, Romania and Slovenia) regarding the effect of neuroscientific evidence in the assignment of legal responsibility in criminal proceedings.

The main argument of this study is that the application of neuroscience in law has great potential to change the way we understand free will and (moral and legal) responsibility. For this reason, the study has a wide spectrum of application as it is addressed to both cognitive scientists and legal practitioners. The theoretical parts suggest that, while new developments in the field of neuroscience could greatly contribute to a better assessment of the responsibility of individuals, these developments must be addressed with caution by both the scientific and legal community. The results obtained in the empirical study suggest the importance of encouraging legal practitioners to reform legal systems in order to better integrate new neuroscientific discoveries and thereby provide a framework to support the shift from a retributive criminal system to a humanistic criminal system.

ACKNOWLEDGEMENTS

It is impossible to adequately credit every single individual that has contributed to the existence of this thesis because so many provided so much. Professors, mentors, colleagues, friends, and family have all played a unique role and I cannot be more grateful for all their support.

A “thank you” alone seems insufficient to convey my gratitude to Prof. Olga Markic from the University of Ljubljana, who went far beyond the requirements of a supervisor and mentor in giving counsel, guidance, encouragement, and more assistance than anyone could ever ask of another.

Equal recognition is deserved to Assist. Prof. Dr. Toma Strle from University of Ljubljana, who patiently and insightfully helped me throughout all phases of this research. His numerous comments and inputs on various stages of this manuscript helped enormously direct and tune this study.

Lastly, I would like to thank my colleagues working in the legal field. They helped enormously in conducting the empirical research. Without their kind patience and willingness to provide their insights on the topic at glance this study would have not been possible.

Chapter I. Introduction

"And since all behavior is caused by our brains, wouldn't this mean all behavior could potentially be excused", Jeffrey Rosen[1]

1. Research Motivation

My interest for the interaction between law and cognitive science[2] began as a young law school graduate when I went deeper in the study of criminal law. As I started researching legal cases and judgements rendered by various courts of law, I was surprised by the different approaches that exist in the application of punishments, particularly when it comes to the assessment of the legal responsibility of defendants presenting evidence of brain damage or mental illness.

During my studies in law, our professors would often remind us of the Latin adage that "*jus est ars boni et aequi*" (i.e. law is the art of what is good and fair). Unfortunately, many legal examples from around the world show that this is not always the case. According to various studies[3], out of 10 million individuals in prisons in the world, half of them suffered from a mental health problem or disorder. [4] [5] Out of these individuals close to 1 million young offenders are under 18 years old. A proportion of 95% of the young offenders display a mental disorder such as anxiety, depression and mania, or other psychotic disorders.[6] These disorders are often ignored during the trial phase, or given

[1] ROSEN, J., *The Brain on the Stand*, New York Times Magazine, 3 November 2011, https://www.nytimes.com/2007/03/11/magazine/11Neurolaw.t.html.

[2] Cognitive science is generally defined as the scientific study of mind, brain, and intelligence, be they real or artificial.

[3] *See* FAZEL, S., HAYES, A., BARTELLAS, K., CLERICI, M., TRSETMAN, R., *The mental health of prisoners: a review of prevalence, adverse outcomes and interventions*, Lancet Psychiatry, Issue 3, No. 9, 2016, p. 871-881. *See* also, JAMES, D., GLAZE, L., *Mental health problems of prison and jail inmates*, Bureau of Justice Statistics, US Department of Justice, September 2006, p. 1-12, https://www.bjs.gov/content/pub/pdf/mhppji.pdf.

[4] For comprehensive statistics on prison population, *See* WALMSLEY, R., *World Prison Population List*, World Prison Brief, Institute of Criminal Policy Research, 2016, p. 1-15.

[5] In the USA, according to the US department of Justice Statistics, the types of mental issues among state and federal inmates are: depressive disorder (21%), maniac depression, bipolar disorder, mania (12%), schizophrenia (5%), post-traumatic stress disorder (7%), another anxiety disorder (8%) and personality disorder (6%). For more details, *See* KHAZAN, O., *Most prisoners are mentally ill: Can mental health courts, in which people are sentenced to therapy, help?*, The Atlantic, April 2015, https://www.theatlantic.com/health/archive/2015/04/more-than-half-of-prisoners-are-mentally-ill/389682/.

[6] Data collected from CHILD TRENDS, *Young Adults in Jail or in Prison*, Data Bank, April 2012,

limited consideration during the decision phase when the judge assesses the legal responsibility of the individual. It often happens that the punishment applied to these type of defendants does not correspond to their actual state of guilt, either because of the personal biases of the judge or juries brought to solve the case, or the non-reliability of tools used to help the judge during the assessment procedure. Because of the irreparable consequences that an unfair sentence can generate for an individual, the main argument of this thesis is that law should end being only an *ars* and become also a proper *scientia* that uses scientific and reliable tools.

Advances in cognitive science, particularly neuroscience, are proving to be useful in solving some recurrent challenges of legal scholars as they open opportunities for new applications in law and policy.[7] For example, the interaction between cognitive science and law is highlighted by Busy and Loftus in the following statement:

> "current cognitive science research addresses the issues that are directly relevant to the connection between normal cognitive functioning and judicial errors and suggests means by which the false-conviction rate could be reduced".[8]

In the last decade, there has been a large amount of research[9] concerning the possible impact of neuroscience on law.[10] These developments in neuroscience and related techniques (fMRI, PET etc.) enabled scientists to peek deeper into the labyrinths of human mind in order to better understand some of the processes that take place at this level. This has led to a great number of questions raised in the scientific, philosophical, and legal community regarding the degree to which individuals can or should be held

---

https://www.childtrends.org/indicators/young-adults-in-jail-or-prison/.

[7] *See* GOODENOUGH, O., TUCKER, M., *Law and Cognitive Neuroscience,* Annual Review of Law and Social Science, Vol. 6, 2010, p. 61-92.

[8] BUSEY, T., LOFTUS, G., *Cognitive Science and the law*, Trends in Cognitive Science, Vol. 11, No. 3, 2007, p. 111.

[9] Some of the most relevant literature in this field in the past decade is: GREEN, J., COHEN, J., *For the law neuroscience changes nothing and everything*, Philosophical Transactions of the Royal Society, London, Vol. 359, 2004, p. 1775-1785; GOODENOUGH, O., TUCKER, M., *Ibid.*, 2010, p. 61-92; GREELY, H., *Neuroscience and Criminal Justice: Not Responsibility but Treatment*, Kansas Law Review, 2008, p. 1103-1137; KOLBER, *Will there be a Neurolaw Revolution?*, Indiana Law Journal, Vol. 89, 2014, p. 807-845; MAHLMANN, M., *Mind and Rights: Neuroscienc*e, Philosophy and the Foundations of Legal Justice, In SELLERS, M. (ed.), *Law, Reason and Emotion*, Cambridge University Press, Cambridge, 2017, p. 80-137; COPPOLA, F., *Mapping the Brain to Predict Antisocial Behaviour: New Frontiers in Neurocriminology*, UCL Journal of Law and Jurisprudence, Special Issue 1, Article 5, 2018, p. 103-126.

[10] Cognitive science and law continue to intersect in areas such as eyewitness testimony and latent-fingerprint evidence, in which, if properly addressed, cognitive science methods can convey relevant information to judges and juries.

responsible for their actions. Concurrently, arguments such as "my brain made me do it"[11] have become more common in courts of law where individuals attempted to prove their lack of accountability by using neuroscientific tools.

The motivation for addressing the topics of legal and moral responsibility from a cognitive perspective resides in my interest in better understanding the way legal systems apply the various available means for assigning responsibility of an individual. Most of the current legal systems rely on the retributive premise, according to which individuals choose their actions freely and should be punished accordingly. [12] The idea of free will (or free agency) is at the core of the discussions when addressing the topic of "responsibility". As we will see in the next chapters, in the past decades there has been substantial research challenging the concept of free will by putting forward a mechanistic conception, according to which our actions are determined by structural features of the brain for which we are not responsible. This new research has reopened the neuro-philosophical and legal debates of whether we are free agents in control of our own actions or, as Mobbs et al. suggested, "mere prisoners of a biologically determined brain".[13]

As we will discover in the next pages, moral responsibility can lead to legal responsibility, but the two concepts do not necessarily equate one to another. Legal (criminal) responsibility is based on mores, customs and norms that are provided for in laws, which can vary from one judicial system to another. Despite these variations, it is generally agreed that for a criminal legal system to be efficient and just, the system must be "both rational as to its goals (utility) and rational as to its values (justice and humaneness)".[14]

---

[11] *See* HARDCASTLE, G., *My Brain Made Me Do It? Neuroscience and Criminal responsibility*, In JOHNSON, S., ROMMELFANGER, K. (eds.), *The Routledge Handbook of Neuroethics*, Routledge, New York, 2018, p. 185-198; FARAHNY, N., *Neuroscience and Behavioural Genetics in US Criminal Law: An Empirical Analysis*, Journal of Law and Bioscience, Issue 2, 2016, No. 3, p. 485-509.

[12] The retributive theory of justice has at its basis Kant's theory of criminal punishment. For more details, *See* MURPHY, J., *Kant's Theory of Criminal Justice*, Retribution, Justice and Therapy, Philosophical Studies Series in Philosophy, Vol. 16, Springer, p. 82-92; For a detailed presentation between retributive and consequential purposes, *See* HODGSON, D., *Criminal Responsibility, Free Will and Neuroscience*, In MURPHY, N., ELLIS, G., O'CONNOR, T. (eds.), *Downward Causation and the Neurobiology of Free Will*, Springer, Heidelberg, 2009, p. 227-241.

[13] MOBBS, D., LAU, H.C., JONES, O., FRITH, C., *Responsibility and the Brain*, In MURPHY, N., ELLIS, G., O'CONNOR, T. (eds.), *Downward Causation and the Neurobiology of Free Will*, Springer, Heidelberg, 2009, p. 243.

[14] LAHITI, R., *Towards a more efficient, fair, and humane criminal justice system: Developments of criminal policy and criminal sanctions during the last 50 years in Finland*, Journal of Cogent Social Sciences, Vol. 3, Issue 1, 2017, p. 1.

The thesis suggests that while new scientific and technological developments in the field of neuroscience could greatly contribute to a better assessment of the moral and legal responsibility of individuals, these developments must be addressed with caution by the legal and scientific community. In our view, they present a great potential to humanize[15] the legal system of responsibility and support the shift from a retributive criminal system to a humanistic criminal system.[16] But while that happens, both legal practitioners and scientists need to be aware of controversial arguments[17] that promote full excuse for behaviours exclusively on the only premise that "my brain made me do it". They must be equipped with sufficient knowledge that would permit them to correctly decide whether such arguments should be accepted or discarded.

2. Main goals

The main objective of this thesis is to determine to which degree the methods and tools of cognitive science could help in assessing the moral and, consequently, the legal responsibility of an individual. The thesis will also discuss new developments in particular areas such as neuroscience and philosophy of science in order to illustrate the debates that they have generated in the legal world. It will, thus, analyse the potential consequences that these developments might have in the near future on the concepts of moral and legal responsibility.

Some of the central questions that this thesis aims to answer to are the following:

- Is there sufficient research to support that the notion of free will has been challenged by the advances in neuroscience? Which are the main issues that have

[15] For a better understanding of what is argued to be a "humane" or "humanized" criminal legal system, *See* LAVAZZA, A., *Neurolaw and Punishment: A Naturalistic and Humanitarian View, and its Overlooked Perils*, Ethics, Law and Cognitive Science, Vol. 87, Issue 81, 2017, p. 81-97.

[16] The idea of a humanistic criminal system is rather old. A criminal "humanistic" criminal justice is one that is oriented towards the betterment of the individual, as opposed to the conventional retributive justice that is oriented towards punishing the individual. For more details, *See* MANNOZZI, G., *Towards a "humanism of justice" through restorative justice: a dialogue with history*, Restorative Justice, An International Journal, Vol. 5, Issue 2, 2017, p. 145-157; HARTJEN, C., *Humanistic Criminology: Is it Possible?*, Vol. 12, Issue 3, 1985, p. 444-468.

[17] There are increasing number of situations in which defense lawyers have used controversial arguments such as "my brain made me do it" in order to argue for the exoneration of their clients. For an interesting account, *See* MARON, D., *"My brain made me do it" is becoming a more common criminal defense*, Scientific American, March 2018, https://www.scientificamerican.com/article/my-brain-made-me-do-it-is-becoming-a-more-common-criminal-defense/; STERNBERG, E., My *Brain Made me Do It: The Rise of Neuroscience and the Threat to Moral Responsibility*, Prometheus Books, New York, 2010.

generated these debates?

- How have advances in neuroscience (e.g. neuro imaging tools) interacted with the legal field and which are the possible consequences that these can generate for the assessment of legal and moral responsibility?

- How have legal practitioners received these advancements and how do they relate to them in the practice of law, particularly when they have to determine the legal responsibility of an individual?

3. Interdisciplinary aspect and research sources

The thesis will answer the questions presented above by using an interdisciplinary approach. It will look at the topic at hand thorough the optics of relevant fields such as neurophilosophy, philosophy of science, cognitive psychology, neuroscience, ethics and law.

The theoretical part of this thesis is based on books, papers and articles, pertaining mostly to the field of philosophy of science, cognitive psychology and neuroscience, but also specialized journals in the field of criminal and neurolaw. The empirical part was designed by the author. It employs similar methodology from experiments and questionnaires[18] designed to measure the concept of free will, but adapts the methodology in order to be relevant for the respondents targeted for this study (i.e. legal practitioners).

4. Structure of the thesis

In order to systematically answer the core questions of this thesis, the study is structured in two main theoretical parts that precede and explain an empirical study.

The introductory part (Chapter I) presents the main motivations for researching this topic, its theoretical and practical relevance for the field of cognitive science and law, as well as the main goals of this study.

The first theoretical part (Chapter II) discusses the impact that neuroscientific advancements have had in the past decades on the debates on free will or free agency. It

[18] For more on the types of questionnaires used, *See* Chapter IV, section *5. Methodology of research*.

then introduces the main philosophical positions on free will, which, as we will see, are at the foundation of moral and legal responsibility. It also summarizes some of the most relevant empirical research that has been considered to have challenged the concept of free will and provides an evaluation of whether these challenge assumptions are founded. Finally, it discusses the important benefits that the belief in free will has and the way the society is shaped and influenced by this concept. By highlighting the philosophical debate surrounding free will, this chapter reveals the difficulties that arise for the scientific community when aiming to research this topic within "normal natural science". It argues for the necessity of having clear-drawn and widely accepted norms when investigating complex issues such as free will and its interaction with law and morality.

The second theoretical part (Chapter III) goes deeper into the subject matter, and presents the interaction between neuroscience and moral and legal responsibility. It discusses the uses of neuroscientific tools in the current legal practice, by illustrating them in some of the most prominent legal cases in which they were invoked. It also discusses to which degree neuroscience and its tools can be useful in the assessment of the responsibility of an individual. More precisely, it analyses to which extent new scientific advancements have either shed more light, or on the contrary, more uncertainty on important legal concepts such as *mens rea* and *insanity*, which are crucial notions to be determined by judges when assessing legal responsibility. It argues that the use of neuroscience in legal practice can present both positive and negative aspects. But, due to its variety of applications in the legal field, it also holds that is undeniable that the role of neuroscience in courts of law will continue to grow in the coming decades.

The empirical part of this thesis (Chapter IV) presents the experiment we conducted to test the intuitions of legal practitioners on two dimensions: 1) the influence of the latest neuroscientific debates on their perceptions of free will; and 2) their view on the relevance of using neuroscientific tools for the assessment of the responsibility of defendants in neurolaw cases. To our knowledge, very few studies have focused exclusively on legal practitioners such as judges and attorneys. By inquiring into the way legal practitioners have been influenced by the recent neuroscientific debates on free will and by evaluating the relevance of neuroscientific evidence when establishing the (legal and moral) responsibility of offenders, the empirical study aims to delve deeper in their decisions when assessing legal and moral responsibility. The ultimate aim of the empirical study is

to understand the way in which the scientific community could help to effectively ensure the fairness of the decision of third party decision-makers such as judges, lawyers and other legal practitioners when using neuroscientific evidence.

The concluding part (Chapter V) of the thesis argues that, based on the experimental data we have obtained so far, we are not able to claim that a paradigm shift on free will[19] has occurred. The thesis will make the case that there are not yet sufficient arguments in the scientific community to claim that neuroscience and its tools have fundamentally changed the concepts of moral (and legal) responsibility as we have understood them so far. The thesis will however highlight the benefits that these neuroscientific tools could have in the future for the criminal law field, if used correctly.

[19] For scholars that claim a paradigm shift on free will, *See* LAVAZZA, A., *Free Will and Neuroscience: From Explaining Freedom Away to new Ways of Operationalizing and Measuring It*, Frontiers in Human Neuroscience, Vol. 10:262, 2016, https://www.frontiersin.org/articles/10.3389/fnhum.2016.00262/full.

Chapter II. The Impact of Neuroscientific Advancements on the Free Will Debates

"No one is responsible for its actions as long as they were predetermined by the brain", Paul Singer[20]

The high amount of information obtained as a result of strenuous investigations in the field of neuroscience generated heated debates on topics such as free will in the field of philosophy of science. As we will see in the following sections, it has been claimed, that the conception of free will and agency have been challenged by a series of neuroscientific experiments.

Some researchers claimed that free will is challenged by the growing neuroscientific evidence according to which the moral actions are mediated by features of the brain, which determine the behavior of the individual.[21] Consequently, the idea that an individual is fully and independently capable of choosing and weighing his actions has been put into question.[22]

In order to understand the degree to which the neuroscientific advancements have challenged the notion of free will, we first need to understand the notion of free will. In a second section, we will analyze the various philosophical views in the field of philosophy of science. A good understanding of these views is necessary for further comprehending how this notion is connected to moral and legal responsibility. In a third section, we will present the empirical research that claims to have challenged the notion of free will. We will then try to establish whether these claims are justified or not. Lastly, we will attempt to address the challenges that the philosophical and scientific communities have encountered in their attempt to investigate the notion of free will using traditional

[20] SINNOTT-ARMSTRONG, W., *Conscious Will and Responsibility: A Tribute to Benjamin Libet*, Oxford University Press, New York, 2010, p. 124.
[21] *See* RAKOFF, S, *Science and the Law: Uncomfortable Bedfellows*, Seton Hall Law Review, Vol. 38, Issue 4, 2008, p. 1379-1393; SCHAUERT, F., *Can bad science be good science? Neuroscience, lie detection and beyond*, Cornell Law Review, Vol. 95, No. 6, 2010, p. 1191-1220; UDELL, M., *Neuroscience, Free Will and Criminal Justice,* Stanford University, 2009, p. 1-16, http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.368.7474&rep=rep1&type=pdf.
[22] The debates have overpassed the philosophical community and reached even the newsrooms, *See* OVERBYE, D., *Free Will: Now You Have It, Now You Don't*, New York Times, 2007, https://www.nytimes.com/2007/01/02/science/02free.html; CAVE, S., *There is No Such Thing as Free Will*, The Atlantic, 2015, https://www.theatlantic.com/magazine/archive/2016/06/theres-no-such-thing-as-free-will/480750/.

scientific methods. We will suggest that these challenges stem from the difficulty of categorizing free will as a "fact" in natural science or as a "value".

1. Conceptual and theoretical background of free will

Throughout the past decade, psychologists and experimental philosophers have defined free will as the "abstract belief that people have the capacity to act freely".[23] Free will has been generally conceptualized as the power to act freely[24], or "to have chosen to do otherwise".[25] Roskies defines free will as a "construct used to refer to the ground for endogenous action, autonomy and choice".[26] Searle defines the concept as an "endogenous mental act of deciding or forming an intention",[27] whereas other authors like Adams and Mele use the same concept to refer to decision or intention itself.[28]

Kane defines free will as the perceived possibility of an individual to choose among options freely without feeling under constraints.[29] He categorizes constraints in two groups: internal and external. Further on, Feldman defines internal constraints are factors that are about oneself, such as "genes, personality, intelligence, urges, physical disabilities, mental disorders, addiction".[30] Feldman includes in external constraints other agents such as family or friends, the environment, societal norms etc.[31] A number or scientists[32] report choice and unconstrained action as the most important factors in the

[23] *See* FELDMAN, G., *Making Sense of Agency: Belief in Free Will as Unique and Important Construct*, Social and Personality Psychology Compass, Vol. 11, 2017, p. 2.
[24] *See* MELE, A., *Free Will: Action Theory Meets Neuroscience,* In LUMER, C., NANNINI, S., (eds.), *Intentionality, Deliberation and Autonomy, The Action-Theoretic Basis of Practical Philosophy*, Routledge, New York, 2016, p. 257-273.
[25] VIHVELIN, K., *Arguments for Incompatibilism*, Stanford Encyclopedia of Philosophy, 2017, ZALTA, N. (ed.), https://plato.stanford.edu/entries/incompatibilism-arguments/.
[26] ROSKIES, A., *How does Neuroscience Affect our Conception of Volition?*, Annual Review of Neuroscience, Vol. 33, 2010, p. 110.
[27] *Ibid.*, p. 110; *See* also SEARLE, J., I*ntentionality: An Essay in the Philosophy of Mind*, Cambridge, Cambridge University Press, Cambridge, 1983.
[28] *See* ADAMS, F., MELE, A., *The Intention/ Volition Debate*, Canadian Journal of Philosophy, Vol. 22, 1992, p. 323-338.
[29] *See* KANE, R., *Free Will: New Directions for an Ancient Problem*, In KANE, R. (ed.), Blackwell Publishers Malden, 2002, p. 222-249; KANE, R. (ed.), *The Oxford Handbook on Free Will*, Oxford University Press, New York, 2011.
[30] FELDMAN, G., *Making Sense of Agency: Belief in Free Will as Unique and Important Construct*, Social and Personality Psychology Compass, Vol. 11, 2017, p. 2.
[31] *Ibid.*
[32] *See* MONROE, A., MALLE, B., *From Uncaused Will to Conscious Choice: The Need to Study, not Speculate about People's Folk Concept on Free Will*, Review of Philosophy and Psychology, Vol. 1, Issue 2, p. 211-224; STILLMAN, T., BAUMEISTER, R., MELE, A., *Free will in everyday life: autobiographical accounts of free and unfree actions*, Philosophical Psychology, Vol. 24, Issue 3, p. 381-394.

way people perceive free will.

Arnason prefers to define free will by showing its relevance:

> "Without free will, there can be neither moral responsibility nor legal culpability. Without free will, no one deserves punishment for breaking the law and no one deserves blame for immoral behavior. On a conceptual level, free will is a precondition for moral responsibility".[33]

As we can deduct from above, there are multiple dimensions of free will. As Pockett rightfully noted, "there are probably as many definitions of free will in the literature as there are philosophers".[34] Each philosopher requires different conditions and explain various and diverse intuitions.[35] Broadly speaking, definitions of free will fall in the main philosophical categories that we will introduce in the subchapter below. As we will see in the following pages, the problem of free will greatly depends on: 1) the exact definition of free will that each respective philosopher adopts; 2) and how determinism is reconciled with this definition.

2. Philosophical views on free will

According to Morris, in philosophy, the free will debate has existed ever since the two primary competing positions – incompatibilism and compatibilism – were established.[36] Based on the scientific progress, the issues regarding free will have made philosophers wonder about the nature of the physical universe and our place in it. Some of the questions they tried to answer were whether we are determined by physical laws and the movement of the atoms; if our actions could be predicted by those who know our psychology; or whether we were determined to become the kinds of persons we are by heredity and environment, birth, and upbringing etc.?[37]

Before we delve into the presentation of the various philosophical views on free will, some remarks about determinism are necessary, as this notion is at the core of the debate.

---

[33] ARNASON, G., *Neuroscience, free will and moral responsibility*, TRAMES, 15(65/60), Vol. 2, 2011, p. 147.
[34] POCKETT, S., *The Concept of Free Will: Philosophy*, *Neuroscience and Law*, Behavioral Sciences and Law, No. 25, 2007, p. 282.
[35] GROTTA, F., *The Freedom of What We care About: Revisiting Frankfurt's Hierarchical Theory of Free Will*, King's College, 2017, p. 9, https://www.repository.cam.ac.uk/handle/1810/270312.
[36] MORRIS, S., *The Impact of Neuroscience on the Free Will Debate*, Florida Philosophical Review, Vol. 9, Issue 2, 2009, p. 56.
[37] KANE, R., *A Contemporary Introduction to Free Will*, Oxford University Press, New York, 2005, p. 1.

We will look at determinism, as understood by Caruso, who defines it "the thesis that every event or action is the inevitable result of preceding events and actions and the laws of nature".[38] Similarly, Igbokwe defines it as "the philosophical position that for every event, including human action, there exist conditions that could cause no other event".[39] Some philosophers argued that if we accept the deterministic worldview, it follows that our choices and actions are causally determined by factors out of our control, for which consequently we are not morally responsible.

On the questions above, there is still no consensus among philosophers, although there is a growing trend towards supporting these theoretical standpoints with empirical evidence. The two opposing positions regarding the relationship of free will and determinism are incompatibilism and compatibilism, which will be discussed further in this chapter. Incompatibilism, which promotes the belief that free will and determinism are incompatible, can be subdivided into three philosophical groups: 1) libertarianism 2) hard determinism, and 3) hard incompatibilism. On the other hand, compatibilism rejects the dichotomy between free will and determinism and instead promotes the belief that the two ideas are not incompatible. Our intention is not to settle these debates, but to briefly discuss the arguments that these different positions bring with regard to the relationship of free will and determinism. However, in full transparency, we will emphasize the importance and relevance of compatibilism, as in our opinion, it provides the best solution to the free will problem and consequently to the debates surrounding moral and legal responsibility.

2.1. Incompatibilism

As its name suggests, incompatibilism takes the conditions for free will and moral responsibility to be incompatible with determinism.[40] The most widely discussed arguments by the incompatibilists is the *consequence argument* proposed by Peter van Inwagen. According to the argument, we cannot do otherwise than we actually do:

> "if determinism is true, then our acts are the consequences of the laws of nature and

[38] CARUSO, G., *Exploring the Illusion of Free Will and Moral Responsibility*, Lexington Books, Plymouth, 2013, p. 97.
[39] IGBOKWE, A., *Free Will and Determinism*, Global Journal of Arts Humanities and Social Sciences, Vol. 3, No. 2, 2015, p. 76.
[40] For authors who have argued that free will and moral responsibility are incompatible *See* BAKER, L., *Moral Responsibility Without Libertarianism*, NOUS, Vol. 42, 2006, p. 307; WARFIELD, T., *Determinism and Moral Responsibility are Incompatible*, Philosophical Topics, Vol. 24, No. 2, 1996, p. 215-226.

> events in the remote past. But it is not up to us what went on before we were born, and neither it is up to us what the laws of nature are. Therefore, the consequences of these things (including our present acts) are not up to us".[41]

Incompatibilists believe that free will associated with "moral responsibility is impossible if determinism is true",[42] and they often claim that this argument is supported by ordinary intuitions.[43] Ekstrom claims that "we come at the table, nearly all of us, as pretheoretic incompatibilists".[44] Strawson also argues that the incompatibilist conception of free will is "just the kind of freedom that most people ordinarily and unreflectively pose themselves to possess".[45]

As proposed by Baker, there are two main groups of incompatibilists: those who believe that we meet the conditions for moral responsibility (the libertarian) and those who do not (the hard determinism).[46] In the following we will briefly introduce the arguments of each of the two groups.

2.1.1. Libertarianism

Libertarianism (or soft incompatibilism) acknowledges that if determinism was true, we would not have free will. In "The Significance of Free Will", Robert Kane offers the most comprehensive defense of libertarianism.[47] In a later publications, he notes that libertarians defend the existence of a "deeper" freedom of will, but they argue that physical determinism is false.[48] Kane shows that libertarians can have different political views – conservative, liberal, libertarian – they can share the ideal of persons having responsibility for their actions and their lives in an "ultimate sense that is incompatible with determinism".[49] The author also notes that "if determinism is true, one can never do otherwise; and if free will requires the power to do otherwise, then no one has free will".[50]

Similarly, Glannon argues that libertarianism rejects determinism and defends the

[41] INWANGEN, P., *An Essay on Free Will and Determinism,* Clarendon Press, Oxford, 1983, p. 16.
[42] MELE, A., *Ibid*., p. 1.
[43] NAHMIAS, E., MORRIS, S., NADELHOFFER, T., TURNER, T., *Is Incompatibilism Intuitive?*, Philosophy and Phenomenological Research, Vol. 73, No. 1, 2006, p. 28.
[44] EKSTROM, L., *Libertarianism and Frankfurt-style Cases*, In KANE, R. (ed.), *The Oxford Handbook of Free Will*, Oxford University Press, New York, 2011, p. 310.
[45] STRAWSON, G., *Freedom and Belief*, Oxford University Press, 1986, p. 30.
[46] BAKER, L., *Moral Responsibility Without Libertarianism*, NOUS, Vol. 42, 2006, p. 307.
[47] KANE, R., *The Significance of Free Will,* Oxford University Press, New York, 1996.
[48] KANE, R., *Ibid.*, 2005, p. 32.
[49] *Ibid.*, p. 33.
[50] *Ibid.*, p. 24.

unconditional ability to do otherwise. He argues that alternative possibilities are essential for free will to manifest. In his view, determinism is incompatible to free will precisely because it rules out alternative possibilities.[51]

According to libertarians, free acts have no antecedents whatsoever. They also believe, as Mele notes, that "the deterministic causation of an action is incompatible with the action's being freely performed".[52] In more simple language, libertarianism attributes a causal power to an agent that enables him or her to make choices and to act without being determined to do so. But in our view, this raises some questions. According to current scientific theories, we *do* live in a physical world that is governed by deterministic laws.[53] Therefore, it would be difficult to assume that there is any reason why our thoughts and decisions escape this determinacy.

2.1.2. Hard determinism and hard incompatibilism

Hard determinism cannot be defined without also mentioning hard incompatibilism, as they form two sides of the same coin. Hard determinism is defined by Slattery as a belief that "every event has a cause and that due to this our decisions stem back in time to causes that precede back to the start of time".[54] In other words, hard determinists claim that our actions are ancestrally determined, and, therefore, we never have alternative possibilities of actions.[55]

Hard incompatibilism, adopted by Derk Pereboom in "Living Without Free Will", reaches the same conclusion of hard determinism, but rejects determinism.[56] In another book, Pereboom argued that "being morally responsible would be ruled out if determinism was true, and also if indeterminism was true".[57] What makes hard incompatibilism different than libertarianism is the rejection of alternative possibilities. In Pereboom's view, an individual is considered to be morally responsibility for an action

[51] *See* GLANNON, W., *The Case for Libertarian Free Will*, An Interdisciplinary Journal of Philosophy, Vol. 42, Issue 2, 1999, p. 285-303.
[52] MELE, A, *Ibid.*, p. 4.
[53] *See* EARMAN, J., *Aspects of Determinism in Modern Physics*, Handbook of the Philosophy of Science, Vol. 2, Elsevier, 2006, p. 1369-1434.
[54] SLATTERY, T., *Why I am a Hard Incompatibilist, not a Hard Determinism*, Breaking the Free Will Illusion, 2014, https://breakingthefreewillillusion.com/hard-incompatibilist-not-hard-determinist/.
[55] *See* VILHAUER, B., *Hard Determinsim, Humeanism and Virtue Ethics*, The Southern Journal of Philosophy, Vol, 45, Issue 1, 2008, p. 121-144.
[56] *See* PEREBOOM, D., *Living Without Free Will*, Cambridge University Press, Cambridge, 2001.
[57] PEREBOOM, D., *Defending Hard Incompatibilism*, Midwest Studies in Philosophy, Vol. 29, 2005, p. 228.

not by the alternative possibilities available to him or her, but "by the action's having causal history of a sort that allows the agent to be the source of his or her action in a specific way".[58] As such, with hard incompatibilism, if our actions are based on indeterministic events, this also precludes free will.

An important number of philosophers[59] consider that the incompatibilist position on free will be much harder to defend than compatibilism as it implies disastrous consequences for moral responsibility and ethics. We will explain in more detail this last argument in throughout the next sections of this chapter.

2.3. Compatibilism

Compatibilism is the view that an individual can possess free will and be morally responsible even if determinism is true.[60] Compatibilism is a position supported by a large number of philosophers (Thomas Hobbes, John Locke, David Hume, John Stuart Mill) and it claims that "acts are freely willed if they are not subject to constraints".[61] As Nahmias et al. note, compatibilists suggest that "we are most in control of our actions when we overcome uncertainty and tension by ruling out all but the one alternative we feel confident we should act on".[62]

Compatibilists like Hobbes and Hume believe that as long as the agent is free from external coercion, he or she has freedom of will. In other words, in comparison to libertarianism, human agents choose and act freely only in those cases where there was no impediment to free action such as coercion or compulsion.[63] They also identify free will with freedom of action – the lack of external constraints.

We highlight Kane's suggestion that compatibilist arguments generally stand up as they show in detail that there is a difference between determinism, on one side, and constraint,

---

[58] *Ibid.*, p. 228.
[59] *See* CAOUETTE, J., *Hard Incompatibilism and Ethics: Some Concerns*, A Philosopher's Take, 2013, https://aphilosopherstake.com/2013/07/01/hard-incompatibilism-and-ethics-some-concerns/; OTSUKA, M., *Incompatibilism and the Avoidability of Blame*, Ethics, Vol. 108, No. 4, 1998, p. 685-701; ALEXANDER, L., *Hard Incompatibilism and the Rejection of Moral Responsibility: A Skeptical look at an Optimistic Account*, San Diego Legal Studies, Paper No. 17-259, 2017, p. 1-7.
[60] POCKETT, S., *Ibid.*, 2007, p. 282.
[61] MORRIS, S., *Ibid.*, p. 56.
[62] NAHMIAS, E., MORRIS, S., NADELHOFFER, T., TUNER, J., *The Phenomenology of Free Will, Journal of Consciousness Studies*, Vol. 11, No. 7-8, 2005, p. 162.
[63] GLANNON, W., *Ibid.* p. 285.

coercion and compulsion, on the other side.[64] Compatibilists show that causation and constraint[65] should not be confused and show that there is a difference between determinism and control by other agents.[66] The philosophers affiliated to this group also clarify that determinism is not be confused with fatalism[67] or with mechanism.[68]

But, where do compatibilists stand regarding determinism? Many compatibilists accept the view of a causal chain of events going back indefinitely in time, consistent with the laws of nature, with the plan of an omniscient God or with other determinisms.[69] More precisely, they argue that "as long as our own will is included in that causal chain, we are free".[70] According to Kane, if compatibilism is right we can have both freedom and determinism and we do not need to worry that future science will undermine our ordinary conviction that we are free and responsible agents.[71]

McKenna and Pereboom note that free will is the "unencumbered ability of an agent to do what he wants".[72] But that ability needs to manifest itself in the absence of impediments that would stand in its way. Therefore, they conclude that

> "it is plausible thus to assume that free will, so understood, is compatible with determinism since the truth of determinism does not entail that no agents ever do what they wish to do unencumbered".[73]

Compatibilists also argue that "determinism is compatible with the ability to do otherwise".[74] In their study McKenna and Coates note that "since determinism is a thesis about what must happen in the future given the actual past, determinism is consistent with the future being different given a different past".[75]

This aspect is also analyzed by Dennett. He offers a general explanation of the evolution

---

[64] For a more detailed presentation of these concepts, *See* KANE, R.*, Ibid.,* 2005, p. 18.
[65] For more on causation and constraint, *See* KANE, R., *Ibid.,* 2005, p. 18.
[66] For more on determinism and control by other agents, *See* KANE. R., *Ibid.,* 2005, p. 19.
[67] For more on determinism and fatalism, *See* KANE. R., 2005, *Ibid.,* p. 19.
[68] For more on determinism and mechanism, *See* KANE. R., 2005, *Ibid.,* p. 20.
[69] MCKENNA, M., COATES, J., *Compatibilism*, The Stanford Encyclopedia of Philosophy, 2016, ZALTA, E. (ed.), https://plato.stanford.edu/archives/win2016/entries/compatibilism/.
[70] *Ibid.*
[71] KANE, R., *Ibid*., p. 12.
[72] MCKENNA, M., PEREBOOM, D., *Free Will: Contemporary Introduction*, Routledge, New York, 2016, p. 51.
[73] *Ibid.*, p. 51.
[74] MCKENNA, M., COATES, J., *Ibid.,* 2016.
[75] *Ibid.*

of human beings as "designed" to be able to avoid certain outcomes and look for others.[76] Dennett considers free will as the

> "ability of a person to control his or her conduct on the basis of rational considerations through means that arise from, or are subject to, critical self-evaluation, self-adjusting and self-monitoring".[77]

Dennett's model of decision making supports the idea that, despite the fact that there are determined processes in our brain, the agent does not lose his agency on the actions he is performing. This way of thinking accommodates the idea of determinism with the idea of free agency, which, in our view, makes compatibilism a credible assumption.

2.4. Relevance of free will philosophical views for the legal debates on punishment

Philosophy of law traditionally sees free will as an essential to criminal responsibility. Nevertheless, as Chiesa argues, most criminal theorists have "not much to say about whether our practices of blaming or punishing are undermined by the thesis of causal determinism".[78] Of the few criminal law scholars[79] who discuss the problem of free will, most espouse views that mirror the views of free will that we discussed in the sections above. For example, scholars from both an Anglo-American legal tradition[80] and a continental legal tradition[81] acknowledge the thesis of causal determinism and discuss the degree to which this thesis has undermined the conventional theories of criminal responsibility.

---

[76] DENNETT, D., *Freedom Evolves*, Penguin Books, London, 2003.
[77] This quote has been taken from MCKENNA, M., PEREBOOM, D., *Ibid.*, p. 184.
[78] CHIESA, L., *Punishing Without Free Will*, Utah Law Review, 2011, p. 1428.
[79] For a detailed comparison of how various criminal theorists have approached the free will problem, *See* CHIESA, L., Ibid., p. 1428-1436.
[80] For Anglo-American criminal law scholars that support a libertarian account of free will, *See* FLETCHER, G., *The Recidivist Premium*, Criminal Justice Ethics, Vol. 1, 1982, p. 54-59. Fletcher seems to believe that criminal responsibility is incompatible with causal determinism.
For Anglo-American criminal law scholars that support a compatibilist account of free will, *See* MOORE, M., *Causation and Responsibility: An Essay in Law, Morals and Metaphysics*, Oxford University Press, New York, 2009; MORSE, S., *Law and the Science of the Brain/Min*d, Penn Legal Scholarship Repository, Faculty Scholarship Paper 1642, 2016, p. 1-52, http://scholarship.law.upenn.edu/faculty_scholarship/1642.
For Anglo-American criminal law scholars that support a hard incompatibilist account of free will, *See* KAYE, A., *Resurrecting the Causal Theory of Excuses*, Nebraska Law Review, Vol. 83, Issue 4, 2005, p. 1116-1177.
[81] For European (continental) criminal law scholars we need to mention ROXIN, C., who argues for a determinist account of human behaviour, *See* ROXIN, C., *Einführung in das Strafrecht und Strafprozessrecht*, Müller Verlag, Heidelberg, 2006.

Moreover, research has provided some evidence that shows a correlation between various views or beliefs in free will and punishment in criminal law.[82] In that sense, legal theorists accept that anything that diminishes the perception that an agent deserves to be blamed for his or her transgression (such as the ability of free will) diminishes the justification for retributive punishment.[83] That is because for law, a legal system without free will would threaten the law of retribution in justifying punishment.

As we saw in the previous sections, it was claimed that "determinism is the most threatening challenge to ordinary moral and legal notions of responsibility".[84] So how do hard determinist views on free will influence the legal discourse on responsibility? Smilansky notes that hard determinists sometimes find it morally acceptable to incarcerate wrongdoers.[85] In his view, which we also strongly share, this contradicts their beliefs according to which determinism is rejecting moral responsibility, making thus their need to punish unjust. Therefore, Smilanskey challenges the reader to look at the consequences that hard determinism's claims would have on the society if they were true, and shows the ridiculous consequences of this philosophical position on the legal system. He shows in a very convincing manner that punishment will have to give way to "funishment"[86], making thus hard incompatibilism difficult to contemplate. As Ferzan puts it, "it is a must-read" for any self-respecting criminal law theorist.[87]

Moreover, according to incompatibilists in order to be truly responsible for our actions – in a way that we could justify blame and punishment – we must be the ultimate source or first causes of our choices, decisions, intuitions or acts of free will.[88] This is what Kane calls the "ultimate responsibility". But this argument poses problems, as well. As Chiesa notes, once we presuppose that humans do not have enough control over their acts to be considered responsible for their conduct, "imposing punishment on the wrongdoers for

[82] *See* SHARIFF, A., GREENE, J., KARREMANS, J., LUGURI, J., CLARK, C., SCHOOLER, J., BAUMEISTER, R., VOHS, K., *Free Will and Punishment: A Mechanistic View of Human Nature Reduces Retribution*, Psychological Science, 2014, p. 1-8.
[83] *Ibid.*, p. 2.
[84] CHIESA, L., *Ibid.*, p. 1452.
[85] SMILANSKY, S., *Hard Determinsim and Punishment: A Practical Reductio*, Law and Philosophy, Vol. 30, Issue 3, p. 353.
[86] *Ibid.*, p. 354.
[87] FERZAN, K., *Does Hard Determinism Require "Funishment": instead of Punishment?*, Criminal Law Jotwell, 2011, https://crim.jotwell.com/does-hard-determinism-require-funishment-instead-of-punishment/.
[88] VIHVELIN, K., *Ibid.*, 2017.

the purpose of extracting retribution is unwarranted".[89]

On the other hand, the compatibilists' arguments are plausible enough to reconcile the deterministic view with the idea of free will or agency and hence to support the notion of responsibility as we understand it in law. Their argument suggests that humans possess the sort of free will that underlies judgements of moral responsibility, regardless of whether it turns out that causal determinism is true.[90]

However, we believe that compatibilism imposes a revision of responsibility, by promoting a "milder" position and by removing from our conceptions the idea of "ultimate" responsibility. Walter shows that there is no "ultimate responsibility" in the way postulated by the libertarians.[91] Furthermore, according to Walter, "in a deterministic universe no one can be responsible for the kind of person he or she is".[92] Therefore, he supports the idea of the revision of the concept of responsibility, as in his view the retributive punishment is unjustified. Since this is an argument that is also at the core of our study, we will readdress it also in chapter III of the thesis.

The next section will introduce some of the empirical research that has been challenging the notion of free will.

3. Implications of empirical research challenging the notion of free will

Over the past three decades, a great deal of neuroscience research has undermined our views about free will by challenging the understanding of how the brain causes behavior and, consequently, the way moral responsibility is assigned. In the following sections, we will discuss some of the key research that has challenged the notion of free will.

We will begin with Benjamin Libet's experiment, concerned primarily with the decision awareness processes, and continue with Wegner and Wheatley's work to learn more about mental causation. On the basis of these experiments, John-Dylan Haynes' research took the next step to see if the current neuroscience allows us to predict our intentions.

---

[89] CHIESA, L., *Ibid.*, p. 1409.
[90] FISHER, J., KANE, R., PEREBOOM, D., VARGAS, M., *Four Views on Free Will*, Blackwell Publishing Inc., Malden, 2007, p. 3.
[91] WALTER, H., *Neurophilosophy of Free Will: From Libertarian Illusions to a Concept of Natural Autonomy*, MIT Press, Cambridge, Massachusetts, 2009, p. 290.
[92] *Ibid.*, p. 291.

3.1. Benjamin Libet and decision awareness

Benjamin Libet's experiment presented an important challenge to the notion of free will, by suggesting that brain processes that may be unconscious are responsible for initiating the behavior performed by the subjects in the experiment.[93] Libet's thesis was relatively simple – that "the brain decides to initiate, or at least, prepare to initiate at a time before there is any reportable subjective awareness of such a decision has taken place".[94] In other words, according to Pockett's interpretation of Libet's experiment,

> "human subjects perceive their conscious decision to initiate a simple finger movement before the movement actually occurs, but considerably *after* the start of the neural activity leading to the movement".[95]

In the experiment conducted by Libet, subjects were asked to report the position of a revolving spot of light or clock hand at the instant they subjectively decide to move their finger to press a key.[96] Libet used an electroencephalogram (EEG) in order to measure and record the readiness potential, by looking at the activity of prefrontal motor areas in preparing the movement. Libet's study noted that the readiness-potential occurs sometime between 500 and 1000ms before the finger movement. The time reported by the participants as the time they "decided", "wanted" or "wished" to move was measured at around 200ms before the start of a finger movement.[97] Accordingly, Libet interpreted these results as showing that the brain prepared the action over a considerable period before the subjects became aware of their intention to act.[98]

Libet's experiment has brought forward the concern that humans might not have conscious free will. Since the results of his test were highly controversial,[99] the experiment has been replicated by various researchers and even disproved.[100] For

---

[93] MORRIS, S., *Ibid.*, 2009, p. 56.
[94] LIBET, G., GLEASON, E., WRIGHT, E., PPEARL, D., *Time of Unconscious Intention to Act in Relation to Onset of Cerebral Activity (Readiness-Potential)*, Brain, No. 106, 1983, p. 640.
[95] POCKETT, S., *Ibid.*, p. 286.
[96] For a detailed description of the methods and procedures *See* LIBET, G., GLEASON, E., WRIGHT, E., PEARL, D., *Ibid.*, 1983, p. 625-629.
[97] POCKETT, S., *Ibid*., p. 286.
[98] HAGGARD, P., *Ibid.*, p. 934.
[99] For a detailed critique on Libet's experiment, *See* MORSE, S., *Determinism and the Death of Folk Psychology: Two Challenges to Responsibility from Neuroscience*, Minnesota Journal of Law, Science and Technology, Vol. 9, No. 1, 2008, p. 29-31.
[100] Some of the studies in which Libet's experiment has been replicated: HAGGARD, P, EIMER, M., *On the relation between brain potentials and the awareness of voluntary movements*, Experimental Brain Research, No. 126, 1999, p. 128-133; LAFARGUE, G., DUFFAU, H., A*wareness of intending to act*

instance, in explaining Libet's results, Haggard suggested as an objection to the concern that humans do not have conscious free will the fact that "the real voluntary action is the participant's decision to join the experiment".[101] In his view, it is the process associated with this action that provides the experimental data and not the feeling of being about to move. He also noted that the

> "subjective estimates of when conscious experience occur are also unreliable because the results can vary according to the way the participant divides attention between the clock and his motor preparation".[102]

Libet himself did not want to accept the implication that humans might not have conscious free will. He noted that "although the conscious decision could not have been the cause of the movement in this case, it did arise before the movement".[103] However, his interpretation on this last fact was that "there was time for consciousness to stop the movement before it took place".[104]

For the purpose of our argumentation, we would like to provide Libet's final conclusion on the experiment he performed:

> "My conclusion about free will, one genuinely free in the non-determined sense, is then that its existence is at least as good, if not a better scientific option than its denial by determinist theory. Given the speculative nature of both deterministic and non-deterministic theories, why not adopt the view that we do have free will (until some real contradictory evidence may appear, if ever does). Such a view would at least allow us to proceed in a way that accepts and accommodates our own deep feeling that we do have free will".[105]

Before proceeding to the next section, we would like to highlight that Libet himself acknowledge the importance for the scientific community to adopt the view that we *do* have free will, at least until we are able to contradict this with "real evidence". This is an argument that we will also highlight throughout the other chapters of this study.

---

following parietal cortex resection, Neuropsychologia, No. 46, 2008, p. 2662-2667; TREVENA, J., MILLER, J., *Cortical movement preparation before and after a conscious decision to move*, Journal of Conscious Cognition, No. 11, 2002, p. 162-190.

[101] HAGGARD, P., *Ibid.*, p. 935.

[102] *Ibid.*

[103] LIBET, B., *Do We Have Free Will?,* Journal of Consciousness Studies, Vol. 6, No. 8-9, 1999, p. 55.

[104] POCKETT, S., *Ibid*., p. 287.

[105] LIBET, B., *Ibid.*, p. 56.

3.2. Wegner and Wheatley's mental causation

In the "I Spy Study" performed in 1999, Wegner and Wheatley conducted two sets of experiments in order to assess the causal path or the apparent mental causation. The scientists wanted to "learn whether people will feel they willfully performed an action that was actually performed by someone else when conditions suggest that their own thought may have caused the action".[106] For this experiment, they were inspired by the Ouija board game.[107] According to the two scientists, they wanted to test

> "whether individuals would feel they had moved a Ouija-like pointer or cursor if they simply thought where it would go just in advance of its movements, even if the movement was actually produced by someone else".[108]

The results of the first experiment showed that the average intentionality of the subjects to move the cursor over an object was rated to only 56%. In the second experiment, the subjects were asked to rate whether they thought they controlled the actions of their hands. They were given a scale from 1 to 7. Wegner and Wheatley showed that in the baseline condition, the subjects were not completely sure if they actually controlled the movements or not. Interestingly, however, when the owner of the hand was moving his hand while hearing at the same time the instructions, the average control score rose from 2.05 to 3.00.[109] The two scientists interpreted these results as showing that that there is tendency to believe that one has cause an event, if one's thoughts are consistent with an event.[110] However, the two authors were also careful to suggest that "the experience of will can be an indication that mind is causing action, but it is not conclusive".[111]

In the discussion part of their article, Wegner and Wheatley argued that "the real causes of human action are unconscious, so it is not surprising that behavior could often arise – as in automaticity experiments – without the person having conscious insight into its causation".[112] In the authors' view,

---

[106] WEGNER, D, WHEATLEY, T., *Apparent Mental Causation: Sources of the Experience of Will*, American Psychologist, Vol. 54, No. 7, 1999, p. 487.
[107] Collins Dictionary defines a Ouija board as "a board on which are marked the letters of the alphabet. Answers to questions are spelt out by a pointer or glass held by the fingerprints of the participants, and are supposedly formed by spiritual forces", https://www.collinsdictionary.com/dictionary/english/ouija-board.
[108] WEGNER, D, WHEATLEY, T., *Ibid.*, p. 487.
[109] POCKETT, S., *Ibid*., p. 289.
[110] WEGNER, D, WHEATLEY, T., *Ibid.*, p. 486.
[111] *Ibid.,* p. 490.
[112] *Ibid.*

> "the experience of conscious will arises from a process that interprets the unconscious causal connections, not from the connections themselves. Believing that our conscious thoughts cause our actions is an error based on the illusory experience of free will".[113]

According to Wegner and Wheatley's model, "both the thought preceding a voluntary action and the action itself are actually generated by separate unconscious processes".[114] However, as the researchers show, sometimes "we automatically, but erroneously, infer a causal path from thought to action".[115] The two researchers established three main principles which are the basis of their model: the priority, the consistency and the exclusivity principle.[116] According to the priority principle, the thought must take place immediately before the action. The consistency principle demands that the thought must be consistent with the action. The exclusivity principle implies that the thought must be the only apparent cause of the action.[117]

Like Libet's experiment, Wegner and Wheatley's results have also been criticized.[118] For instance, Pockett notes that "the example of illusory control does not impact on the question of free will because it studies an abnormal situation".[119] According to Peter Ross, the example they chose for their experiment is "not relevant to the ordinary example of free will, that is, the case where one's intentions clearly do cause one's actions".[120]

Moreover, Bayne also identified some drawbacks. In his opinion, phenomenological processes and the neuroscience of action still need to be thoroughly investigated. For that, he argues, we need "both an account of the content of the phenomenology of agency and an account of the structure of agency itself".[121] According to him, until these matters are fully understood there should be no sharp pronouncements on free will such as those purporting that it does not exist.[122]

---

[113] *Ibid.*
[114] I*bid.*
[115] *Ibid.*, p. 491.
[116] *Ibid.*, p. 483.
[117] *Ibid.*; For a commented version of Wegner and Wheatley's principles, *See* POCKETT, S., *Ibid*., p. 287-288.
[118] For a detailed presentation of all the criticism brought to Wegner and Wheatley's experiment *See,* MORRIS, S., *Ibid.,* p. 56-72.
[119] POCKETT, S., *Ibid*., p. 289.
[120] ROSS, P., *Empirical Constraints on the Problem of Free Will*, In POCKETT, S., BANKS, W.P., *Does Conscious Cause Behavior?*, MIT Press, Cambridge, 2006, p. 125.
[121] BAYNE, T., *Phenomenology and the feeling of doing: Wegner on the conscious will*, In S. POCKETT, W.P. BANKS, W.P., *Does Conscious Cause Behavior?*, MIT Press, Cambridge, 2006, p. 182.
[122] *Ibid.*, p. 182.

Nonetheless, Nahmias also considered that Wegner and Wheatley have overstated somehow their research and that "they have not shown that our conscious will is an illusion – at least not in the strong sense that says our conscious experience of willing our actions plays no causal role in how we act".[123]

3.3. John-Dylan Haynes and prediction of intentions

Almost a decade later, in 2007, Haynes conducted an experiment in which he put the participants into a fMRI scanner. [124] He asked them to press a button with either the right or left finger whenever they felt the urge and to remember the letters which were on the screen on the moment they made their decision.[125] The researcher opted for the fMRI in order to monitor brain activity in real time as the participants made their decision.

Haynes' follow-up experiment in 2011 was developed to resolve the inconsistencies he found in the Libet's experiment and it came as a modernization to his experiment. Haynes criticized Libet's experiment claiming that the measurements Libet performed did not show the readiness potential for every single trial. In contrast, in his experiment, Haynes analyzed the activity of the whole brain, whereas the Libet's experiment measured only the motor cortex. The task was also partially changed: the participants were less constrained than in Libet's experiment. Their task was to spontaneously press the left or the right button when they formed their decision. As mentioned above, Haynes used the fMRI in order to obtain multivariate pattern recognition and not the EEG, like Libet, because of its bad spatial resolution.[126]

Haynes' results found unconscious, predictive brain activity patterns in Brodmann area 10[127] in frontpolar cortex and parietal cortex. The result was unexpected as this area is not normally discussed in connection with free choices.[128] Moreover, the findings pointed toward long-leading brain activity that predicts the outcome of a decision even before the

---

[123] NAHMIAS, E., *When Consciousness Matters: A Critical Review of Daniel Wegner's The Illusion of Conscious Will*, Philosophical Psychology, No. 15, 2002, p. 528.
[124] *See* HAYNES, J., *Decoding and Predicting Intentions*, Annals of the New York Academy of Science, 2011, p. 9-21.
[125] SMITH, K., *Neuroscience versus Philosophy: Taking Aim at Free Will*, Nature, No. 477, 2011, p. 24.
[126] *Ibid.*, p. 24.
[127] "Brodmann Area 10 (BA10) is a prefrontal cortical area responsible for several executive functions associated with planning of future actions, taking initiative, and the processing of working memory and attention", *See* HARTON, C., YADAV, A., *Frontal Cortex Area 10 Cytoarchitecture*, Centre for Academic Research and Training in Anthropogeny, https://carta.anthropogeny.org/moca/topics/frontal-cortex-area-10-cytoarchitecture.
[128] HAYNES, J., *Ibid.*, p. 14.

decision reaches awareness[129]. Haynes used pattern classification techniques on fMRI data from regions of frontal-polar and parietal cortex to predict a motor decision. The information that aided prediction was available 7-10 seconds before the decision was consciously made.[130] Despite the fact that the predictive accuracy is only around 60%, according to the author, the prediction can be improved if it is tailored to each subject.[131] The low prediction accuracy is due to incomplete prediction (small training data set and fMRI limitations) and also because of the incomplete determination generated by the stochastic background fluctuations in the neural network.[132]

As Smith notes, these results made Haynes raise the challenge that conscious awareness of decision may be a "mere afterthought, with no influence on the person's actions".[133] This made Haynes pose the following question: "How can I call a will mine if I don't even know when it occurred and what it has decided to do?"[134] The impact of Haynes' experiment on the free will has also been analyzed by many critics. It has been pointed out that these decisions do no address real world decisions that have motivational importance, they are not based on long-term reward expectations and they do not involve complex reasoning".[135]

Although acknowledging the little motivational salience of Libet's specific types of decisions, Haynes believes that the findings address the "folk-psychological intuitions that at the time when the decision is made, the outcome of the decision is free in the sense of not being predetermined by prior brain activity".[136] These results are opening new research pathways. Some scientists such as Smith argued that starting from this empirical research neuroscience could help researchers identify "the physical processes underlying conscious intention and to better understand the brain activity that precedes it".[137]

The experiments performed by the three scientists demonstrate that neuroscience could contribute to a better understanding of free will. But at the same time, they present certain inconsistencies that need to be carefully acknowledged by researchers in this field. In the

[129] *Ibid.,* p. 15.
[130] ROSKIES, A., *Ibid.*, 2010, p. 116.
[131] HAYNES, J., *Ibid.*, p. 16.
[132] *Ibid.*, p. 16 -17.
[133] SMITH, K., Ibid., p. 24.
[134] *Ibid.,* p. 25.
[135] HAYNES, J., *Ibid.*, p. 16.
[136] *Ibid.,* p. 16.
[137] SMITH, K., *Ibid.*, p. 24.

next section, we will address the implications of these experiments and the discussions they have generated in the scientific community.

3.4. Discussion on the implications of these experiments

The experiments presented above have generated some questions for the legal field, particularly related to the issue of how law will be affected if it turns out that all our voluntary behavior is in fact initiated in an unconscious manner.[138]

Anarson has suggested that the "neuroscientific challenges to free will could work on at least three levels".[139] Firstly, he notes that on a *metaphysical level* there is a deterministic challenge which purports that "the mind is nothing more than what the brain does, and the brain is a physical, deterministic system". [140] Secondly, he identifies the *epistemological level* containing a reductionist challenge. According to this level of analysis, the "mental phenomena can be fully explained in terms of neural states, structures and functioning".[141] And thirdly, the author believes that on an *empirical level*, we could argue that "decision-making is fundamentally unconscious and therefore not free".[142] By showing in detail the three main challenges that could be brought to free will, Arnason concludes that "an universal challenge to free will based on neuroscientific evidence is unlikely to be successful".[143] Therefore, he believes that neuroscience has not yet revealed that free will is just a mere illusion or social construct and, in his view, it is not likely ever to do so.

In Pockett's view, at the moment, neuroscience "can have little to say about the truth of any positions". [144] Therefore, she believes that one possible solution would be to acknowledge that

> "the mind is a mixture of conscious and unconscious components and consequently it is necessary to judge an individual's act by taking into consideration if the offending act was either conscious or unconscious".[145]

[138] POCKETT, S., *Ibid*., p. 292.
[139] ARNASON, G., *Ibid.*, p. 148.
[140] *Ibid.*, p. 149.
[141] *Ibid.*, p. 151.
[142] *Ibid.*, p. 153.
[143] *Ibid.*, p.154.
[144] POCKETT, S., p. 292.
[145] *Ibid*.

Other authors like Roskies acknowledge the merits of the neuroscientific developments, but, at the same time, continue to believe that neuroscience has not much affected our conception of volition.[146] According to her, the only thing that neuroscience has affected substantially is our notions of intention, choice and the experience of agency.[147] In her view, all that neuroscience managed to do is to increase our understanding of the neural basis of the brain and to make us think of volition in a more mechanistic manner, by putting pressure on our ordinary notions of what is required for freedom. Roskies concludes that for the time being, the most significant contribution neuroscience made in the field of free will has been in allowing us to formulate novel questions about the nature of voluntary behavior and in providing new ways of addressing them.[148]

One clear outcome of these empirical experiments is the legitimate concern that some researchers have about studies that claim that free will is an illusion. As Arnarson illustrated, even if the

> "neuroscientific challenges to free will turn out to be poorly justified or even wrong, scientists' claims about free will being an illusion are quickly and easily circulated in the media and can hence have negative impact on the society".[149]

It appears thus that when neuroscientific claims are made against free will, we should take them seriously, but at the same time we should view them critically. It seems that at least in the foreseeable future, the likelihood of a strong challenge to the notion of free will is hard to predict, especially for the legal systems. That is because law has to be based on the idea that people are responsible for their actions except in exceptional circumstances that are unambiguously identified by law.[150]

As Smith notes, for scientists like Libet and Haynes, maintaining a just world without free will seems difficult, if not even impossible.[151] An explanation could be that free will is a value that is too important to the retributive premise of justice. In the next section, we will address the question of why it is valuable to believe in free will. We will also address the debates surrounding free will as a "value" and free will as a "scientific fact", and the

[146] ROSKIES, A., *Ibid.*, 2010, p. 111.
[147] *Ibid.*
[148] *Ibid.*, p. 124.
[149] ARNASON, G., *Ibid.*, p. 148.
[150] SMITH, K., *Ibid.*, p. 25.
[151] *Ibid*.

relevance for the legal community to be aware of these debates.

4. Values, science and free will

Vohs and Schooler argued that free will is *per se* a value that has the property of "coercing" the people to control their behavior.[152] The authors main hypothesis was that "changing people's perception of responsibility can impact on their behavior. Weakening free-will beliefs reliably increases cheating".[153] Their experiment also discusses the aspect of reading deterministic statements. Being exposed to deterministic scenario, the two researchers argued, decreased people's self-reported belief in free will and this change resulted in higher tendency to cheat.[154] Vohs and Schooler explained:

> "The fact that brief exposure to a message asserting that there is no such thing as free will can increase both passive and active cheating raises the concern that advocating a deterministic world view could undermine moral behavior".[155]

They noted that if exposure to deterministic messages increases the likelihood of unethical actions, then identifying approaches for protecting the public against such harms would become necessary. Therefore, Vohs and Schooler advise that in order to oppose the unfavorable consequences of determinism, which some espouse, the field must first develop "a deeper understanding of why dismissing free will leads to amoral behavior".[156]

Authors like Udell, discusses the positive aspects that the belief in free will has on moral and legal responsibility.[157] Specifically, she notes that "by believing in this notion, the processes in our brain endows us with the feeling of consciousness which makes us feel like creatures who have choices and make decisions for which we are responsible".[158] This view is shared also by other researchers. For instance, Harmon-Jones and Mills noted that expecting a sense of personal accountability causes people to modify their behavior

[152] *See* VOHS, K., SCHOOLER, J., *The Value of Believing in Free Will: Encouraging a Belief in Determinism Increases Cheating*, Psychological Science, Vol. 19, No. 1, 2008, p. 49-54.
[153] VOHS, K., SCHOOLER, J., *Ibid.*, p. 49.
[154] For a similar study *See* MUELLER, C., DWECK, C., *Intelligence praise can undermine motivation and performance*, Journal of Personality and Social Psychology, Vol 75, 1998, p. 33-52.
[155] VOHS, K., SCHOOLER, J., *Ibid.*, p. 53.
[156] VOHS, K., SCHOOLER, J., *Ibid.,* p. 54.
[157] UDELL, M., *Ibid.*, p. 6-7.
[158] *Ibid.*, p. 6.

and attitudes.[159] In a recent study performed by Stillman and colleagues, the authors showed that the belief in free will predicts better work attitudes. According to them, it appears the belief in free will more strongly affects job performance than other predictors such as conscientiousness, for example. [160]

But how are the notions of "value" and "science" seen and understood in the legal practice? Judges are often reminded that they need to be neutral and objective, while seeking to ensure the fairness of a process. They are expected to apply legal reasons to the "facts" of the case in a rational manner. They must look at the facts, consider the law, and apply it to cases that come before them in a way that it is independent of their own values[161] and principles.[162] That is, they have to separate value-judgements about what "should be", from factual claims about what "is".[163]

The idea that science must be objective and value-free was present centuries ago, in the works of Galileo and Bacon. Galileo refers to "the facts of Nature, which remains deaf and inexorable to our wishes".[164] Much has been written about facts and values and about the interaction between norms, values, and scientific reasoning.[165] Lacey discusses the idea that science is "value-free" in terms of three characteristics: impartiality, neutrality and autonomy.[166] According to him, these notions are important values of science practice and institutions. He noted the three characteristics of science (or "facts of science"[167]). First, real science is *impartial*, in the sense that there is "no proper role for moral, social

---

[159] *See* HARMON-JONES, E., MILLS, J. (eds.), *Cognitive Dissonance: Progress on a Pivotal Theory in Social Psychology*, Washington, DC, American Psychological Association, 1999, p. 145.
[160] STILLMAN, T., BAUMEISTER, R., VOHS, K., LAMBERT, N., FINCHMAN, F., BREWER, L., *Personal Philosophy and Personnel Achievement: Belief in Free Will Predicts Better Job Performance*, Social Psychology and Personality Science, Vol. I, 2010, p. 43-50.
[161] Here, by "value" we will understand what society sees as most worthwhile. We address this issue through the prism of legal positivism as seen by Kelsen, who stated that "the function of the science of law is not the evaluation of its subject, but its value-free description." *See* KELSEN, H., *Pure Theory of Law*, University of California Press, Barkley, 1967, p. 68.
[162] WALDRON, J., *Judges as Moral Reasoners*, International Journal of Constitutional Law, Vol. 7, Issue 1, p. 9.
[163] This Humean distinction has been very influential in showing that "emotivist" or "noncognitivist" theories of moral values and "facts of science", which must be value-neutral. *See* BALL S., *Facts, values and Interpretation in Law: Jurisprudence from perspectives in Ethics and Philosophy of Science*, The American Journal of Jurisprudence, Vol. 38, Issue 1, 1993, p. 15-61.
[164] LACEY, H., *Is Science Value Free?: Values and Scientific Understanding*, Routledge, New York, 1999, p. 2.
[165] *See* RAILTON, P., *Facts, Values and Norms: Essay toward a Morality of Consequence*, Cambridge University Press, Cambridge, 2003; PUTNAM, H., *The collapse of the fact/value dichotomy and other essays*, Harvard University Press, Cambridge, 2002.
[166] LACEY, H., *Ibid.*, p. 5.
[167] By "scientific fact" or "fact of science" we mean a notion or a statement that is consistent with reality and can be proven with evidence.

and any other non-cognitive values in the appraisal of the soundness of scientific reasoning". [168] Secondly, well-conceived scientific practices produce a body of understanding that is *neutral*, i.e. consistent with all value judgments and "evenly applicable regardless of [whether] values hold".[169] Thirdly, scientific research practices are *autonomous*, in the sense that "their methodologies should be unencumbered by political, religious and other non-cognitive interests".[170] This view is also supported by the work of Allchin, who discussed the difference between "facts" and "values", noting that science deals with "facts" and not "values" and therefore, science is objective, while values are not. [171]

Lacey provides a clear definition of the two concepts. In his view, "facts"

> "are explicable in terms of their underlying order – their underlying structures, processes and laws. All objects belonging to the underlying order can be fully characterized in quantitative terms; all interactions are lawful; and the laws (not necessarily deterministic) are expressible in mathematical equations".[172]

In contrast, values are separate from the underlying order of the world. According to Lacey, an "object may come to acquire value through its relationship to human experience, practice, or social organization".[173] Because of the human's influence, values are not like "scientific facts". He further notes that values may play both positive and negative roles in "the context of discovery, concerning judgments made in connection with the various stances that precede acceptance of theory".[174] Science deals only with facts, while values come in only when decisions are made as to how to use the facts.[175]

Concerning values, Allchin shows that they intersect with science in three main ways.[176] There are values which guide the scientific research itself. Then, there are values that enter science through the intermediary of the scientists and researchers and which are always embedded in some particular culture. Unfortunately, there are no mechanisms that

---

[168] *Ibid.*, p. 5.
[169] *Ibid.*
[170] *Ibid.*
[171] ALLACHIN, D., *Values in Science: An Educational Perspective*, Science and Education, Kluwer Academic Publisher, No. 8, 1999, p. 1.
[172] LACEY, H., *Ibid.*, p.6.
[173] *Ibid.*, p. 3.
[174] *Ibid.*, p. 17.
[175] *See* KINCAID, H., DUPRE, J., WHLIE, A., *Value-Free Science: Ideals and Illusions*, Oxford University Press, New York, 2007.
[176] ALLCHIN, D., *Ibid.*, p. 3.

might prevent the bias they can introduce. Lastly, there are values which emerge from science, both "as a product and process and which are redistributed in the culture or society".[177]

Allchin shows that science proceeds through the agency of individuals, as they express the values of their cultures and particular lives when they engage in scientific activities.[178] Values enter thus in science and shape its conclusions. Social theorists argued that values are just a "cultural" or "social construction", a contingent result of history and power, lacking any objective[179] or rational foundation.[180] For instance, Gauthier also notes the subjectivity that is often attached to values:

> "Value does not afford a single uniform measure of preference but a measure relative to each valuer. And although values are ascribed to states of affairs, the ascription is attitudinal, not observational, subjective, not objective. As a measure of preference value is and must be contingent on preferences for its very existence".[181]

As we can also see from Gauthier's statement, the problematic aspect of values when it comes to morality is that they have been intimately tied to preferences. But since preferences can be arbitrary, to reiterate Moore's question, "why would anyone's arbitrary preferences count morally"?[182] The relevance of this question is great for the legal field, particularly due to the concern that preferences can be arbitrarily manipulated.[183] This is an issue we will explore more in depth in Chapter III. For the moment, we conclude by noting that values influence the way opinions are made and they can produce biases, but they can also have positive aspects, like promoting well-being in society.[184]

In the sections above we discussed some of the criticism brought to the neuroscientific experiments performed with the intention of testing the existence of free will within the

---

[177] *Ibid*., p. 8.
[178] *Ibid.*, p. 5.
[179] ROLSTON, H., *Are Values in nature Subjective or Objective?*, Environmental Ethics, Vol. 4, 1982, p. 125-151.
[180] *See* GORSKI, P., *Beyond the Fact/Value Distinction: Ethical Naturalism and the Social Sciences*, Symposium: Facts, Values and Social Science, Vol. 50, 2013, p. 543-553.
[181] GAUTHIER, D., *Morals by Agreement*, Oxford University Press, New York, 1986, p. 25.
[182] *See* MOORE, A., *Values, Objectivity and Relationism*, The Journal of Value Inquiry, Vol. 38, 2004, p. 78.
[183] For a wonderful account on various instances in which societal "values" have been manipulated, *See* MOORE, A, *Ibid.*, p. 76.
[184] LACEY, H., *Ibid.*, 1999.

framework of "natural science"[185]. At the same time, we have also highlighted the arguments of some researchers that argued that even if difficult to prove free will as a "scientific fact", there are still undeniable benefits for keeping free will as a "value" for the society. Because of the complexities of the notion of the free will, the next question we pose is whether free will is a notion that can be investigated within "normal science" as defined by Kuhn.[186]

5. Can free will be studied within "normal science"?

Kuhn showed that normal science means "research firmly based upon one or most past scientific achievements that some scientific community acknowledges for a time as supplying the foundation for its further practice".[187] Kuhn showed that "achievements" he refers to share two essential characteristics. Firstly, the achievements are "sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity". [188] And secondly, according to Kuhn, they are "sufficiently open-ended to leave all sorts of problems for the groups of practitioners to resolve".[189] Kuhn suggested that achievements that share these two characteristics encompass the notion of "paradigms". In the author's view, "paradigms gain their status because they are more successful than their competitors in solving few problems that the group of practitioners has come to recognize as acute".[190]

Studying free will through the lens of only one paradigm is very difficult, because of the various positions on free will. [191] Philosophers like Mele argue that sometimes scientists are getting the science right, but they misinterpret modern philosophers.[192] This could easily be the case with the notion of free will, as it can mean many things and therefore,

---

[185] By "natural science" we refer to the branch of science that deals with the understanding and explanation of natural phenomena. Its observations are based on empirical evidence obtained from observation and experimentation.
[186] Thomas Kuhn defined the concept of normal science as "the activity in which most scientists inevitably spend almost all their time and which is predicated on the assumption that the scientific community knows what the world is like", *See* KUHN, T., *The Structure of Scientific Revolutions*, International Encyclopaedia of Unified Science, Second Edition enlarged, The University of Chicago Press, Chicago, 2012, p. 5.
[187] *Ibid.,* p. 5.
[188] *Ibid.,* p. 10.
[189] *Ibid.*
[190] *Ibid.,* p. 23.
[191] *See* GREENFIELD, K., *Free Will Paradigms*, Duke Journal of Constitutional Law and Public Policy, Vol. 7, 2011, p. 1-24.
[192] MELE, A., *Does Free Will exist?, (Podcast) Big Think,* 2010*,* http://bigthink.com/videos/does-free-will-exist.

it is "not clear what someone means when they say free will does or does not exist".[193] It turns out that not everybody understands the expression in the same way. Walter has a similar opinion. When asked whether free will exists or not, his answer depends on "exactly what it is to which we are attributing or questioning its existence". [194] The problem relies exactly in defining free will and in establishing "norms" on which the debates regarding free will can be built. Therefore, just as Walter argued, the definition of the notion of free will is the most urgent challenge of the controversy.[195]

There has also been some dispute on the overall relevance of scientific research on free will. As we could see in the previous sections, the studies presented revealed a number of problems in trying to investigate free will. It was suggested that, in the earlier studies, research relied too much on the subjective introspection of the participants.[196] Moreover, Klemm argued that introspection is not an accurate method to measure the timing of when a free will occurs.[197] Hence, he argued against the reliability of both introspection and accuracy of timing awareness. In the same line of thought, Danquah and his colleagues suggested that there are often biases in the subjective timing of perceptual events.[198] Walter argues that brain activities have been "insufficient and primitive and there is not yet a good independent method to measure the conscious generation of intentions, choices or decisions".[199] Because of the difficulty in factually proving the existence of free will, it has been affirmed that free will might be an illusion,[200] therefore possibly making our attempts to investigate it futile.

In answering the question of whether free will can be studied within "normal natural science" by using traditional scientific methods, unfortunately the answer is not straightforward. We believe that Dennett summarized this issue the best, by arguing that "there are types of free will that are incompatible with modern science and which are not

---

[193] *Ibid.*
[194] WALTER, H., *Ibid.*, 2009, p. 11.
[195] *Ibid.*, p. 12.
[196] *See* HORGAN, T., TIMMONS, M., *Introspection and the Phenomenology of Free Will: Problems and Prospects*, Journal of Consciousness Studies, Vol. 18, No. 1, 2011, p. 180-205.
[197] *See* KLEMM, W., *Free Will Debates: Simple Experiments are Not so Simple*, Advanced Cognitive Psychology, Vol. 6, 2010, p. 47-65.
[198] *See* DANQUAH, A., FARREL, M., BOYLE, D., *Biases in the subjective timing of perceptual events: Libet et al. (1983) revisited*, Consciousness and Cognition, Vol. 17, 2008, p. 616-627.
[199] WALTER, H., *Ibid.,* p. 12.
[200] *See* PEARCE, J., *Is Society Accepting that Free Will is an Illusion?*, Humanist Living, June-July 2015, p. 55-58; HARRIS, S., *Free Will*, Free Press, New York, 2012.

worth wanting". [201] At the same time, he argues, "there are other types of free will which are pivotal to people's sense of responsibility and purpose and many of these types are actually compatible with modern science".[202] Some of Dennett's remarks align with the concerns of the scientists in the field of psychology, who, in contrast to philosophers, are not generally concerned about whether free will exists or not as a "scientific fact", but rather how people's everyday reasoning about free will a "value" influences their social behaviors in the field of morality.[203]

We, therefore, argue that investigation of free will is such a complex endeavor that adopting a clear-cut distinction between "values" and "scientific facts" is just too simplistic. We support Allchin's arguments who embraces a middle way position argues: "the following two premises are mistaken: 1) science is value-free, and 2) objectivity is best exemplified by scientific fact".[204] In order to build his argumentation, Allchin firstly shows that "science expresses a wealth of epistemic values, and therefore, it inevitably incorporates cultural values in practice".[205] In his view, this aspect is not to be regarded as a threat, because "some values have the property of governing how we regulate the potentially biasing effect of other values in producing reliable knowledge".[206] Secondly, Allchin is of the opinion that "values can be equally objective when they require justification".[207]

Lacey also seems to embrace the idea that an objective science is not challenged by values. In his opinion, science itself can be considered a value. This claim, he notes, comes in many versions: "knowledge (truth) is value; science informs practices that produce value; and the practice of science requires the exercise of rationality".[208] The author also shows that values may play an important role in ethical evaluation of scientific practice and applications.[209]

---

[201] DENNETT, D., *Elbow Room: The Varieties of Free Will Worth Wanting*, The MIT Press, Cambridge, 1984, p. 16.
[202] DENNETT, D., *The Scientific Study of Religion* (Podcast), Point of Inquiry, 2011, http://www.pointofinquiry.org/daniel_dennett_the_scientific_study_of_religion/.
[203] BERING, J., *Scientists say free will probably doesn't exist but urge "Don't stop believing"*, Scientific American, 2010, https://blogs.scientificamerican.com/bering-in-mind/scientists-say-free-will-probably-doesnt-exist-but-urge-dont-stop-believing/.
[204] ALLACHIN, D., *Ibid.,* 1999, p. 2.
[205] Ibid., p. 1.
[206] *Ibid.*
[207] *Ibid.*, p. 2.
[208] LACEY, H., *Ibid.*, 1999, p. 16.
[209] *Ibid.*, p. 17.

Unfortunately, we do not have a proposal for how the debate free will as a "scientific fact" or as a "value" should be solved. But we *do* argue that the stakes of these debates in law are much higher than maybe some scientists expect. The relationship between values and law is not straightforward. It is accepted that law draws upon values in many ways and forms. The remarks of justice Singh succeed in beautifully presenting the relevance for a judge to be able to disentangle "values" from "scientific facts" (and legal rules):

> "Although the outside observer of a legal system may be able to see that a legal norm reflects a moral or other fundamental value in a society, this does not offer much assistance to the participant within the legal system. In particular a judge has to decide a case in accordance with the law and nothing else. Certainly, a judge is not entitled to impose his or her own subjective views of what is morally right or wrong on society."[210]

To sum up, there is an importance balance that needs to be struck between "scientific facts" and "values". Values change or develop over time[211] and vary between societies. Because of that, legal systems and societies cannot be built or sustained primarily on values. The foundations of criminal law system must be grounded on facts, which ideally remain consistent across societies and unchanged over time.

6. Concluding remarks

This first theoretical chapter presents the various philosophical debates around free will and how they support or reject the idea that our brain processes determine our behavior. We deliberately emphasized the importance and relevance of compatibilism, as, in our opinion, it provides the best solution to the problem of free will and the related debates surrounding moral and legal responsibility. We argued that the compatibilists' arguments provide a plausible means to reconcile the deterministic views with the idea of free will, and hence to support the notion of responsibility as we understand it in law. However, by

[210] SINGH, R., *Law as a system of values*, Judiciary of England and Wales, 2013, p. 15, https://www.judiciary.gov.uk/wp-content/uploads/JCO/Documents/Speeches/singh-law-as-system-of-values20131031.pdf.

[211] The way values change over time can be seen in the following example. A society that has abolished the death penalty can be contrasted to one that retains it. This can be seen not just as a difference between two legal systems, but as saying something important about the character of each society, about its "values". For a long time, many legal systems criminalized abortion of any kind on moral reasons or prohibited LGBT people to enter into marriage. Today, in some countries, we might think of law as value-neutral when it comes to LGBT marriage, but that was not the case that long ago. The definition of marriage in English law was "the voluntary union for life of one man and one woman, to the exclusion of others." The societal values regarding LGBT marriage have changed. Also, law has changed dramatically in the last decade. What was criminalized until the '60s has now become subject to human rights: the right to respect private life and autonomy etc.

promoting this argument, we also suggested that compatibilism requires a revised understanding of responsibility – a position that is "milder" and excludes the idea of "ultimate" responsibility.

Moreover, this chapter also presented and discussed some experiments performed in the field of neuroscience of free will. We argued that due to the inconsistencies in the methodology of these experiments, the results are not reliable, and therefore cannot be interpreted as a true challenge to the notion of free will, as some have suggested. Regarding the interactions between free will and neuroscience, we affiliated ourselves with the position voiced by a considerable number of scientists who agree that neuroscience has not affected our view on the existence of free will, but rather it has introduced questions regarding our view of moral responsibility.

Moreover, we also considered it necessary to ask whether the question of free will and determinism can be studied within "normal natural science" with the scientific tools we currently possess. We argued that, given the current limits of science, we do not yet have the tools to investigate such complex notions as free will. Despite this challenge, it is important to reaffirm the importance of interdisciplinary approaches such as cognitive science for future advances in this regard.

Lastly, we also discussed in this chapter the distinction between free will as a "scientific fact" or as a "value". Firstly, we concluded that this debate is very important for legal considerations, and therefore, more conversation on this topic should be encouraged. Secondly, while we acknowledged the great relevance that free will has as a "value" for society, particularly when it comes to preserving the concept of morality, we also argued that "natural science" may not be currently up to the task of proving free will. In fact, it may never be given the inherent limitations that we have discussed above. Therefore, for the time being, we might just have to accept that the question of the existence of free will is a moot point. In our opinion, a more productive and better use of future efforts might be in qualifying to which degree free will or agency is constrained by neurological impairment and consequently how moral and legal responsibility is diminished.

Chapter III. Neuroscience of Agency and Legal Responsibility

"What if you could do a brain scan and determine to a high probability whether a criminal defendant was a psychopath with, for example, a 60-70 percent chance of recidivism… Would that make a difference to a judge or a jury? What if you were a juror in a capital case in the sentencing phase?", Henry Greely[212]

1. Neuroscience in the current legal practice

In the previous chapters, we considered the place of free will within the philosophical discourse and the limitations of investigating it within "normal science". In this chapter, we will analyze the role that scientific discoveries in the field of neuroscience of free will have or could have in helping courts of law assess the criminal responsibility of an individual.

In order to comprehend this topic, it is first necessary to understand the current state of admissibility for neuroscientific evidence in the legal practice. Then, it is important to pinpoint the pragmatic uses of neuroscience for assessing the conditions to determine legal responsibility: intent, insanity and *mens rea*. These theoretical considerations will enable us to understand what neuroscience might bring to the future of legal practice.

Recent neuroscientific studies have argued that impaired individuals[213] in certain parts of the brain such as the prefrontal cortex may commit morally reprehensible actions.[214] Other studies demonstrated that people born with a smaller prefrontal cortex or with other structural or genetic deficits may be predisposed to violence and crime.[215] Separate extensive investigation from the perspective of cognitive science and modern theory of human mind focused particularly on the current implications of neuroscience for notions like free will and its connections to moral and legal responsibility. [216] These studies and their findings have led to legal questions regarding whether these individuals are fully

[212] GREELY, H., *Law and the Revolution in Neuroscience: An Early Look at the Field*, Akron Law Review, Vol. 42, Issue 3, 2009, p. 692.
[213] For studies on impairment, *See* DARBY, R., HORN, A., CUSHMAN, F., FOX, M., *Lesion network localization of criminal behavior*, Proceedings of the National Academy of Sciences of the United States of America, Vol. 115, 2018, p. 601-606.
[214] *See* "*Does the crime fit the brain?*" In MOBBS, D., LAU, H.C., JONES, O., FRITH, C., *Ibid.*, p. 247.
[215] For more details *See* "*Does some criminal behavior result from mental disorders?"* In MOBBS, D., LAU, H.C., JONES, O., FRITH, C., I*bid.*, p. 248.
[216] HODGSON, D., *Ibid.*, p. 227; *See* also MAHLMANN, M., *Ethics, Law and Cognitive Science*, German Law Journal, Vol. 8, No. 6, 2005, p. 577.

responsible for their actions; whether they actually deserve to be punished for their crimes; or to what degree one could affirm that their brain processes are behind their decisions. In this regard, Udell reaffirmed the idea that

> "blameworthiness is philosophically questionable and its application is growing more difficult as neuroscientific evidence provides examples of the deterministic causes of human behavior".[217]

In the legal practice, there have been many examples when innocent people were sent to prison based on flawed human perception, memory and decision making.[218] These issues raise important questions regarding the interaction between philosophy, law and science. Busey and Loftus showed that

> "cognitive science research, among others, addresses the issues that are directly relevant to the connection between normal cognitive functioning and judicial errors and suggests means by which false-conviction rate could be reduced and the moral and judicial responsibility of the persons better assessed".[219]

Functional neuroimaging studies have recently identified brain networks and regions which are thought to be of utmost importance in assessing the legal responsibility of a person, including motor planning, awareness of actions, agency, and social contract reasoning.[220] As various studies[221] show, in the last decades brain images[222] are used more and more used as evidence within criminal proceedings. They are used mainly to

---

[217] UDELL, M., *Ibid.,* p. 7.
[218] BUSEY, T., LOFTUS, G., *Ibid.*, p. 111.
[219] *Ibid.*, p. 112.
[220] AHARONI, E., FUNK, C., ARMSTRONG, W.S., GAZZANIGA, M., *Can Neurological Evidence Help Courts Assess Criminal Responsibility? Lessons from Law and Neuroscience*, Annual New York Academy Science, No. 1124, 2008, p. 145.
[221] Some of these studies include: JUN, J., YOO, S., *Three Research Strategies of Neuroscience and the Future of Legal Imaging Evidence* , Frontiers in Neuroscience, Vol. 12:120, 2018, https://www.frontiersin.org/articles/10.3389/fnins.2018.00120/full.; GINTHER, M., SHEN, F., BONNIE, R., HOFFMAN, M., JONES, O., SIMONS, K., *Decoding Guilty Minds: How Jurors Attribute Knowledge and Guilt*, Vanderbilt Law Review, Vol. 71, Issue 241, 2018, p. 241-283; POLDRACK, R., MONAHAN, P., IMREY, P., REYNA, V., RAICHLE, M., FAIGMAN, D., BUCKHOLTZ, J., *Predicting Violent Behavior: What can Neuroscience add?*, Trends in Cognitive Science, Vol. 111, 2017, p. 111-123; FARAHNY, N., *Ibid.*, 2016, p. 485-509; CATLEY, P., CLAYDON, L., *The Use of Neuroscientific Evidence in the Courtroom by those Accused of Criminal Offenses in England and Wales*, Journal of Law and Bioscience, Vol. 2, Issue 3, 2015, p. 510-549; BURNS, K., BACHARA, A., *Decision Making and Free Will: a Neuroscience Perspective*, Behavioral Sciences and the Law, No. 25, 2007, p. 263-324.
[222] For studies on brain images, *See* BEECH, A., FISHER, D., *Neuroscience in Forensic Settings: Origins and Recent Developments*, In BEECH, A., CARTER, A., MANN, R., ROTSHTEIN, P. (eds.), *The Wiley Blackwell Handbook of Forensic Neuroscience*, Wiley Black, Hoboken, 2018, p. 3-20; PALMER, R., *Time to take Brain-Fingerprinting Seriously?*, Te Wharenga New Zealand Criminal Law Review, Issue 330, 2018, p. 316-356.

support propositions concerning competency to stand trial, mitigation of criminal responsibility and prediction of future dangerousness.[223] For instance, in the case *Commonwealth of Pennsylvania vs. Pirela* (2007),[224] after 21 years of imprisonment of the defendant, the court reduced Pirela's punishment from the death penalty to life in prison on the basis of neuroimaging data. The judge decided that since the defendant was suffering from aberrations in his prefrontal lobes, which was proven to have affected his inability to function normally, he was not eligible for the death penalty.

One of the best uses of neuroscience in criminal law court may be found in the case *Roper vs. Simmons* (2005).[225] It ruled out the death penalty in the case of adolescents younger than 18 years, by arguing that children's brains are not fully developed, and consequently do not have adult levels of judgement. In this particular case, neuroscientific evidence had a valuable role in promoting human rights and in fighting against the death penalty, a measure which is still employed in some countries like USA.

In other cases reported by Fisher and Hopkins, neuroscientific evidence has been used in order to show that because of abnormalities in the brain, the defendant could not form or commit to plans of actions.[226] This has been recognized by many jurisdictions as *diminished capacity*. This means of defense has been used in *Kansas vs. Wilburn* (1991),[227] when the defendant's diminished capacity was used to challenge the concept of intent (or intention).[228]

Neuroimaging scans[229] have already been used in a variety of other cases in order to establish the defendant's mental state. For example, in civil cases, neuroimaging has been

[223] Presidential Commission for the Study of Bioethical Issues, *Gray Matters: Topics at the Intersection of Neuroscience, Ethics and Society*, Vol. II, Washington DC, 2015, p. 86, https://bioethicsarchive.georgetown.edu/pcsbi/sites/default/files/GrayMatter_V2_508.pdf.
[224] *See* Supreme Court of Pennsylvania, *Commonwealth of Pennsylvania v. Pirela* (2007), J-74-2005.
[225] *See* United States Supreme Court, *Roper Superintendent Correctional Center v. Simmons* (2005), No. 03-633.
[226] FISHER, H., HOPKINS, P., *Getting Inside the Employee's Head: Neuroscience, Negligent Employment Liability and the Push and Pull for New Technology*, Boston University Journal of Science and Technology Law, Vol. 1, 2017, p. 44-89.
[227] *See* Supreme Court of Kansas, *State of Kansas v. Earl Wilburn* (1991), No. 65525.
[228] AHARONI, E., FUNK, C., SINNOTT-ARMSTRONG, W., GAZZANIGA, M., *Ibid.*, p. 150; For more information on the notion of "intent", *See* CABRERA, L., *Can Brain Scans Spot Criminal Intent?*, Bioethics in the News, 2017, https://msubioethics.com/2017/04/06/can-brain-scans-spot-criminal-intent/.
[229] For a detailed historical presentation on how fMRI scans have been used in the past decade, *See* BEECHER-MONAS, E., GARCIA-RILL, E., *Overselling Images: fMRI and the Search for Truth*, The John Marshall Law Review, Vol. 48, Issue 3, 2015, p. 651-692.

requested in personal injury, disability belief and contract cases.[230] In *Fini vs. General Motors Corporation* (2003),[231] brain scans were used to help determine the extent of head injuries from a car accident, while in *Van Middelsworth vs. Century Bank & Trust Co.* (2000),[232] the defense used brain images to prove mental incompetency and thereby void the contract in question.[233]

In criminal cases, brain images are mainly invoked in order to negate the *mens rea* of a crime and to avoid convictions. [234] For instance, in *People vs. Weinstein* (1992),[235] a defendant was accused of strangling his wife and throwing her from a 12th floor window. The defense sought to introduce images of a brain defect in support of an argument that the defendant was not responsible.[236] In a similar case, *People vs. Goldstein* (2004),[237] after having killed a woman by pushing her in front of a subway train, the defendant presented the court a brain image of an abnormality, in the attempt to prove an insanity defense.[238] In *Oregon vs. Kinkel* (2002),[239] a boy was convicted of killing and injuring fellow students in a high school cafeteria. He also asked to introduce brain imagines of abnormalities in order to obtain a lower punishment.[240] Nonetheless, in the case *Coe vs. State* (2000),[241] the lawyers have introduced brain images in order to argue that the defendant should not be executed. These are just some of many more examples of the use of neuroscientific evidence in courts of law. Just as Jones et al. showed, the "complement of cases at the intersection of neuroscience and law is too large for comprehensive review".[242] However, the authors also suggested,

---

[230] JONES, O., BUCKHOLTZ, J., SCHALL, J., MAROI, R., *Brain Imaging for Legal Thinkers: A Guide for the Perplexed*, Stanford Technological Law Review, No. 5, 2009, §2, http://www.antoniocasella.eu/archipsy/jones-brain-imaging_2009.pdf.
[231] *See* State of Michigan Court of Appeals, *Angela Fini v. General Motors Corporation* (2003), No. 227592.
[232] *See* State of Michigan Courts of Appeals, *Rodney Van Middlesworth and Sue A. Van Middlesworth v. Century Bank & Trust Company* (2000), No. 215512.
[233] JONES, O., BUCKHOLTZ, J., SCHALL, J., MAROI, R., *Ibid.*, §2.
[234] For studies containing a comprehensive collection of criminal cases in which neuroscience evidence has been use, *See* POSA, F., LOSA, G., *Neuroscience in Criminology*, Fractal Geometry and Nonlinear Analysis in Medicine and Biology, Vol. 2, Issue 2, 2016, p. 1-7; DENNO, D., *The Place for Neuroscience in Criminal Law*, In PATTERSON, D., PARDO, M. (eds.), *Philosophical Foundations of Law and Neuroscience*, Oxford University Press, New York, 2016, p. 68-83.
[235] *See* Supreme Court New York County, *People v. Weinstein* (1992), No. 591 N.Y.S.2d 715.
[236] JONES, O., BUCKHOLTZ, J., SCHALL, J., MAROI, R., *Ibid.*, §3.
[237] *See*, Supreme Court, Appellate Division, New York, *People v. Goldstein* (2004).
[238] JONES, O., BUCKHOLTZ, J., SCHALL, J., MAROI, R., *Ibid.*, §3.
[239] *See* Court of Appeals of the State of Oregon, *State v. Kinkel (2002)*, No. A108593.
[240] JONES, O., BUCKHOLTZ, J., SCHALL, J., MAROI, R., *Ibid.*, §4.
[241] *See* Supreme Court of Tennessee, *Coe v. State* (2000), No. M1999-01313-SC-DPE-PD.
[242] JONES, O., BUCKHOLTZ, J., SCHALL, J., MAROI, R., *Ibid.*, §5.

> "while there is no denying that brain imaging is a powerful tool, whether used for medical or legal purposes, it is also clear that, like any tool, brain imaging can be used for good and for ill, skillfully or sloppily and in ways useful or irrelevant".[243]

Departing from the cases presented above, an important question that we need to consider is whether brain imaging has been used only as a tool to reduce or exonerate responsibility, or if it has also been used to establish or determine the criminal responsibility of a person? The answer to this question varies from one legal system to another. As we can see from the examples above, it appears clear that brain imaging is already widely used (at least in technically developed countries like the USA and Europe where legislation already exists on these issues) by prosecutors to remove or reduce criminal responsibility. However, a number of examples demonstrate that brain imagining has also been used successfully in courts to establish criminal responsibility.

Statistics show that over 80 million CT scans were performed in the United States in 2015, showing thus that these neuroscience tools are rapidly becoming common in courts.[244] Grafton showed that with the level of experience in the USA, it would be unusual to hear a legal argument attempting to prevent the introduction of the neuroscientific evidence in the courtroom based on technical evidence. [245] As a matter of fact, statistics show that "over 1500 judicial opinions issued during 2005-2012 discuss the use of neuroscience by criminal defendants".[246]

Despite the wide use of scans in courts, there is concern among scientists and legal practitioners concerning the practical consequences of neuroscientific developments on the legal systems. Aharoni et al. draw the attention on the fact that, for the time being, "neuroscience can offer us only descriptive models of brain organization and function. Ascription of responsibility, on the other hand, is unequivocally prescriptive."[247]

Why are these aspects important for the legal thinking? Because legal systems cannot define important concepts like *mental insanity* or *mens rea* without taking into

---

[243] *Ibid.*, §5.
[244] For more statistics, *See* STATISTA, *Number of examination with computer tomography in selected countries as of 2015*, https://www.statista.com/statistics/283085/computer-tomography-examinations-in-selected-countries/.
[245] GRAFTON, S., *Has neuroscience already appeared in the courtroom?*, In MANSFIELD, A. (ed.), *A judge's guide to neuroscience: a concise introduction*, University of California, Santa Barbara, 2010, p. 54.
[246] Presidential Commission for the Study of Bioethical Issues, *Gray Matters: Topics at the Intersection of Neuroscience, Ethics and Society*, Vol. II, Washington DC, 2015, p. 92.
[247] AHARONI, E., FUNK, C., SINNOTT-ARMSTRONG, W., GAZZANIGA, M., *Ibid.*, p. 145.

consideration the notion of agency (or free will), which is a prerequisite for determining the responsibility of a person.

2. The nexus between responsibility, agency and punishment

The most common definition of moral responsibility as it appears in the Stanford Encyclopedia of Philosophy is "the status of morally deserving praise, blame, reward or punishment for an act or omission".[248] When considering moral and legal responsibility there are many problems which immediately arise. Just as Mahlamann noted "the universality, particularity or relativity of morality and material legal standards is as much an issue as the general relation of morality and law".[249] Researchers like Roskies, believe that some philosophers try to dissociate moral and legal responsibility from freedom of action, while expressing the belief that a "mechanistic explanation for behavior poses a great threat to freedom and responsibility".[250]

It has been affirmed that morality is one of the strongest and most intimately humane qualities of an individual. Mahlmann stated that "every word about the nature of morality is a word about an essential aspect of our existence".[251] In his opinion, morality is constituted of and connected to a variety of "mental and emotional states that are elusive and hard to grasp".[252] According to him,

> "morality matters in practical terms for the course of human lives and the makeup of society. Therefore, the concept of morality is very vulnerable to all kinds of distortions and misconceptions that derive their forces from sometimes very deeply seated cultural traditions, ideological formations and social background assumptions".[253]

Mahlmann believes that some of the considerations presented above can also be applied to law, too. In his view, "the law defines apart from technical notions the core normative architecture of the society and of the global community in general. Law is at its deepest

[248] ESHLEMAN, A., *Moral Responsibility*, The Stanford Encyclopedia of Philosophy, 2016, available at: https://plato.stanford.edu/archives/win2016/entries/moral-responsibility/.
[249] MAHLMANN, M., *Ibid.*, p. 577.
[250] ROSKIES, A., *Ibid.,* 2010*,* p. 111. *See* also MONTAGUE, R., *How is neuroscience likely to impact law in the near future?*, In MANSFIELD, A. (ed.), *A Judge's Guide to Neuroscience: A Concise Introduction*, University of California, Santa Barbara, 2010, p. 60.
[251] MAHLMANN, M., *Ibid.*, p. 579.
[252] *Ibid.*, p. 578.
[253] *Ibid.*

level a mirror image of the self-perception of humanity".[254]

Some scientists suggest that recent developments in neuroscience,[255] including experiments like those presented in Chapter II, raise the concern that understanding how our brain works and causes behavior may undermine our views on free will and consequently of moral responsibility. Meanwhile, there are many who suggest that most of these worries are misplaced. They suggest that problems regarding the intuitive notion of freedom and morality existed prior to the neuroscientific knowledge and yet there have been no powerful transformations in the way people relate to this paradigm.[256] Roskies is one advocate of this last view, as she believes that new developments in neuroscience and psychology will provide new insights into the processes involved in decision-making and allow us to formulate new theories that take into account what is already known about moral cognition, and hence moral and legal responsibility.[257] In her opinion, although there is no radical way in which science changes our conceptions,

> "neuroscience might enable us to develop a more sophisticated view of responsibility that takes into account both the cognitive demands and the control demands made by intuitive and legal notions of responsibility and reconciles them with a scientifically informed view of the brain as a physical system that governs our actions."[258]

When it comes to legal responsibility, Roskies shows that the current legal systems operate with notions of "personhood and agency that treat concepts of volition, control, choice, belief, desire and responsibility" very seriously.[259] Therefore, she also suggests that neuroscience advances will require at some point revisions in some of these views or even a rejection of some of them as not applicable to the human nature. In her view, "if such notions become widely accepted, pressure will be put on the legal system to adapt

---

[254] *Ibid*.
[255] For some of the most relevant literature on the recent developments in neuroscience, *See* LAVAZZA, A., *Free Will and Neuroscience: From Explaining Freedom Away to New Ways of Operationalizing and Measuring It*, Frontiers in Human Neuroscience, Vol. 10:262, 2016, https://www.frontiersin.org/articles/10.3389/fnhum.2016.00509/full.; LEVY, N., Neuroscience, *Free Will and the Responsibility: the Current State of Pla*y, In CLAUSEN, J., LEVY, N., *Handbook of Neuroethics*, Springer, 2015, p. 204-209; SMITH, K., *Ibid.*, 2011, p. 23-25; MORRIS, S., *Ibid.*, 2009, p. 56-78; HAGGARD, P., *Human Volition: Towards a Neuroscience of Will*, Nature Reviews Neuroscience, Vol. 9, 2008, p. 934-946; ROSKIES. A., *Neuroscientific Challenges to Free Will and Responsibility*, Trends in Cognitive Science, Vol. 10, No. 9, 2006, p. 419-423.
[256] ROSKIES. A., *Ibid.*, 2006, p. 417.
[257] *Ibid.*, p. 419.
[258] *Ibid.*
[259] ROSKIES, A., *How is neuroscience likely to impact law in the long run?*, In MANSFIELD, A. (ed.), *A Judge's Guide to Neuroscience: A Concise Introduction*, University of California, Santa Barbara, 2010, p. 66.

to this new framework".[260]

Besides the required revisions that Roskies mentions, it seems that there is also the concern that neuroscience will be used as a tool to "incriminate" and not to help in determining whether a person is responsible for his or her acts.[261] Hence, the main question that arises is how neuroscience and its tools can be used in order to exclude or reduce responsibility (exculpate) and not to ascribe responsibility (incriminate)?[262] In other words, is there any possibility that neuroscience be used to make the legal responsibility more humane?[263]

Concerning the "humanization" of the criminal justice, in his article on the "Cognitive Neuroscience Project for Punishment", Snead discussed about the exceptional group of cognitive neuroscientists and lawyers who use the tools of their disciplines in an effort to discredit retribution as a justification for punishment.[264] These scholars see retribution as the root cause of inhumanity in the criminal justice system, particularly when it comes to capital punishment. Consequently, by using tools of neuroscience, their aim is to overthrow retributive justice. If that could be achieved, according to them, "the criminal justice will have the purely forward-looking, consequentialist goal of avoiding socially harmful behavior".[265]

3. Criteria for assessing legal responsibility

In this section we will analyze the ways neuroscience can help in assessing the legal responsibility. An agent's responsibility for his actions has critical importance in law. In a society that favors liberty, law permits maximum liberty and autonomy only to the

[260] *Ibid.*
[261] *See* VUKOV. J., *Is Neuroscience Relevant for Our Moral Responsibility Practice?*, Journal of Cognition and Neuroethics, Vol. 2, Issue 2, 2014, p. 61-82.
[262] Scientists have made the case that neurotechnologies can be great tools for exculpation or reduced sentencing, but more attention should be given when used for incrimination purposes. In general, "reliability standards for incrimination are or should be more demanding that for exculpation, and for that neurotechnologies must be more accurate than they currently are in order to meet such standards. For more details on this", *See* ROSKIES, A., *How is neuroscience likely to impact law in the long run?*, In MANSFIELD, A. (ed.), *A Judge's Guide to Neuroscience: A Concise Introduction*, University of California, Santa Barbara, 2010, p. 67.
[263] *See* LAVAZZA, A., *Ibid.*, 2017, p. 81-97.
[264] SNEAD, C, *Cognitive Science and the Future of Punishment*, Governance Studies of Brookings, 2010, p. 3, https://www.brookings.edu/wp-content/uploads/2016/06/1228_neuroscience_snead.pdf.
[265] *Ibid.*, p. 3.

responsible agents.[266] According to Morse,

> "law's concept of responsibility follows from its view of the person and the nature of law itself. Unless human beings are rational creatures that can conform to legal requirements through intentional actions, law would be powerless to affect human behavior. Therefore, legally responsible agents are people who have the general capacity to grasp and be guided by good reasons in particular legal contexts".[267]

It is not easy to define how law determines the legal responsibility of an individual. One reason is that different legal traditions have different criteria to assess responsibility. As Morse noted, it is generally agreed that "the capacity for rationality in a particular context is the primary criterion of responsibility, while its absence is the primary excusing condition".[268] Intent is another important criterion for establishing responsibility. It is in these areas that the developments in neuroscience are relevant, particularly for establishing defenses such as insanity and for explaining other versions of *mens rea* (which is defined as the mental element of a person's intention to commit a crime), such as recklessness and negligence, blameless irresistible impulse and automatism.[269]

3.1. Rationality, insanity and the insanity defense

Neuroscientific evidence regarding the insanity of a defendant was firstly discussed in the case *US vs. Hinckley* (1998),[270] when John Hinckey was found not guilty by reason of insanity after trying to assassinate President Reagan. In order to establish a defense of insanity, the court stated that

> "it must be clearly showed that, at the time of committing the act, the party accused was under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing; or if he did know it, that he did not know what he was doing was wrong".[271]

In order for the insanity defense to be accepted by the court there are certain conditions that need to be reunited. Neuroscientific methods may have the potential to help us

---

[266] MORSE, S., *Rationality and Responsibility*, Southern California Law Review, Vol. 74, 2000, p. 251.
[267] *Ibid.*, p. 253.
[268] *Ibid.*
[269] AHARONI, E., FUNK, C., SINNOTT-ARMSTRONG, W., GAZZANIGA, M., *Ibid.*, p. 149.
[270] *See* United States Court of Appeals, *Hinckley v. United States* (1998), No. 973094.
[271] This is the Test of Insanity as laid down in *M'Naghten's* Case, 1843, https://h2o.law.harvard.edu/collages/41277.

determine whether we deal with a normal or abnormal brain. If the insanity of the agent is established, the result resides in his commitment to a mental hospital or other medical treatment as long as he represents a danger to himself or others.[272] As correctly noted by Udell, the consequences of the insanity defense are two:

> "firstly, insanity may act as evidence that precludes establishing a crime by leaving in doubt some material element of an offense, namely the guilty mind of the criminal; secondly, it may serve as a defense to a crime that may change the sentence invoked, even though all the elements of the crimes have been established".[273]

Defendants cannot be found guilty by reason of insanity if it is showed that they could not know what they were doing was wrong.[274] In medical terms, such lack of knowledge could result from delusion, retardation, sleepwalking or automatism. Neuroscience is useful in this situation as the individual's capacity of "knowing" has to be assessed.[275] But determining whether a defendant is insane depends on two main premises: firstly, knowing and understanding the nature and the quality of an act and secondly, knowing that the act *per se* is wrong.[276]

3.2. Intent, *mens rea* and culpability

Intent has been commonly defined in the legal literature as a commitment to a plan of action. Moore believes that "to do wrong is to act in a way that morality and the law prohibit, and intentions are at the root of action and agency".[277] In most legal systems, an act is considered intentional when the agent commits to a plan that includes that action as an essential element. For an act to be intentional, the act needs to be voluntary[278] and the agent must also know that he is planning it and performing it.[279] For example, an agent

[272] GREELY, H., *Ibid*, p. 1113.
[273] UDELL, M., *Ibid.*, p. 8.
[274] There is already relevant research on this topic. *See* SCARPAZZA, C., PELLEGRINI, S., PIETRINI, P., SARTORI, *The Role of Neuroscience in the Evaluation of Mental Insanity: on the Controversies in Italy*, Neuroethics, Vol. 11, Issue 1, 2018, p. 83-95; CLAYDON, L., *Reforming Automatism and Insanity: Neuroscience and Claims of Lack of Capacity for Control*, Medicine, Science and the Law, Vol. 55, Issue 3, 2015, p. 162-167; SHNIDERMAN, A., *No Such Thing as a Sure Thing: Neuroscience, The Insanity defense and Sentencing Mitigation*, The Jury Expert, Vol. 26, No. 1, 2014, p. 11-14.
[275] AHARONI, E., FUNK, C., SINNOTT-ARMSTRONG, W., GAZZANIGA, M., *Ibid.*, p. 150.
[276] *Ibid.,* p, 151.
[277] MOORE, M., *Intention, Responsibility and the challenges of Recent Neuroscience*, Stanford Technical Law Review, 2009, www.stlr.stanford.edu.
[278] Fore detailed information of neuroscience and voluntary acts, *See* PATTERSON, D., *Criminal law, neuroscience and voluntary acts*, Journal of Law and the Biosciences, Vol. 3, Issue 2, 2016, p. 355-358.
[279] For more detailed information on the legal and moral suppositions about the nature of intention and the challenging data of neuroscience *See* MOORE, M., *Ibid.*, p. 12-17.

kills intentionally when he knows that death is a likely consequence of his actions or a result of what he needs to accomplish in order to obtain this result.[280] Premeditation of an action might sometimes seem like an indicator that the agent has thoroughly weighed his actions. However, premeditation is not necessary to establish intention. It is here that, according to scientists like Aharoni, neuroscience comes in. In order to determine that a crime was committed with intention, there must be proof that the defendant had sufficient knowledge, relevant plans and also a proper mental condition.[281] If it is established that the agent lacked the capacity to act intentionally at the time of offence, he might be acquitted of the greater crime and charged with a lesser one. In this case, neuroscientists have the great role of identifying and measuring abnormalities associated with these dysfunctions.[282]

Mens rea incorporates the intention to commit a criminal act, but the term generally refers to "all mental states consistent with moral and legal blame".[283] In most of the legal systems, a criminal act is divided into *actus reus* and *mens rea*, which are the physical act and the mental element. The classical example that can be provided is the act of murder which requires the physical act of killing somebody (*actus reus*) and the intention to kill the person (*mens rea*). Another example is the offence of theft which requires taking the property of a person (*actus reus*) with the knowledge that it belongs to somebody and the intention to deprive the person of the object (*mens rea*). Both of the aforementioned elements must be proven by the prosecutors in order to convict a defendant of a crime.

Katz, by reiterating the conclusions reached by courts, noted that an insane person cannot be charged with a crime:

> "because the totality of his personality is such, because of mental illness, that he has lost the capacity to control his acts in a way that the normal individual can and does control them... he must be found not to possess the guilty mind, the *mens rea*, necessary to constitute his prohibited act a crime".[284]

The levels of *mens rea* and the distinction between them vary from one system to another, although in general, the basic elements are the same. For instance, the American Model

[280] AHARONI, E., FUNK, C., SINNOTT-ARMSTRONG, W., GAZZANIGA, M., *Ibid.*, p. 149.
[281] *Ibid.*, p. 149.
[282] *Ibid.*, p. 150.
[283] GREEN, J., COHEN, J., (2004), *Ibid.*, p. 1775.
[284] KATZ, J., GOLDSTEIN, J., *Abolish the Insanity Defence – Why Not?*, Faculty Scholarship Series 2453, 1963, http://digitalcommons.law.yale.edu/fss_papers/2453.

Penal Code[285] shows that *mens rea* includes at least four versions: intention or purpose, knowledge that the act is done, recklessness and negligence. In England, the culpability of a person is assessed in terms of direct intention, oblique intention, recklessness and criminal negligence.[286] However, in civil law countries, like France, Belgium, Luxembourg, Canada, Italy, Romania, Scotland, Spain etc. a person can be declared responsible for *intentional* or *unintentional* actions (imprudence, negligence etc.).[287] Scholars like Aharoni consider that neuroscience could be used to determine when one of the mental conditions is met although the endeavor is difficult and may lack accuracy.[288]

The last main argument that we want to highlight in this section concerns the mismatch between the legal definitions of "intent", "intentional" and "voluntary", and those definitions used in neuroscience. It was correctly noted in various official reports that

> "mental state, like voluntariness has a precise meaning in law: the defendant's purpose in acting, awareness of the surrounding circumstances and intent to achieve the resulting consequences. Neuropsychological testing that happens months or years after a crime might have little bearing on the defendant's brain at the time of the crime".[289]

When analyzing concepts like "motivation", "intent", "voluntary", it is important that scientists and legal practitioners speak the same langue. A suggestion would be to work together on agreeing on exact meaning of these notions.

4. The future of neuroscience in legal thinking

The legal issues presented above are meant to show the complexity of assessing legal responsibility by using both legal and scientific rules. In the following section, we will

[285] Model Penal Code (1981) has standardized *mens rea* terms in order to determine levels of mental states. Each material element of every crime has an associate culpability state that the prosecution must prove beyond a reasonable doubt.
[286] In England and Wales there is no codification form of *mens rea*. However, the criminal law applies two distinct methods of assessing *mens rea* – subjectivism and objectivism. "A *subjective test* depends upon what the defendant himself believed or intended. An *objective test* will label the defendant culpable for what a hypothetical reasonable person would have foreseen or how he would have reacted". For a more detailed presentation of this issue *See* FUREY, J., A *Consistent Approach to Assessing Mens Rea in the Criminal Law of England and Wales*, University of Exeter, 2010, p. 2, https://ore.exeter.ac.uk/repository/bitstream/handle/10036/117790/FureyJ.pdf?sequence=2.
[287] French Penal Code (1994), art. 121-3 stipulates that "Il n'y a point de crime ou délit sans intention de la commettre".
[288] AHARONI, E., FUNK, C., SINNOTT-ARMSTRONG, W., GAZZANIGA, M., *Ibid.*, p. 149.
[289] Presidential Commission for the Study of Bioethical Issues, *Gray Matters: Topics at the Intersection of Neuroscience, Ethics and Society*, Vol. II, Washington DC, 2015, p. 95, https://bioethicsarchive.georgetown.edu/pcsbi/sites/default/files/GrayMatter_V2_508.pdf.

address the use of neuroscientific evidence in the courtrooms in the future, while highlighting some of the ethical considerations that will need to be considered by legal practitioners when using this type of evidence.

4.1. Use of neuroscientific evidence in courts

There are various opinions as to whether there is a future for neuroscientific tools in the legal thinking. On the one side, there are many optimistic voices that see a future for neuroscientific tools, as they may provide a more objective assessment of an individual's responsibility, particularly when compared to legal rules, which are generally insufficient and represent only a translation of the social beliefs in legal terms. On the other hand, some concerned voices support the view that neuroscientific techniques are still not ready to provide sufficient accuracy, and hence they are not fully reliable in the court. In the following, we will briefly present all these arguments.

Hodgson identified some of the ways in which neuroscience will contribute in the future operation and development of law. According to him, neuroscientific evidence will increasingly be used in "answering questions about criminal responsibility, in accordance with the categories the law prescribes".[290] Moreover, he holds the view that advancements in neuroscience may influence "the development of the law concerning the attribution of criminal responsibility, particularly in cases with defendants affected by mental abnormalities".[291]

Hodgson discusses the possibility of using neuroscience to identify brain conditions that involve particular risks for criminal behavior in order to devise methods to minimize these risks. Knowledge of how the brain works may be used to inform a wide variety of programs for addressing criminal behavior such as: the environmental and social factors[292] that contribute to criminal conduct; the rehabilitation of offenders; and the development and implementation of processes to discourage criminal conduct.[293] Nonetheless, according to Mobbs et al., a better understanding of the brain "may lead to

[290] HODGSON, D., *Ibid.*, p. 237.
[291] *Ibid.*, p. 238.
[292] For a good understanding of social factors that contribute to criminal conduct, *See* GREELY, H., *The Social Consequences of Advances in Neuroscience: Legal problems, Legal Perspectives*, ILLES, J., (ed.), *Neuroethics: Defining the Issues in Theory, Practice and Policy*, Oxford University Press, New York, 2005, p. 245-265.
[293] HODGSON, D., *Ibid.*, p. 237. *See* also ROSKIES, A., *Ibid,* 2010.

more effective deterrence, more effective treatment and more just and morally sound sentencing".[294]

On the other side of the coin, as Aharoni explained, even the best neuroscientific evidence could sometimes leave us unsure whether some defendants meet the conditions for criminal responsibility. According to him,

> "even assuming that new science can help us figure out who was or was not rational at the scene of the crime, much as it has in the past, new science will not justify any fundamental change in the law's approach to responsibility unless it shows that people in general fail to meet the law's very minimal requirements for rationality".[295]

From all the positions presented above, we can infer that the use of neuroscientific evidence in the courtroom in the future will certainly comprise many applications. However, as we will see in the next section, there are also some ethical considerations that need to be considered when using the neuroscientific tools in criminal proceedings.

4.2. Ethical considerations on neuroscientific tools

Ethical questions concerning the applications of neuroscientific tools and their implications for individuals and society alike were also looked at by governmental organizations and researchers alike.[296] To begin with, the authors of the US Presidential Commission for the Study of Bioethical Issues, in their 2014 report on the BRAIN Initiative[297] noted:

> "The ethical issues surrounding data privacy, informed consent, and minimization of risk, for example are common across scientific field. Some issues, however, such as those regarding privacy of our thoughts, threats to personal volition, or erosion of self-determination are expressed in sharper relief in neuroscience".[298]

The report analyzed in detail some of the ethical and societal implications of neuroscience research. The report noted that the use of neuroscientific tools within the legal systems

---

[294] MOBBS, D., LAU, H.C., JONES, O., FRITH, C., *Ibid.*, 2009, p. 249.
[295] GREEN, J., COHEN, J., *Ibid.*, p. 1778.
[296] For a detailed presentation of the neuroethical problems *See* FAHRAH, M., *Neuroethics: The Practical and the Philosophical*, Trends in Cognitive Science, Vol. 9, No. 1, 2005, p. 34-40.
[297] The mission of the BRAIN Initiative is to "deepen understanding of the inner working of the human brain and to improve how we understand, treat, prevent, and cure disorders of the brain", http://www.braininitiative.org/mission/.
[298] Presidential Commission for the Study of Bioethical Issues, *Ibid.*, 2014, p. 4.

raises the important question of "how to determine when scientific findings are ready for public use, and how to ensure that scientific experts who testify and play a role in determining the fate of the defendants are reliable and their conclusions are sound".[299]

Moreover, Goodenough and Tucker draw attention to the real dangers that can arise with improper use of science in formulating policy and legal rules.[300] The authors synthesize three main cautions for consideration by the scholars working in this field. Firstly, they advise against the use of "neuro-dazzle" techniques to justify conclusions that can be arrived at by other means. They suggest that "policy makers are often at fault, as they either interpret the science only as far as it supports their agenda or negligently ignore it altogether".[301] Secondly, in their opinion, "neurolaw is not simple determinism, i.e. there are many factors that influence and shape a human being".[302] This implies that humans are not just sets of genetic programs, but, they note, also remarkable composites of influence. Therefore, elements like social environment, culture, personal experience, etc. have an important role in shaping the individual's decisions and behaviors. Thirdly, the authors also point out the danger of creating a stigmatized "other". By they mean that finding differences in the brain by using the new technological possibilities may create an artificial separation for those with differences.[303]

Unfortunately, law has used in the past to create markers for discrimination and even persecution for various socially constructed differences such as race, gender and ethnicity.[304] The same mistakes should not be repeated for neurological differences. In fact, Goodenough and Tucker graciously noted,

> "if we start looking for the criminal mind, whether using phrenology or the best of the new neuroscience, we are all prone to forget that an inner criminal lurks in most of us, waiting for the right cues of anger or desperation to emerge".[305]

As far as the implications of neuroscience on law are concerned, scientists such as

---

[299] Presidential Commission for the Study of Bioethical Issues, *Ibid.*, 2015, p. 17.
[300] GOODENOUGH, O., TUCKER, M., *Ibid.*, p. 64.
[301] *Ibid.*, p. 65. For more scenarios regarding the way science has been invoked to justify social policy, *See* RUHL, J., *Reconstructing the wall of virtue: maxims from the co-evolution of environmental law and environmental science*, Environmental Law, Vol. 37, No. 274, 2007, p. 1755-1758.
[302] GOODENOUGH, O., TUCKER, M., *Ibid.*, p. 65.
[303] *Ibid.*, p. 66.
[304] *See* WILLMOT, C., *Are We Ready for an Expanded Use of Neuroscientific Evidence in the Courtroom?,* In Springer Briefs in Ethics, *Biological Determinism, Free Will and Moral Responsibility*, Springer, Heidelberg, 2016, p. 65-84.
[305] GOODENOUGH, O., TUCKER, M.*, Ibid.,* p. 67.

Edersheim have summed it up in the following way:

> "We are making remarkable strides in identifying specific functional brain networks and the genetic and environmental causes for disruptions in these networks. However, until we can make well founded, scientifically sound and legally relevant links between genes, brains and behaviors, judges, juries and the public should be wary of neuroscience in the courtroom".[306]

Therefore, ensuring the correct application of neuroscientific tools and evidence in courts requires substantial scientific and legal education. The US Bioethics Commission has correctly identified the core issues of the problem when they stated the following:

> "When neuroscience that is unreliable or has not yet been validated and is not ready for application is introduced into the legal system, justice is threatened. Unrealistically high expectations for new science and technology can lead to a loss of trust when those expectations are unmet".[307]

Therefore, it is necessary for both scientists and legal practitioners to be aware of the ethical implications of using neuroscientific data and tools. A right balance needs to be struck in which the benefits of neuroscientific data are acknowledged, while remaining mindful to the fact that some claims might be misleading or exaggerated.

5. Concluding remarks

From the literature presented in the sections above, one could infer that the use of neuroscience in legal practice presents both positive and negative aspects. Moreover, due to its variety of applications in the legal field, in our view, it is undeniable that the role of neuroscience in courts of law will continue to grow in the coming decades.

One the positive side, as the scientific understanding of the human brain improves, its potential benefits could be tremendous. In time, neuroscience could permit a better assessment of one's legal responsibility and could, hopefully, allow more just outcomes in the assignment of responsibility of an individual. It could greatly influence the shaping of the law, particularly in cases related to age of criminal responsibility or mental condition defenses.

---

[306] EDERSHEIM, J., '*Your Honour, My Genes Made Me Do It'*, Wall Street Journal, October 2012, https://www.wsj.com/articles/SB10000872396390444592404578030652157630958.
[307] Presidential Commission for the Study of Bioethical Issues, *Ibid.*, 2015, p. 9.

On the negative side, we also noted many neuroscientific techniques are still in their infancy, and we therefore raise concern about their premature use in courtrooms. For that reason, more efforts are needed to increase the understanding of empirical data obtained so far, its potential uses and, more importantly, its limitations. In our opinion, these efforts will require a closer collaboration between legal scholars, neuroscientists and philosophers. By bridging the gaps, neuroscientists can play an important role in assisting judges and jurors in the accurate interpretation of neuroscientific evidence.

Regardless of the positive and negative aspects of neuroscientific advancements that we might have to deal with in the future, we argue that we are facing a more current problem – that of accommodating these neuroscientific developments in criminal legislation. In this context, re-examination of certain areas of criminal law that deal with legal concepts such as "motivation", "intention" and "voluntary", may be needed; and it may be necessary to amendment legislation in order to ensure the just treatment and punishment of individuals with impaired capacity. Therefore, we believe, that it is time for legal practitioners to start thinking of ways to better integrated neuroscientific evidence in the practice of criminal law, by resolving the procedural issues related to the admissibility and weight of neuroscientific evidence in courtrooms.

Chapter IV. Empirical Study

Legal practitioners' beliefs on the effect of neuroscientific evidence for the assessment of legal responsibility

> *"The acceptance of a theory as true does involve a personal choice in a way that a law does not. Different people do differ about theories; they can choose whether or not they will believe them; but people do not differ about laws; there is no personal choice; universal agreement can be forced", Norman Campbell*[308]

1. Relevance of the study and goal setting

We have seen in the previous chapters that finding an answer to such complex questions as the interaction between free will (agency), neuroscience, and moral and legal responsibility represents a very difficult endeavor, especially since there are many different views on the subject.

The present empirical study blends methods from experimental philosophy and experimental psychology with the aim of capturing a more "specialized" view on the question brought to analysis: Could neuroscientific evidence permit a better assessment of the legal and moral responsibility of the individuals? Could these tools generate a paradigm shift in legal science regarding the way the responsibility of an individual is assessed?

In order to answer these questions we combined tools and methodological approaches pertaining to the following disciplines:

- *Experimental philosophy* – employs empirical science methods to provide explanations on philosophical debates.[309] This discipline attempts to explore ordinary intuitions about a particular case or question in the attempt of learning

[308] CAMPBELL, N., *Physics the Elements*, Cambridge University Press, Cambridge, 1920, p. 113.
[309] SOMMERS, T., *Experimental Philosophy and Free Will*, Philosophy Compass, Vol. 5, Issue 2, 2010, p. 199.

about the processes that underlie these intuitions. Experimental philosophers[310] examine their research questions though experiments. They introduce participants to hypothetical questions and scenarios to test folk intuitions.

- *Social psychology* – is the area of psychology that examines relationships between human behavior and the mind. It is focused on fact-based, scientific research and experimentation.[311] Social psychologist[312] use scales to measure individual differences and priming techniques to examine relationships with behavioral factors.

2. Aim and subject of the empirical study

Most criminal theorists have little to say about whether our practices of blaming and punishing are undermined by the thesis of causal determinism. Of the few criminal law scholars who do consider this question, most espouse views that mirror the theories of free will and moral responsibility discussed in Chapter II. In fact, the current research on this question has been limited to a handful of specialists with knowledge in both legal aspects and philosophy or to students in universities.

The aim of this empirical study is to test the beliefs legal practitioners such as judges, attorneys and lawyers have regarding the way they generally relate to the concept of free will (agency) and determinism (religious determinism, biological determinism, social determinism, psychological determinism etc.), and the impact that the latter has on punishments.[313] This part of the study is meant to determine to which degree claims that our brain determines our behavior have affected the beliefs of legal practitioners when ascribing legal responsibility to an individual. Furthermore, the empirical study seeks to see how legal practitioners relate to "neurolaw cases" and the degree to which they accept neuroscientific evidence in court in order to determine the moral and legal responsibility of an individual.

---

[310] *See* examples of important experimental philosophy studies on free will: KNOBE, J., BUCKWALTER, W., NICHOLS, S., ROBBINS, P., HAGOP, S., SOMMERS, T., *Experimental Philosophy*, Annual Review of Psychology, Vol. 63, Issue 1, 2012, p. 81-89.

[311] *See* DAVIS, S. (ed.), *Handbook of Research Methods in Experimental Psychology*, Blackwell Publishing Inc., Malden, 2003.

[312] *See* examples of important social psychological studies on free will: BAUMEISTER, R., *Free Will in Scientific Psychology*, Perspective in Psychological Science, Vol. 3, Issue 1, 2008, p. 14-19; BAUMEISTER, R., BREWER, L., *Believing versus Disbelieving in Free Will: Correlates and Consequences*, Social and Personality Psychology Compass, Vol. 6, Issue 10, 2012, p. 736-745.

[313] CHIESA, L., *Ibid.*, p. 40.

3. Hypotheses and goal setting

The main hypotheses of the present study are:

1. Despite significant advances in neuroscience, which, some argue, have changed the perceptions on free will (agency) and responsibility of an individual, the beliefs of legal practitioners have not changed significantly when taking these advancements into consideration.

2. Debates on free will (agency) and ascription of an individual's responsibility may be strongly affected by the cultural factors of the person subjected to perform the assessment.

Some of the goals set by the empirical study are:

1. Create the profile of current legal practitioners by determining whether they can be assigned to one of the philosophical categories (hard determinism, hard incompatibilist, compatibilist or libertarian) presented in Chapter II of the thesis;

2. Test the way legal practitioners relate to neuroscientific cases and how they assess them in practice (determine whether there is resistance from the legal community towards new scientific discoveries and tools);

3. Test the degree to which legal practitioners presently acknowledge the utility of the neuroscientific evidence during court proceedings and determine how they might further acknowledge it in the future; and

4. Determine whether there are cultural differences in the beliefs of various legal practitioners regarding the interaction between neuroscience and law when it comes to assessing the moral and legal responsibility of a person.

4. Previous research studies

To our knowledge this is the first study of this kind that maps legal practitioners' beliefs on free will (agency), determinism and responsibility. At the same time, it is one of the few experiments that tests whether neuroscientific evidence has an impact on legal practitioners' decisions when assessing the responsibility of an individual. In the following we will briefly introduce some previous studies, which in our opinion present relevance for our empirical study.

For the first part of our empirical study we departed from two separate studies: 1) the study conducted by Nichols in 2006; 2) the study conducted by Nahmias et al. in 2007.

In his empirical study, Nichols relied on methods from experimental psychology to explore folk intuitions about free will and responsibility.[314] He concluded that in different conditions and baseline scenarios, individuals tend to give conflicting responses about agency and responsibility. According to him,

> "in some contexts people treat agency as indeterminist, while in others, they treat agency as determinist. Furthermore, in some contexts people treat responsibility as incompatible with determinism, whereas in other contexts, they treat it as compatible with determinism".[315]

Nahmias et al. also understood the importance of mapping ordinary folk intuitions on free will.[316] In their opinion, "mapping the relevant beliefs and intuitions in a systematic, empirically informed way can play a useful role in the development of a viable theory of free will" and consequently of moral responsibility.[317] In their opinion, by considering folk intuitions, philosophers can better understand the cognitive processes that generate these intuitions and provide better explanations for why certain views seem more attractive than others. This is an aspect of very high relevance, as philosophical debates should be relevant to the public.[318] Nonetheless, they are important because they significantly influence people's attitudes, thinking and behavior.

It is necessary to analyze into more depth the experiment conducted by Nahmias et al., as it connects in some aspects to our empirical study. The scholars started from three hypotheses. Firstly, they hypothesized that if a scenario presents determinism in a way that would lead people to adopt the mechanistic stance toward an agent, then people will be less inclined to attribute free will (and responsibility) to the agent. Secondly, they suggested that if determinism is presented in a way that people would be able to interpret an agent's conscious deliberations, values and goals as causally efficacious, then people

[314] *See* NICHOLS, S., *Folk Intuitions on Free Will*, Journal of Cognition and Culture, Vol. 6, Issue 1, 2006, p. 57-86.
[315] *Ibid.*, p. 58.
[316] *See* NAHMIAS, E., COATES, J., KVARAN, T., *Free Will, Moral Responsibility and Mechanism: Experiments on Folk Intuitions*, Midwest Studies in Philosophy, Vol. 31, Issue 1, 2007, p. 214-242.
[317] *Ibid.,* p. 217.
[318] *Ibid.*

would tend to attribute free will and responsibility.[319] Lastly, the authors predicted that subjects will significantly increase their judgments of free will and responsibility in response to morally reprehensible actions described in a specific, detailed way rather than in an abstract way.[320]

The results of the experiment of Nahmias et al. supported Nichols and Knobe's theory,[321] according to which the affect has an important role in adhering to a position or another. Moreover, they claimed that their results demonstrate the common claim that most of the people have incompatibilist intuitions. On this basis, Nahmias et al. believe that more attention should be given to the mind-body relation and to the increasingly mechanistic understanding of human behavior offered by the science.[322]

For the second part of the questionnaire, we departed from a study performed in 2012 by Church who argued that "that neuroscience hype and fascination with colorful brain images exerts undue influence in legal decision making".[323] In order to test the degree to which legal practitioners acknowledge the utility of neuroscientific evidence in the assessment of responsibility, we also departed from a hypothesis tested by Aspinwall et al. in 2012 who argued that there is a "correlation between the inclusion of the biological explanation of neurological disorder with significantly reduced sentence length and increased number of mitigating factors listed".[324]

We also took into consideration the conclusions of the report of the US President's Council on Bioethics, which claimed that "judges and juries have recognized the persuasive allure of brain scans".[325] We corroborated these claims with the argument made by Munro's 2014 study according to which the public is more likely to trust diagnosis when brain imaging evidence is presented.[326]

---

[319] *Ibid.*, p. 222.
[320] NAHMIAS, E., COATES, J., KVARAN, T., *Ibid.*, p. 232.
[321] *See* NICHOLS, S., KNOBE, J., *Moral Responsibility and Determinism: The Cognitive Science of Folk Intuitions*, NOUS, Vol. 41, Issue 4, 2007, p. 663-685.
[322] NAHMIAS, E., COATES, J., KVARAN, T., *Ibid.*, p. 236.
[323] *See* CHURCH, D., *Neuroscience in the courtroom: An international concern*, William and Marry Law Review, Vol. 53, Issue 5, p. 1854.
[324] ASPINWALL, L., BROWN, T., TABERY, J., *The Double-Edge Sword: Does Biomechanism Increase or Decrease Judges' Sentencing of Psychopaths?,* Science, Vol. 337, 2012, p. 849.
[325] President's Council on Bioethics, *Staff Working Paper: An Overview of the Impact of Neuroscience Evidence in Criminal Law*, 2004, https://bioethicsarchive.georgetown.edu/pcbe/background/neuroscience_evidence.html.
[326] *See* MUNRO, G., MUNRO, C., *"Soft" versus "hard" psychological evidence: Biased evaluations of scientific evidence that threatens or supports a strongly held political identity*, Basic and Applied Social

5. Methodology of research

5.1. Design of research

This empirical study is based on a questionnaire[327] designed in English language (original) and translated in German, Romanian and Slovenian in order to minimize errors in response due to difficulties of understanding the languages. The questionnaire was administered online and contained full instructions for the participants. The questionnaires were anonymous. The questionnaire can be found in the Annex part of this thesis in all the languages mentioned above.

5.2. Participants

All the selected participants in the study are legal practitioners (judges, lawyers and attorneys) or graduates of legal studies preparing for the bar exam, which are already working in the legal profession.

The online questionnaires have been completed by 91 participants (N=91). The participants were categorized in three main groups, a group coming from Slovenia (= Slovenian Group), a second group from Romania (= Romanian Group), and a third group (= Mixed Group) representing legal practitioners residing in Austria, but coming from other countries in Europe and North America.

5.3. Instruments of research

In the first part of the questionnaire the participants were given a series of 30 questions designed to measure their opinion regarding free-will versus determinism. At the basis of this questionnaire, we used the free-will scales based on Nadelhoffer et al.[328] and Stroessner and Green.[329] These were coupled with the scales proposed by Paulhaus and Carey[330] and adapted for our participants.

Psychology, Vol. 36, No. 6, 2014, p. 533-543.

[327] The questionnaires are available in all the languages mentioned in the Annex to this document.

[328] *See* "Free-Will Determinism Scale", In NADELHOFFER, T., SHEPARD, J., SRIPADA, C., ROSS, L., *The free will inventory: Measuring beliefs about agency and responsibility*, Consciousness and Cognition, Issue 25, 2014, p. 27-41.

[329] *See* STROESSNER, S., GREEN, C., *Effects of Belief in Free Will or Determinisms on Attitudes toward Punishment and Locus of Control*, The Journal of Social Psychology, Vol. 130, Issue 6, 1990, p. 789-799.

[330] *See* PAULHAUS, D., CAREY, M., *The FAD-Plus: measuring lay beliefs regarding free will and related constructs*, Journal of Personal Assessment, Issue 93, Vol. 1, 2011, p. 96-104.

In the first part of the questionnaire, the participants were asked to rate statements measuring:

- Their general attitude to science
- Religious determinism
- Environmental determinism
- Psychological determinisms
- Social determinism
- Free agency and mental health
- Free agency and level of intelligence
- Free agency and morality
- Attitudes towards punishment

The participants were asked to read 30 statements and decide whether they agree or disagree with the statement. They were asked to circle a number from 1 to 6, indicating whether they: (1) strongly disagree; (2) disagree; (3) somewhat disagree; (4) somewhat agree; (5) agree or (6) strongly disagree. We rejected the Likert scale assessment[331] with an odd number of choices in order to avoid participants adopting neutral positions such as "I do not know" which would prevent us from understanding the beliefs of the participants. The participants were encouraged to choose numbers (3) and (4) only when they were unsure of their answers or when it was difficult for them to choose a position.

In the second part of the questionnaire, the legal practitioners were asked to analyze five legal cases in order to assess the defendant's level of responsibility and assign punishment (or treatment).

6. Results

6.1. Analysis of data

The analysis comprised:

- **Slovenian group** comprised 41 legal practitioners (N=41) with ages between 23 and 42 years old, with an average age of 28.2 years old;

[331] For more on Liker scale, *See* JOSHI, A., *Likert Scale: Explored and Explained*, Current Journal of Applied Science and Technology, Vol. 7, Issue 4, 2015, p. 396-403.

- **Romanian group** comprised 22 legal practitioners (N=22) with ages between 23 and 51 years old, with an average age of 34.1 years old;

- **Mixed group** comprised 28 legal practitioners (N=28) with ages between 21 and 54 years old, with an average age of 28.6 years old.

	SLOVENIA	ROMANIA	MIXED GROUP
Average age	28.2 years old	34.1 years old	28.6 years old
Males	11 respondents (26.8%)	5 respondents (22.7%)	16 respondents (57.1%)
Females	30 respondents (73.2%)	17 respondents (77.3%)	12 respondents (42.9%)
Religious	21 respondents (51.2 %)	18 respondents (81.8%)	12 respondents (42.9%)
Non-religious	20 respondents (48.8%)	4 respondents (18.2%)	16 respondents (57.1%)
Married	12 respondents (29.3%)	13 respondents (59.9%)	1 respondent (2.8%)
Not married	29 respondents (70.7%)	9 respondents (40.1 %)	27 respondents (97.2%)

Table 1. Overview data on the participants in the study

6.1.1. General attitudes towards science

As showed in the previous chapter, legal disputes increasingly presuppose the use of principles and tools of science. In order to properly respond to the needs of society, judges' decisions should reflect a proper understanding of the science.[332] Given the well-documented gap[333] between science and law, particularly in the context of a courtroom, the first statements of the questionnaire aimed to measure the general attitude of the respondents to science.

When analyzing the legal practitioners' general attitudes towards science, namely the capacity for science to define the true human essence, similar views could be noted between the Slovenian, Romanian and the Mixed Group, of whom 74.8% agreed that science will *never* be fully capable of defining human "essence". Despite this, our results show the participants' trust in the capabilities of science to explain human behavior and actions, with 76.4% of the respondents agreeing that science is, or will become, better in explaining human behavior. See Table 2 for a full overview of the participants' responses

[332] BREYER, S., *Science in the Courtroom*, Issues in Science and Technology, Vol. XVI, Issue 4, 2000, http://issues.org/16-4/breyer/.
[333] *See* TOMPKINS, A., *Science in the courtroom: is there, and should there, be a better way?*, Australian Journal of Forensic Sciences, Vol. 49, Issue 5, 2017, p. 579-588.

regarding the role and capability of science.

STATEMENT	LEVEL	SLOVENIA	ROMANIA	MIXED GROUP
The essential me is something that science will never pin down.	Strongly disagree	1 respondent (2.4%)	1 respondent (4.5%)	1 respondent (3.6%)
	Disagree	4 respondents (9.8%)	3 respondents (13.6%)	2 respondents (7.1%)
	Somewhat disagree	5 respondents (12.2%)	1 respondent (4.5%)	5 respondents (17.9%)
	Somewhat agree	6 respondents (14.6%)	5 respondents (22.7%)	8 respondents (28.6%)
	Agree	16 respondents (39%)	10 respondents (45.5%)	7 respondents (25%)
	Strongly agree	9 respondents (22%)	2 respondents (9.1%)	5 respondents (17.9%)
The explanation for my behavior and actions lies in science.	Strongly disagree	3 respondents (7.3%)	0 respondents (0%)	1 respondent (3.6%)
	Disagree	5 respondents (12.2%)	1 respondent (4.5%)	4 respondents (14.3%)
	Somewhat disagree	3 respondents (7.3%)	0 respondents (0%)	6 respondents (21.4%)
	Somewhat agree	10 respondents (24.4%)	5 respondents (22.7%)	9 respondents (32.1%)
	Agree	16 respondents (39%)	16 respondents (72.7%)	7 respondents (25%)
	Strongly agree	4 respondents (9.8%)	0 respondents (0%)	1 respondent (3.6%)

Table 2. Overview data general attitudes towards science

6.1.2. Religious determinism

The questionnaire continued with a series of statements meant to measure the legal practitioners' attitudes towards religion, particularly theological determinism. Theological determinism[334] is a form of determinism according to which all events that happen are pre-ordained, or predestined to happen, by a God, Divinity or Superior Force, or that they are destined to occur.[335] As noted by Grunthaler,[336] the theory of theological determinism is derived from the attributes assigned to God by the three major theistic religions (Judaism, Christianity and Islam). Among the characteristics that all these religions agree upon is that God or Divinity is omniscient – that is, he knows everything that happened in the past, and what will happen in the present or the future. However, relevant for determinism debates, from this line of thought it can be inferred that if God

[334] For more details on free will and theological determinism, *See* BYERLY, R., *Free Will Theodicies for Theological Determinism*, SOPHIA, Vol. 56, Issue 2, 2017, p. 289-310.
[335] For more details on determinism from a theological perspective, *See* GRUNTHALER, A., *The Challenge of Determinism*, SOPHIA Project, Ethics Archives, p.1, http://www.sophia-project.org/uploads/1/3/9/5/13955288/grunthaler_determinism.pdf.
[336] *Ibid.*

knows beforehand what an individual is going to do, then the individual must or will choose what God knows he is going to choose. In Grunthaler's view, "the problem with predestination is that this foreknowledge is incompatible with human freedom and agency".[337]

According to Feinberg et al., the most common conception of free will espoused by theological determinists is the standard compatibilist one. According to Vicens, determinism of any type — whether theological (i.e. determination by God) or natural (i.e. determination by the laws of nature) – does not automatically rule out free agency.[338] Consequently, theological determinists defend the view that "freedom within natural determinism is compatible with free will".[339] On these premises, we wanted to find out whether the legal practitioners that participated in our experiment espoused the standard compatibilist conception on free will (agency).

Consequently, when asked to assess whether there is a non-physical part in the humans (e.g. souls, spirit etc.) that determines one's actions but is not determined by genes, environment or other factors, the answers given by the respondents were varied. All the three groups agreed in a proportion of 68.8% that there is an immaterial thing, which could be attributed to something else and goes beyond what we already know. Asked whether they believed that a "higher being" or "force" (God or Divinity) limited their choices a great majority of the three groups respondents disagreed (87.5%), arguing that theological determinism (even if accepted) does not imply that one's choices are limited by this "higher force".

Differences in the responses can be noted, which, in our opinion could be attributable to differences in views related to religion, which seem to be embedded in the culture. For instance, the Romanian Group believes much more than the other groups that a "higher force" would limit one's choices (36.3%), compared to 17.1% in the Slovenian Group and 14.3% for the Mixed Group. The explanation for these differences could possibly reside in the fact that participants in the Romanian Group are more religious (81.8%) than their counterparts in the Slovenian (51.2%) and Mixed Group (42.9%). See Table 3 for a

[337] GRUNTHALER, A., *Ibid.,* p.1.
[338] For more information on theological determinism and free will, *See* BASINGER, D., BASINGER, R. (eds), *Predestination and Free Will: Four Views of Divine Sovereignty and Human Freedom*, InterVarsity Press, USA, 1986.
[339] VICENS, L., *Theological Determinism*, Internet Encyclopedia of Philosophy, 2018, http://www.iep.utm.edu/theo-det/.

full overview of the participants' responses regarding religious determinism.

STATEMENT	LEVEL	SLOVENIA	ROMANIA	MIXED GROUP
There is a non-physical part of me (e.g. a soul, spirit etc.) which determines my actions but which is not itself determined by my genes, environment or other factors.	Strongly disagree	4 respondents (9.8%)	0 respondents (0%)	5 respondents (17.9%)
	Disagree	6 respondents (14.6%)	4 respondents (19%)	2 respondents (7.1%)
	Somewhat disagree	3 respondents (7.3%)	0 respondents (0%)	5 respondents (17.9%)
	Somewhat agree	9 respondents 22%)	3 respondents (14.3%)	2 respondents (7.1%)
	Agree	13 respondents (31.7%)	14 respondents (66.7%)	10 respondents (35.7%)
	Strongly agree	6 respondents (14.6%)	0 respondents (0%)	4 respondents (14.3%)
My choices are limited by a superior force.	Strongly disagree	14 respondents (34.1%)	1 respondent (4.5%)	13 respondents (46.4%)
	Disagree	15 respondents (36.6%)	10 respondents (45.5%)	8 respondents (28.6%)
	Somewhat disagree	5 respondents (12.5%)	3 respondents (13.6%)	3 respondents (10.7%)
	Somewhat agree	3 respondents (7.3%)	4 respondents (18.2%)	3 respondents (10.7%)
	Agree	2 respondents (4.9%)	3 respondents (13.6%)	1 respondent (3.6%)
	Strongly agree	2 respondents (4.9%)	1 respondent (4.5%)	0 respondents (0%)

Table 3. Overview data religious determinism

6.1.3. Biological determinism

Another cluster of statements tested the views of legal practitioners on biological determinism. According to Grunthaler, biological determinism argues that "basic human biology and our specific genetic makeup determine what kinds of people we will ultimately become and even what kinds of actions we will perform". [340] In Greene's view, biological determinism is an approach to the explanation of human behavior that emphasizes the definitive causal role of biological entities or processes. [341] Denno defines biological factors as "non-social, non-behavioral measures of constitution and functioning", such as different chromosome patterns and biochemical effects.[342]

Given that this field has been bolstered in recent years by the rise of evolutionary

[340] GRUNTHALER, A., *Ibid.*, p. 2.
[341] *See* GREENE, S., *Biological Determinism*, The Wiley Blackwell Encyclopedia of Gender and Sexuality Studies, Vol. 1-3, 2016, p. 431-435.
[342] DENNO, D., *Human Biology and Criminal Responsibility: Free Will or Free Ride*, University of Pennsylvania Law Review, Vol. 137, 1988, p. 618.

psychology, the "new" genetics[343] and the claims of neuroscience,[344] we believed it was necessary to include in our questionnaire questions on biological determinism.

Biological explanations of criminal responsibility go back to the research of an Italian physician called Cesare Lombroso. His main theory was that criminals have an innate and primitive predisposition towards crime.[345] This theory was later extensively criticized.[346] Late in the 1970s, research focused on the XYY chromosomal abnormality, which revealed one of the most controversial links between genetics and crime. The researchers at that time believed that "genetically normal" individuals have 46 chromosomes. A "normal female" would have the pair of sex chromosomes called XX, and a "normal male" the XY pair.[347] Because of this demarcation, they concluded that the XYY chromosomal abnormality was linked to "exaggerated maleness, aggressiveness and violence".[348] The XYY defense was not successful in the four[349] American cases that attempted to use it in the 1970s. However, it marked the beginnings for the use of biological evidence during criminal trials.

When we asked our respondents whether their behavior and personality were generated by their biological makeup, there were disparities in the answers given by all three groups. For example, 27.2% of the Romanian Group disagreed with this statement, as compared to 56.4% and 49.9% for the Slovenian Group and Mixed Group, respectively. This question was intended to examine whether legal practitioners would accept defenses based on biological deficiency when assessing the criminal responsibility of an

---

[343] For more information on "new genetics" and free will, *See* LIPTON, P., *Genetic and Generic Determinism: A new Threat to Free Will?*, In REES, D., ROSE, S., (eds.), *The New Brain Sciences: Perils and Prospects*, Cambridge University Press, Cambridge, 2004, p. 88-100; CLARK, W., GRUNSTEIN, M., *Are we Hardwired?: The Role of Genes in Human Behavior*, Oxford University Press, New York, 2010.

[344] *See* HEWITT, A., *Biological Determinism, Free Will and Moral Responsibility: Insights form Genetics and Neuroscience*, The New Bioethics, Vol. 23, Issue 2, 2017, p. 188-190.

[345] *See* ELLWOOD. C., *Lombroso's Theory of Crime*, Journal of Criminal Law and Criminology, Vol. 2, Issue 5, p. 716-723.

[346] DENNO, D., *Ibid.,* p. 619.

[347] *See* MEDNICK, S., MOFFITT, T., STACK, S., *The Causes of Crimes: New Biological Approaches*, Cambridge University Press, New York, 1987.

[348] MEDNICK, *Ibid.*

[349] For example, in *People v. Tanner (1970*) the defendant was charged with kidnapping, rape and intent to commit murder. He was found to have an extra Y chromosome, about which the expert geneticists stated that explained the link between the XYY chromosomes and the defendant's aggressive behavior. The Court, however, did not accept this link. In a similar case, in People v. Yukl, in which the defendant was accused of murder, the Court stated that "…this defense should be possible only if one establishes with a high degree of medical certainty an etiological relationship between the defendant's metal capacity and the genetic syndrome. The genetic imbalance, must have so affected the thought process as to interfere substantially with his ability to understand or appreciate the basic moral code of his society". For more details about similar cases, *See* DENNO, *Ibid.,* p. 621.

individual. The results obtained can be interpreted as showing that legal practitioners continue to be divided on whether science research has demonstrated links that are sufficiently to link biological factors and criminal behavior when it comes to determining criminal responsibility.[350]

The majority of respondents from all three groups also disagreed that one's biological makeup is the ultimate cause of success or failure, with 73.2% for the Slovenian Group, 81.8% for the Romanian Group and 82.2% for the Mixed Group agreeing with this view. These answers show that legal practitioners believe that agency, despite being tied to biological determinants, is not completely dependent on these determinants. In our view, this supports similar recent studies[351] that show that, in general, a great majority of individuals accept the idea that biological determinism, free will and responsibility can coexist. See Table 4 for a full overview of the participants' responses regarding biological determinism.

STATEMENT	LEVEL	SLOVENIA	ROMANIA	MIXED GROUP
My biological makeup generates my behavior and personality.	Strongly disagree	5 respondents (12.2%)	1 respondent (4.5%)	2 respondents (7.1%)
	Disagree	11 respondents (26.8%)	4 respondents (18.2%)	6 respondents (21.4%)
	Somewhat disagree	5 respondents (12.2%)	1 respondent (4.5%)	6 respondents (21.4%)
	Somewhat agree	13 respondents (31.7%)	9 respondents (40.9%)	9 respondents (32.1%)
	Agree	5 respondents (12.2%)	4 respondents (18.2%)	4 respondents (14.3%)
	Strongly agree	2 respondents (4.9%)	3 respondents (13.6%)	1 respondent (3.6%)
I'm not just the product of genetic and biological factors.	Strongly disagree	1 respondents (2.4%)	0 respondents (0%)	0 respondents (0%)
	Disagree	3 respondents (7.3%)	3 respondents (13.6%)	3 respondents (10.7%)
	Somewhat disagree	4 respondents (9.8%)	0 respondents (0%)	2 respondents (7.1%)
	Somewhat agree	8 respondents (19.5%)	1 respondent (4.5%)	1 respondent (3.6%)
	Agree	19 respondents (46.3%)	10 respondents (45.5%)	10 respondents (35.7%)
	Strongly agree	6 respondents (14.6%)	8 respondents (36.4%)	12 respondents (42.9%)
I believe that a person's biological makeup is the	Strongly disagree	8 respondents (19.5%)	5 respondents (22.7%)	5 respondents (17.9%)
	Disagree	17 respondents (41.5%)	11 respondents (50%)	12 respondents (42.9%)

[350] Our results are also confirming previous research on this topic such. *See* DENNO, D., *Ibid.*, 1988, p. 615-671.
[351] WILLMOTT, C., *Ibid.*, 2016, p. 54.

ultimate cause of their success and failure.	Somewhat disagree	5 respondents (12.2%)	2 respondents (9.1%)	6 respondents (21.4%)
	Somewhat agree	5 respondents (12.2%)	1 respondent (4.5%)	3 respondents (10.7%)
	Agree	6 respondents (14.6%)	3 respondents (13.6%)	2 respondents (7.1%)
	Strongly agree	0 respondents (0%)	0 respondents (0%)	0 respondents (0%)

Table 4. Overview data biological determinism

6.1.4. Environmental determinism

We grouped under environmental determinism [352] issues related to behavioral determinism due to environmental factors. According to 20th century behavioral psychologists, human behavior was determined not only by unconscious processes, but also by environmental factors. Behaviorists such as B. Skinner argued that human beings are "conditioned to act in specific ways by their environment, and that freedom, therefore, is an illusion".[353] In his view, the only way to change a person's behavior is to change his environment.

Denno includes among environmental factors those factors that are "without a biological base, such as climate, social status and family income".[354] Tied to behavioral determinism is the psychological determinism, which according to psychoanalysts like Freud,[355] human beings are determined by "unconscious drives that the society forces them to repress".[356] The questionnaire aimed to make reference to these issues.

Most of the three groups' respondents acknowledged the important role that environmental factors have on the human behavior in general, with 68.3% for the Slovenian group, 54.5% for the Romanian group and 82.1% for the Mixed Group agreeing with this view. We do not have a clear explanation for why these differences

[352] For more on environmental determinism, *See* FEKADU, K., *The Paradox in Environmental Determinism and Possibilism: A Literature Review*, Journal of Geography and Regional Planning, Vol. 7, Issue 7, 2014, p. 132-139; HARDIN, G., *Environmental Determinism: Broken Paradigm or Viable Perspective*, Electronic Theses and Dissertations, 2009, 2009, https://dc.etsu.edu/etd/1839/.; PEET, R., *The Social Origins of Environmental Determinism*, Annals of the Association of American Geographers, Vol. 75, Issue 3, 1985, p. 309-333.
[353] GRUNTHALER, A., *Ibid.*, p. 3. For more on environmental behaviorism *See* SKINNER, B., *Beyond Freedom and Dignity*, Hackett Publishing Company Inc., Cambridge, 1971.
[354] DENNO, D., *Ibid.,* p. 619.
[355] For an explanation of Freud's views on determinism, *See* DALEY, J., *Freud and Determinism*, The Southern Journal of Philosophy, Vol. 9, Issue 2, 1971, p. 179.
[356] ARMINJON, M., *The Four Postulates of Freudian Unconscious Neurocognitive Convergences*, Frontiers in Psychology, Vol. 2:125, 2011, https://www.frontiersin.org/articles/10.3389/fpsyg.2011.00125/full.

between groups. A possible hypothesis, however, could be that the great majority of legal practitioners in the Mixed Group were individuals who had moved from their respective countries to Austria for study or work. Having experienced living in more countries and cultures, they may be more aware of the impacts of environmental factors on behavior.

Moreover, a great majority of respondents also agreed that these factors also influence physical and psychological predispositions. The results were similar across the three groups, with 75.6% of the Slovenian Group agreeing to the statement, compared to 72.8% of the Romanian Group and 89.3% of the Mixed Group.

These results confirm previous studies[357] that link environment and predispositions towards certain behaviours. See Table 5 for a full overview of the participants' responses regarding environmental determinism.

STATEMENT	LEVEL	SLOVENIA	ROMANIA	MIXED GROUP
My character and behavior are the result of environmental factors.	Strongly disagree	0 respondents (0%)	1 respondent (4.5%)	0 respondents (0%)
	Disagree	6 respondents (14.6%)	7 respondents (31.8%)	1 respondent (3.6%)
	Somewhat disagree	7 respondents (17.1%)	2 respondents (9.1%)	4 respondents (14.3%)
	Somewhat agree	18 respondents (43.9%)	8 respondents (36.4%)	9 respondents (32.1%)
	Agree	8 respondents (19.5%)	3 respondents (13.6%)	11 respondents (39.3%)
	Strongly agree	2 respondents (4.9%)	1 respondent (4.5%)	3 respondents (10.7%)
I believe that environmental factors (such as climate or habitat) influence my physical and psychological predispositions.	Strongly disagree	1 respondents (2.4%)	0 respondents (0%)	0 respondents (0%)
	Disagree	3 respondents (7.3%)	3 respondents (13.6%)	2 respondents (7.1%)
	Somewhat disagree	6 respondents (14.6%)	3 respondents (13.6%)	1 respondent (3.6%)
	Somewhat agree	13 respondents (31.7%)	6 respondents (27.3%)	7 respondents (25%)
	Agree	14 respondents (34.1%)	8 respondents (36.4%)	12 respondents (42.9%)
	Strongly agree	4 respondents (9.8%)	2 respondents (9.1%)	6 respondents (21.4%)

Table 5. Overview data environmental determinism

[357] *See* EHRENREICH, H., *The Impact of Environment of Abnormal Behavior and Mental Disease*, Science and Society, Vol. 18, Issue 5, 2017, p. 661-665; CABRERA, L., TESLUK, J., CHAKRABORTI, M., MATTHEWS, R., ILLES, J., *Brain Matters: From Environmental Ethics to Environmental Neuroethics*, Environmental Health, Vol. 15, Issue 20, 2016, p. 1-5; HEEKIN, K., POLIVKA, L., *Environmental and Economic Factors Associate with Mental Illness*, The Claude Pepper Centre, 2015, p. 1-15.

6.1.5. Social determinism

Social determinism is a term used for the view that humans' behavior is fixed by our upbringing and social conditioning.[358] This term encompasses historical and economic factors, just to mention a few. For example, economic determinism was associated with Karl Marx and his theory of historical materialism. Marx argued that all human action is the result of the need to engage in certain kinds of economic activity to satisfy our needs.[359] Consequently, according to him, the sort of person we are is the result of the kind of activity we engage in. He also suggested that "the religious, artistic, moral and philosophical beliefs within a society are determined by the political circumstances which take hold within the society".[360]

Researchers have investigated social factors relating to delinquency in the past decades. Among these, Denno lists factors that include weak attachment to the neighborhood, for example "frequent moves, number of multifamily dwellings, population density and dangerous physical environment".[361] Many theories of crime, Denno adds, emphasize "the social and psychological characteristics of delinquency in terms of controls or social bonds that create and perpetuate acceptable standards of behavior".[362] But the results of these studies can be very divided. Let us look at a specific example. In a longitudinal study conducted by McCord, the researcher examined the effect of parental role models on crime. The study postulated that "children are most apt to imitate their criminal father when home conditions are unstable".[363] Interestingly, however, other studies have disapproved the conclusions of this study.[364] We see thus that studies on socioeconomic and sociological factors have reached conflicting conclusions. Hence the reason we wanted to test some of these issues in our study, as well.

---

[358] *See* BURMEISTER, S., *Innovation as a Possibility. Technological and Social Determinism in Their Dialectical Resolution*, In BURMEISTER, S., BERNBECK, R., The Interplay of People and Technologies. Archeological Cases on Innovations, Berlin Studies of Ancient World, Vol. 43, 2017, p. 21-42.
[359] SHERMAN, H., *Marx and Determinism*, Journal of Economic Issues, Vol. 15, 1981, p. 61-71.
[360] JONATHAN, W., Karl Marx, The Stanford Encyclopedia of Philosophy, 2017, ZALTA, E. (ed.), https://plato.stanford.edu/archives/win2017/entries/marx/.
[361] DENNO, D., *Ibid.,* p. 648.
[362] *Ibid.,* p. 649.
[363] *See* MCCORD, W., *The Effects of Parental Role Model on Criminality*, Reading in Juvenile Delinquency, Vol. 14, Issue 3, 1958, p. 66.
[364] *See* ANDREW, J., *Delinquency, Sex, and Family Variables*, Social Biology, Vol. 23, 1976, p. 168-171. The author argues that there is a strong link between larger families and delinquency. He claims that families with four or more children, appear to have a higher incidence of delinquency among males than smaller families.

A great majority of our respondents (91.5%) agreed that social expectations and interpersonal interactions determine an individual's behavior and personality. Moreover, an almost unanimous majority agreed (99.2%) that past and current experiences mold the abilities and personality of a person. In this sense, 96.9% of total respondents agreed that upbringing and education strongly influences one's individual choices. Through these statements, the respondents undeniably show the important role of social determinism in the expression of free will (agency).

Asked whether free agency (will) manifests itself only when one is not the victims of oppressive social conditions such as wealth, class, race or gender, a considerable number of respondents – 43.9% for Slovenians, 63.3% for Romanians, and 42.8% for the Mixed Group – agreed. These numbers confirm the recognized correlation between free agency and the freedom to act by not being suppressed in any way. The respondents additionally agreed that even the health of an individual can play an important role in the way agency is exercised, with 56.1% of Slovenians, 36.3% of Romanians and 57.1% of the Mixed Group, agreeing that is the case. Nonetheless, a high proportion (87.6%) across all three groups confirm that physical problems and mental disturbances also influence the agency of an individual. The table below contains all the statements and the ratings obtained. See Table 6 for a full overview of the participants' responses regarding social determinism.

STATEMENT	LEVEL	SLOVENIA	ROMANIA	MIXED GROUP
I believe that social phenomena (such as social expectations and interpersonal interactions) can determine an individual's behavior and personality.	Strongly disagree	0 respondents (0%)	0 respondents (0%)	0 respondents (0%)
	Disagree	1 respondents (2.4%)	3 respondents (13.6%)	0 respondents (0%)
	Somewhat disagree	2 respondents (4.9%)	1 respondent (4.5%)	0 respondents (0%)
	Somewhat agree	10 respondents (24.4%)	7 respondents (31.8%)	7 respondents (25%)
	Agree	23 respondents (56.1%)	8 respondents (36.4%)	11 respondents (39.3%)
	Strongly agree	5 respondents (12.2%)	3 respondents (13.6%)	10 respondents (35.7%)
I believe that people's past and current experiences mold their abilities and personalities.	Strongly disagree	0 respondents (0%)	0 respondents (0%)	0 respondents (0%)
	Disagree	0 respondents (0%)	0 respondents (0%)	0 respondents (0%)
	Somewhat disagree	1 respondents (2.2%)	0 respondents (0%)	0 respondents (0%)
	Somewhat agree	7 respondents (17.1%)	2 respondents (9.1%)	4 respondents (14.2%)
	Agree	18 respondents (43.9%)	15 respondents (68.2%)	12 respondents (42.9%)
	Strongly agree	15 respondents (36.6%)	5 respondents (22.7%)	12 respondents (42.9%)
I believe that my	Strongly disagree	0 respondents (0%)	0 respondents (0%)	0 respondents (0%)

current choices are influenced by my upbringing and education.	Disagree	0 respondents (0%)	1 respondent (4.5%)	0 respondents (0%)
	Somewhat disagree	0 respondents 0%)	1 respondent (4.5%)	0 respondents (0%)
	Somewhat agree	6 respondents (14.6%)	0 respondents (0%)	7 respondents (25%)
	Agree	19 respondents (46.3%)	13 respondents (59.1%)	14 respondents (50%)
	Strongly agree	16 respondents (39%)	7 respondents (31.8%)	7 respondents (25%)
I believe that free agency manifests itself only when we are not the victims of oppressive social conditions such as wealth, class, race, gender.	Strongly disagree	1 respondents (2.4%)	0 respondents (0%)	1 respondent (3.6%)
	Disagree	12 respondents (29.3%)	8 respondents (36.4%)	2 respondents (7.1%)
	Somewhat disagree	4 respondents (9.8%)	1 respondent (4.5%)	8 respondents (28.6%)
	Somewhat agree	5 respondents (12.2%)	1 respondent (4.5%)	8 respondents (28.6%)
	Agree	15 respondents (36.6%)	6 respondents (27.3%)	8 respondents (28.6%)
	Strongly agree	4 respondents (9.8%)	6 respondents (27.3%)	1 respondent (3.6%)
I believe that health is not a factor in having free agency, as we have free agency as long as we are alive.	Strongly disagree	3 respondents (7.3%)	1 respondent (4.5%)	2 respondents (7.1%)
	Disagree	15 respondents (36.6%)	5 respondents (22.7%)	6 respondents (21.4%)
	Somewhat disagree	5 respondents (12.2%)	2 respondents (9.1%)	8 respondents (28.6%)
	Somewhat agree	8 respondents (19.5%)	2 respondents (9.1%)	7 respondents (25%)
	Agree	4 respondents (9.8%)	10 respondents (45.4%)	3 respondents (10.7%)
	Strongly agree	6 respondents (14.6%)	2 respondents (9.1%)	2 respondents (7.1%)
I believe there are physical problems (physical illness) and mental disturbances which may interfere with free agency.	Strongly disagree	1 respondents (2.4%)	0 respondents (0%)	0 respondents (0%)
	Disagree	3 respondents (7.3%)	2 respondents (9.1%)	0 respondents (0%)
	Somewhat disagree	2 respondents (4.9%)	1 respondent (4.5%)	2 respondents (7.1%)
	Somewhat agree	10 respondents (24.4%)	2 respondents (9.1%)	11 respondents (39.3%)
	Agree	20 respondents (48.8%)	11 respondents (50%)	10 respondents (35.7%)
	Strongly agree	5 respondents (12.2%)	6 respondents (27.3%)	5 respondents (17.9%)

Table 6. Overview data social determinism

6.1.6. Intelligence and free agency

We recognized that a more controversial issue in assessing criminal responsibility concerns individual differences in intellectual abilities. For instance, some studies claim that "delinquents or criminals differ from non-criminals in intellectual functioning or school achievements". [365] Other studies question whether any definite difference exists at

[365] ERICKSON, M., *Delinquency in a Birth Cohort: A new Direction in Criminological Research*, Journal of Criminal Law and Criminology, Vol. 64, Issue 3, 1974, p. 362.

all. As Freeman notes "the nature and source of specific differences in intellectual functioning are not clear". [366] To that Denno adds that "some researchers attribute lower scores in general aptitude among delinquents or criminals to a generalized intellectual disinterest".[367]

Denno makes the important remark "that courts continue to appear mixed in their consideration of mental and emotional deficits when determining competency to stand trial or culpability in general".[368] For example, she notes that attention deficit disorder (ADD) and minimal brain dysfunction (MBD) have already for decades played a role in legal cases and used by defendants in order to argue that their behavior should be excused.

According to Denno most of the excuses associated with the ADD-MBD complex include "prenatal and birth trauma, neurodevelopmental lag, minor physical anomalies, genetic transmission and disorganized or chaotic living environments".[369] However, the problem with this excuses is that although studies show that some disorders (such as ADD complex) are related to the disabilities mentioned above, "research has not yet fully clarified how select psychological and biological characteristics interact or relate to responsibility".[370] Since similar questions arise very frequently in courts we also wanted to directly test the beliefs of the legal practitioners.

When asked whether levels of intelligence place restriction on free agency, a majority of respondents (67.3%) agreed that is the case. On the other hand, around a third of all respondents, with a potentially interesting difference noted among the groups on this response, with 44% of the Slovenian group, 27.3% of the Romanian Group and 28.6% of the Mixed Group agreeing that free agency and intelligence are unrelated. We do not have an explanation for these differences; they might be again attributed to either societal or cultural norms or to something completely different. This is for sure a question that would be interesting to further explore in another study. See Table 7 below for a full overview of the participants' responses regarding intelligence and free agency.

---

[366] FREEMAN, J., *The Relationship Between Lower Intelligence, Crime and Custodial Outcomes: A Brief Literary Review of a Vulnerable Group*, Vulnerable Groups and Inclusion, Vol. 3, Issue 1, 2012, p. 14.
[367] DENNO, D., *Ibid.,* p. 641.
[368] *Ibid.,* p. 642.
[369] *Ibid.,* p. 644.
[370] *Ibid.*, p. 645.

STATEMENT	LEVEL	SLOVENIA	ROMANIA	MIXED GROUP
When I make up my mind, it is not just a matter of how my brain works.	Strongly disagree	2 respondents (4.9%)	0 respondents (0%)	0 respondents (0%)
	Disagree	5 respondents (12.2%)	1 respondent (4.5%)	3 respondents (10.7%)
	Somewhat disagree	5 respondents (12.2%)	0 respondents (0%)	3 respondents (10.7%)
	Somewhat agree	9 respondents (22%)	3 respondents (13.6%)	6 respondents (21.4%)
	Agree	16 respondents (39%)	16 respondents (72.7%)	12 respondents (42.9%)
	Strongly agree	4 respondents (9.8%)	2 respondents (9.1%)	4 respondents (14.3%)
I believe levels of intelligence place restriction on free agency.	Strongly disagree	2 respondents (4.9%)	0 respondents (0%)	1 respondent (3.6%)
	Disagree	6 respondents (14.6%)	5 respondents (22.7%)	5 respondents (17.9%)
	Somewhat disagree	6 respondents (14.6%)	2 respondents (9.1%)	3 respondents (10.7%)
	Somewhat agree	12 respondents (29.3%)	4 respondents (18.2%)	6 respondents (21.4%)
	Agree	13 respondents (31.7%)	7 respondents (31.8%)	10 respondents (35.7%)
	Strongly agree	2 respondents (4.9%)	4 respondents (18.2%)	3 respondents (10.7%)
I believe free agency and intelligence are unrelated.	Strongly disagree	5 respondents (12.2%)	4 respondents (18.2%)	0 respondents (0%)
	Disagree	11 respondents (26.8%)	9 respondents (40.9%)	11 respondents (39.3%)
	Somewhat disagree	7 respondents (17.1%)	3 respondents (13.6%)	8 respondents (28.6%)
	Somewhat agree	5 respondents (12.2%)	0 respondents (0%)	2 respondents (7.1%)
	Agree	9 respondents (22%)	6 respondents (27.3%)	5 respondents (17.9%)
	Strongly agree	4 respondents (9.8%)	0 respondents (0%)	1 respondent (3.6%)

Table 7. Overview data brain, intelligence and free will

6.1.7. Age and free agency

Another set of questions involved age and free agency, which has been a topic considered in a number of studies performed so far. In a study conducted by Wente et al., the authors explored the development of free will beliefs across cultures.[371] Departing from Wente's results, Mele, in his study, concluded that free will in ordinary's people mind is a psychological process.[372] When he asked whether free will is something that humans are born with or develop with age, the majority of his participants (71%) reported that an agent's capacity for free will develops over the life span, compared to 21% who viewed

[371] *See* WENTE, A., BRIDGERS, S., ZHAO, X., SEIVER, E., ZHU, L., GOPNIK, A., *How Universal Are Free Will Beliefs? Cultural Differences in Chinese and US 4- and 6-Year-Olds, Child Development*?, Vol. 87, Issue 3, June 2016, p. 666-676.
[372] MELE, A., *Surrounding Free Will: Philosophy, Psychology and Neuroscience*, Oxford University Press, 2015, New York, p. 32.

free will as an innate, unchanging module.[373]

Comparatively, in our empirical study, 70.7% of the Slovenians agreed that free agency starts manifesting at an early age,[374] compared to 59.1% of Romanians and 75% of the respondents in the Mixed Group. This shows the reason why many legal systems continue to ascribe legal responsibility from a very young age, although this age varies in different countries.[375]

Moreover, just like in Mele's experiment, our respondents believe that agency develops gradually with 41.5% of Slovenians, 72.8% of Romanians and 64.3% of Mixed Group supporting this view. Only a few respondents (18.4%) across the three groups believed that agency is limited and manifests itself only in mature adults. See Table 8 below for a full overview of the participants' responses regarding age and free agency.

STATEMENT	LEVEL	SLOVENIA	ROMANIA	MIXED GROUP
I believe that free agency starts manifesting at an early age.	Strongly disagree	0 respondents (0%)	0 respondents (0%)	0 respondents (0%)
	Disagree	7 respondents (17.1%)	2 respondents (9.1%)	2 respondents (7.1%)
	Somewhat disagree	5 respondents (12.2%)	0 respondents (0%)	5 respondents (17.9%)
	Somewhat agree	8 respondents (19.5%)	4 respondents (18.2%)	7 respondents (25%)
	Agree	14 respondents (34.1%)	5 respondents (22.7%)	14 respondents (50%)
	Strongly agree	7 respondents (17.1%)	4 respondents (18.2%)	0 respondents (0%)
I believe that free agency may not necessarily exhibit itself in small children, but gradually develops at a later stage.	Strongly disagree	3 respondents (7.3%)	0 respondents (0%)	1 respondent (3.6%)
	Disagree	15 respondents (36.6%)	2 respondents (9.1%)	2 respondents (7.1%)
	Somewhat disagree	6 respondents (14.6%)	4 respondents (18.2%)	7 respondents (25%)
	Somewhat agree	7 respondents (17.1%)	6 respondents (27.3%)	9 respondents (32.1%)
	Agree	10 respondents (24.4%)	8 respondents (36.4%)	8 respondents (28.6%)
	Strongly agree	0 respondents (0%)	2 respondents (9.1%)	1 respondent (3.6%)
I believe that free agency is limited and manifests itself only in mature	Strongly disagree	8 respondents (19.5%)	4 respondents (18.2%)	1 respondent (3.6%)
	Disagree	21 respondents (51.2%)	15 respondents (68.2%)	14 respondents (50%)
	Somewhat	3 respondents	1 respondent	7 respondents

[373] *Ibid.*, p. 32.
[374] The age of criminal responsibility starts at 14 years old both in Slovenia and Romania.
[375] *See* PAPADODIMITRAKI, Y., *Minimum Age of Criminal Responsibility – Comparative Analysis*, Centre for Youth and Criminal Justice, 2016, p. 1-5, http://www.cycj.org.uk/wp-content/uploads/2016/03/MACR-International-Profile-Sweden.pdf.; DWYER, C., MCALISTER, S., *Raising the Age of Criminal Responsibility: Endless debate, Limited Progress*, ARK Feature, No. 3, 2017, p. 1-3, https://pure.qub.ac.uk/portal/files/139101063/Ark_Feature_MACR.pdf.

adults.	disagree	(7.3%)	(4.5%)	(25%)
	Somewhat agree	6 respondents (14.6%)	0 respondents (0%)	3 respondents (10.7%)
	Agree	3 respondents (7.3%)	2 respondents (9.1%)	3 respondents (10.7%)
	Strongly agree	0 respondents (0%)	0 respondents (0%)	0 respondents (0%)

Table 8. Overview data age and free agency

6.1.8. Determinism/indeterminism and free agency

Since we have already presented in detail the theoretical aspects of determinism and indeterminism in the previous chapters of this thesis, on this occasion, we will focus on providing and discussing the results of the questionnaire.

A majority of the Slovenian respondents (53.6%) and participants of the Mixed Group (71.3%) believed that even if one's choices were determined by environmental, genetic and other factors, one is still responsible for his or her actions. The Romanian responders agreed to this statement only in a proportion of 49.9%. Similarly, a significant majority (58.2%) of the respondents across the three groups agreed that even if one's choices were completely determined, one would still have free agency. More precisely, 58.5% of the Slovenians, 68.1% of the Romanians and 50.1% of the Mixed Group presented this view.

In our opinion, these results confirm in an empirical way the existence of various doctrines on determinism and indeterminism in the philosophical field. Our results also validate that these debates are not ongoing only in the scientific community, but also in the legal community. These results also support our hypothesis that a majority of legal practitioners display compatibilist views with regard to free will or agency. It would be, however, interesting for further studies to understand, besides compatibilism, which doctrines are believed by the remaining legal practitioners, who did not fall into the group of compatibilists. See Table 9 below for a full overview of the participants' responses regarding determinism and free agency.

STATEMENT	LEVEL	SLOVENIA	ROMANIA	MIXED GROUP
If all my choices were determined by environmental, genetic and other factors, then I cannot be responsible for my	Strongly disagree	6 respondents (14.6%)	1 respondent (4.5%)	9 respondents (32.1%)
	Disagree	14 respondents (34.1%)	7 respondents (31.8%)	9 respondents (32.1%)
	Somewhat disagree	2 respondents (4.9%)	3 respondents (13.6%)	2 respondents (7.1%)
	Somewhat agree	7 respondents (17.1%)	3 respondents (13.6%)	5 respondents (17.9%)
	Agree	7 respondents	7 respondents	2 respondents

actions.		(17.1%)	(31.8%)	(7.1%)
	Strongly agree	5 respondents (12.2%)	1 respondent (4.5%)	1 respondent (3.6%)
Even if my choices were completely determined, I would still have free agency.	Strongly disagree	2 respondents (4.9%)	0 respondents (0%)	2 respondents (7.1%)
	Disagree	10 respondents (24.4%)	3 respondents (13.6%)	9 respondents (32.1%)
	Somewhat disagree	5 respondents (12.2%)	4 respondents (18.2%)	3 respondents (10.7%)
	Somewhat agree	7 respondents (17.1%)	3 respondents (13.6%)	5 respondents (17.9%)
	Agree	11 respondents (26.8%)	7 respondents (31.8%)	5 respondents (17.9%)
	Strongly agree	6 respondents (14.6%)	5 respondents (22.7%)	4 respondents (14.3%)
I have free agency in that at least some of my choices are not determined by environment genetic or other factors.	Strongly disagree	1 respondents (2.4%)	0 respondents (0%)	0 respondents (0%)
	Disagree	6 respondents (14.6%)	3 respondents (13.6%)	1 respondent (3.6%)
	Somewhat disagree	2 respondents (4.9%)	2 respondents (9.1%)	2 respondents (7.1%)
	Somewhat agree	12 respondents (29.3%)	3 respondents (13.6%)	8 respondents (28.6%)
	Agree	16 respondents (39%)	14 respondents (63.6%)	11 respondents (39.3%)
	Strongly agree	4 respondents (9.8%)	0 respondents (0%)	6 respondents (21.4%)

Table 9. Overview data determinism/ indeterminism and free will

6.1.9. Morality and free agency

We also presented in the third chapter some of the controversial issues related to the interaction between morality and free agency. Since legal practitioners deal on daily basis with questions related to morality,[376] we considered it necessary to introduce a series of questions testing their beliefs on this aspect. Asked whether behavior must be based on free agency in order to be considered moral, 68.3% of the Slovenian respondents agreed, compared to 68.1% of the Romanians and 53.6% of the Mixed Group.

More interestingly, a majority of the respondents believed that moral behavior is only a label used to describe behaviors which are in accord with the society's norms. The answers to this question were rather consistent among the three groups, with 48.8% of the Slovenians, 54.5% of the Romanians and 53.6% of the Mixed Group agreeing on this. We can see that morality remains an area in which there is a considerable divide between the views of the respondents, and therefore we encourage more research on this topic.

[376] *See* WALDRON, J., *Judges as Moral Reasoners*, International Journal of Constitutional Law, Vol. 7, Issue 1, 2009, p. 2-24; MOORE, M., *The Various Relations between Law and Morality in Contemporary Legal Philosophy*, An International Journal of Jurisprudence and Philosophy of Law, Ratio Juris, Vol. 25, Issue 4, 2012, p. 435-471.

Regardless of their views on whether morality is a construct of the society, an overwhelming number of the respondents (95.6%) reported their conviction that human beings actively choose their actions and are responsible for the consequences of their actions. See Table 10 below for a full overview of the participants' responses regarding morality and free agency.

STATEMENT	LEVEL	SLOVENIA	ROMANIA	MIXED GROUP
I believe that behavior must be based on free agency in order to be considered moral.	Strongly disagree	1 respondent (2.4%)	1 respondent (4.5%)	0 respondents (0%)
	Disagree	8 respondents (19.5%)	3 respondents (13.6%)	8 respondents (28.6%)
	Somewhat disagree	4 respondents (9.8%)	3 respondents (13.6%)	5 respondents (17.9%)
	Somewhat agree	9 respondents (22%)	2 respondents (9.1%)	7 respondents (25%)
	Agree	16 respondents (39%)	10 respondents (45.4%)	4 respondents (14.3%)
	Strongly agree	3 respondents (7.3%)	3 respondents (13.6%)	4 respondents (14.3%)
I believe that moral behavior is not dependent on free agency because morality is just a label used to describe behaviors which are in accord with the society's norms.	Strongly disagree	7 respondents (17.1%)	1 respondent (4.5%)	4 respondents (14.3%)
	Disagree	11 respondents (26.8%)	8 respondents (36.4%)	5 respondents (17.9%)
	Somewhat disagree	3 respondents (7.3%)	1 respondent (4.5%)	4 respondents (14.3%)
	Somewhat agree	8 respondents (19.5%)	6 respondents (27.3%)	5 respondents (17.9%)
	Agree	10 respondents (24.4%)	5 respondents (22.7%)	10 respondents (35.7%)
	Strongly agree	2 respondents (4.9%)	1 respondent (4.5%)	0 respondents (0%)
I believe that human beings actively choose their actions and are responsible for the consequences of their actions.	Strongly disagree	0 respondents (0%)	0 respondents (0%)	0 respondents (0%)
	Disagree	0 respondents (0%)	2 respondents (9.1%)	0 respondents (0%)
	Somewhat disagree	0 respondents (0%)	0 respondents (0%)	2 respondents (7.1%)
	Somewhat agree	5 respondents (12.2%)	3 respondents (13.6%)	5 respondents (17.9%)
	Agree	18 respondents (43.9%)	11 respondents (50%)	14 respondents (50%)
	Strongly agree	18 respondents (43.9%)	6 respondents (27.3%)	7 respondents (25%)

Table 10. Overview data morality and free agency

6.1.10. Attitude towards punishment

The last statements of the questionnaire deal with general questions meant to test legal practitioners' general attitudes on the link between free will (or lack thereof) and punishment. These results should be looked at in connection with the results obtained in the second part of the questionnaire in which the respondents had to provide a punishment for a specific case scenario. These latter results will be addressed into more detail below.

To the question regarding whether one should think more in terms of punishment (retribution) rather than rehabilitation[377] when crimes are premeditated, the respondents' opinions were varied. It seems that overall, the Slovenian Group was more inclined towards choosing a punishment rather than rehabilitation, with 61.1% of Slovenians agreeing to this statement, compared to 45.4% of Romanians and 35.7% of Mixed Group.

The majority of respondents (56.1%) across the three groups disagreed that for premediated offences, for example, the judge should apply the maximum provided by the criminal law. Therefore, as regards prevention through higher punishments for the first offence, the majority of legal practitioners (58.2%) across the three groups considered that a higher sentence does not necessarily mean that a further offence could be prevented. See Table 11 below for a full overview of the participants' responses regarding attitudes toward punishment.

STATEMENT	LEVEL	SLOVENIA	ROMANIA	MIXED GROUP
I believe that when the crimes are premeditated, we should think more in terms of punishment than rehabilitation.	Strongly disagree	2 respondents (4.9%)	2 respondents (9.1%)	4 respondents (14.3%)
	Disagree	10 respondents (24.4%)	6 respondents (27.3%)	6 respondents (21.4%)
	Somewhat disagree	4 respondents (9.8%)	4 respondents (18.2%)	8 respondents (28.6%)
	Somewhat agree	9 respondents (22%)	3 respondents (13.6%)	3 respondents (10.7%)
	Agree	9 respondents (22%)	7 respondents (31.8%)	4 respondents (14.3%)
	Strongly agree	7 respondents (17.1%)	0 respondents (0%)	3 respondents (10.7%)
I believe that for premeditated crimes the judges should apply the maximum of punishment provided by the criminal laws.	Strongly disagree	2 respondents (4.9%)	1 respondent (4.5%)	4 respondents (14.3%)
	Disagree	12 respondents (29.3%)	7 respondents (31.8%)	7 respondents (25%)
	Somewhat disagree	6 respondents (14.6%)	5 respondents (22.7%)	6 respondents (21.4%)
	Somewhat agree	5 respondents (12.2%)	3 respondents (13.6%)	6 respondents (21.4%)
	Agree	9 respondents (22%)	5 respondents (22.7%)	2 respondents (7.1%)
	Strongly agree	7 respondents (17.1%)	1 respondent (4.5%)	3 respondents (10.7%)
I believe that further offences could be prevented, if first offenders were not given light	Strongly disagree	2 respondents (4.9%)	2 respondents (9.1%)	2 respondents (7.1%)
	Disagree	15 respondents (36.6%)	11 respondents (50%)	8 respondents (28.6%)
	Somewhat disagree	5 respondents (12.2%)	0 respondents (0%)	8 respondents (28.6%)
	Somewhat agree	11 respondents	7 respondents	5 respondents

[377] The topic of retribution versus rehabilitation is an ongoing heated debated in criminal law in various legal systems across the world. For a better understanding of the debates, *See* BERNARD, J., HAAS, K., SILER, B., WEATHERBY, A., *Perceptions of Rehabilitation and Retribution in the Criminal Justice System: A Comparison of Public Opinion and Previous Litera*ture, Journal of Forensic Sciences, Vol. 5, Issue 3, 2017, p. 1-14.

sentences		(26.8%)	(31.8%)	(17.9%)
	Agree	5 respondents (12.2%)	0 respondents (0%)	3 respondents (10.7%)
	Strongly agree	3 respondents (7.3%)	2 respondents (9.1%)	2 respondents (7.1%)

Table 11. Overview data attitudes towards punishment

6.2. Conclusions on the First Part of the Questionnaire

Based on the results presented above, a series of conclusions could be reached. These conclusions address the beliefs of legal practitioners on determinism and free will. They also discuss the possible reasons why legal practitioners displayed different views.

6.2.1 Beliefs of legal practitioners on determinism and free will

In 1999, Kane claimed that "most ordinary persons believe that there's some kind of conflict between freedom and determinism".[378] In his study, in 2005, Nahmias presents contradictory conclusions, noting that in his experiment most people "do not judge determinism to be incompatible with an agent's acting of his own free will or with his being morally for his action".[379] Later on, in his paper "Folk Intuitions on Free Will", in 2006, Nichols concludes that "in some contexts, people treat agency as indeterminist, while in others as determinist. Some people treat responsibility as incompatible with determinism, while in other as compatible with determinism".[380] These various claims have left us with a plethora of interpretations regarding folk institutions, hence the reason we found it necessary to test it on our participants.

In summary, our results are in line with Nahmia's conclusions. From the results of the statements analyzed above we can infer that the majority of legal respondents believe that humans are to some degree determined (by religious, biological, and environmental factors, as well as age and intelligence), but at the same time that they possess the agency for their choices. Based on this, we could safely argue that the profile of the majority of the legal practitioners that took part in our study could be labelled as agreeing with compatibilism and "degree determinism"[381] – the view in which free will can co-exist

[378] KANE, R., *Ibid.*, 1999, p. 217.
[379] NAHMIAS, E., MORRIS, S., NADELHOFFER, T., TUNER, J., *Ibid.*, 2005, p. 569.
[380] NICHOLS, S., *Ibid.*, 2006, p. 57.
[381] "Degree determinism" is a concept used by DENNO, D., *Ibid.,* p. 644. For other studies where the concept is used *See* MILES, J., *The Free Will Delusion: How we Settled for the Illusion of Morality*, Matador, Leicestershire, 2015, p. 250. For a full account on "degree determinism, *See* MOORE, M., *Causation and Excuses*, California Law Review, Vol. 71, Issue 4, 1985, p. 1114-1118.

with the idea of humans as determined persons. Degree determinisms implies the degree of "freedom of choice on a continuum with varying degrees of free will and determinisms existing in all actions depending on a variety of factors",[382] such as those mentioned in the statements given to the respondents.

6.1.2. Cultural differences in the beliefs of legal practitioners

A second main conclusion is that there are few cultural differences in the beliefs of legal practitioners across the three groups in our study.

There is not much written on the nexus between free will and culture, besides a very limited number of papers.[383] Sarkissin et al.[384] make an important remark on the culture factor, by noting that most of the studies conducted so far on free will were conducted on American participants or individuals coming from Western countries.[385] He rightfully asked the question whether these studies were telling us anything "fundamental about human nature, or whether they tell us something about the local contemporary Western culture".[386] We believe that the results of our study contribute to the argument that there are a number of cultural differences related to beliefs regarding free will that vary from one country to another. The idea of "acting freely" also can also have different meanings in different cultures.[387]

The cultural differences that stood out in our study concern religious determinism, as well as general attitudes related to morality. For instance, participants in the Romanian Group display stronger beliefs in religious determinism as compared to the Slovenian Group. Our finding is in line with the results of previous studies, which note that modern religions operate under *some* (our emphasis) assumption of human agency and the belief that free will is endorsed by high percentage of people from around the world in different cultures.[388]

---

[382] DENNO, D., *Ibid.,* p. 644.
[383] WENTE, A., BRIDGERS, S., ZHAO, X., SEIVER, E., ZHU, L., GOPNIK, A, *Ibid.*, 2016, p. 676.
[384] SARKISSIN, H., CHATTERJEE, A., BRIGARD, F., KNOBE, J., NICHOLS, S., SIRKER, S., *Is Belief in Free Will a Cultural Universal?*, Mind and Language, Vol. 25, Issue 3, 2010, p. 353.
[385] Sarkassin et al. decided to test these intuitions on a wider group of subjects coming from United States, Hong King, India and Colombia. What they found was that the majority of subjects believed that our universe is indeterministic. Based on that, they also noted that moral responsibility is not compatible with determinism.
[386] SARKISSIN, H. et al., *Ibid.,* p. 354.
[387] Our results are also in line with the results of Sarkissin and his colleagues.
[388] SARKISSIN, H. et al., *Ibid.,* p. 353.

However, our results also validate studies[389] that argue that people do differ in the degree to which they perceive their free agency as being free and the extent to which they endorse the belief in it. Our results show that compared with Romanians, Slovenians do present a stronger belief in free will. In our opinion, this is reflected in the fact that Slovenians believe that there are just a few instances in which the agency of an individual is restricted and hence a possible explanation why in general they tend to attribute harsher punishments in the study. This confirms previous studies[390] that indicate that the strength of the belief in free will predicts intolerance for unethical behavior in others as well as support for harsher criminal punishment.[391]

But culture is also intimately connected to values, upon which the core principles and ideals of a community is based. Previous findings of Feldman et al. support the idea that "the notion of free will and freedom of choice is cultural and meant to facilitate coexistence with others in society".[392] We also argue that the belief in free will is related to the concept of "values" and their meaning for the society that we discussed in Chapter II. To take further Feldman's et al. conclusion, "it is plausible that cross-cultural differences in regard to free will beliefs are not limited to the extent to which different cultures endorse the belief in free will, but also to the meaning that they give free will".[393] The question of "meaning" is very interesting. Something acquires "meaning" or becomes "meaningful" based on the importance that one attaches to it. In other words, one culture society might see free will as a "scientific fact", while other simply as a "value". We believe that the debate between free will as a value or free will as a fact is vital in solving this puzzle, as the variations in opinion seem to be so intimately connected to culture and its values. We believe that future research is needed to better understand these cultural variations.

---

[389] *See* CAREY, M., PAULHUS, D., *Worldview Implications of Believing in Free Will and/or Determinism: Politics, Morality and Punitiveness,* Journal of Personality, Vol. 81, 2013, p. 130-141; PAULHUS, D., CAREY, J., *Ibid.*, 2011, p. 96-104.

[390] For a series of studies supporting this thesis, *See* CLARK, C., *Free to Punish: A Motivated Account of Free Will Belief*, Journal of Personality and Social Psychology, Vol. 106, 2014, p. 501-513; SHARIFF, A., *Ibid.*, 2014, p. 1563-1570; MARTIN, N., RIGONI, D., VOHS, D., *Free Will Beliefs Predict Attitudes Toward Unethical Behaviour and Criminal Punishment*, Proceedings of National Academy of Science of the United States of America, Vol. 114, 2017, p. 7325-7330.

[391] GENSCHOW, O., RIGONI, D., BRASS, M., *Belief in Free Will Affects Causal Attribution when Judging Others' Behavior*, Proceedings of National Academy of Science of the United States of America, 2017, p. 1-6.

[392] FELDMAN, G, FARH, J., WONG, K., *Ibid.*, 2018, p. 308.

[393] *Ibid.*, p. 313.

6.3. Analysis: Second Part of the Questionnaire

In the second part of the questionnaire, legal practitioners from the three groups had to analyze five cases and assess the defendant's level of responsibility and assign punishment (or treatment). The fictional case scenarios presented to legal practitioners were designed in such a way as to determine which types of neuroscientific evidence would be acceptable in courts and how the legal practitioners' assessment of the individual's responsibility (i.e. guiltiness, type and length of punishment) would be influenced by this evidence. The case scenarios were also meant to test whether legal practitioners display any resistance to "new science", particularly advancements in neuroscience. Concurrently, the scenarios tested general beliefs of legal practitioners on moral and criminal responsibility. It aimed to understand at which point may the behavior of an individual could be considered out of his or her control and therefore, not blameworthy. By finding answers to these questions, it hoped to contribute to drawing the line between when responsibility ends and "excuse" or "justification" begins.

Before introducing each case scenario and the results, a few remarks are required in order to fully understand why each case was formulated as it was. It was argued in some of the studies presented in Chapter III that, in most of legal systems, neuroscience evidence will not be useful in criminal trials, unless a significant cognitive or volitional impairment can be proved.[394] We wanted to test this claim and see how judges and lawyers in our empirical study admit or present these neurological findings.

Sloboghin identifies at least five categories of neuroscience evidence. This categorization was made based on the existing neuroscientific cases presented in American courts.[395] Due to the limited amount of literature on this topic, it is difficult to assess whether other European criminal systems may have fully or partially adopted these categories. Yet, we believe that these categories could represent a good start in laying the foundations of evidence law in neuroscientific cases. In the following, we will briefly introduce each category, as each case scenarios below will align with one of the categories of neuroscientific evidence. In the analysis section, we will discuss any potential problems

[394] *See* SLOBOGHIN, C., *Neuroscience Nuance: Dissecting the Relevance of Neuroscience in Adjudicating Criminal Culpability*, SLOBOGHIN, C., *Neuroscience Nuance: Dissecting the Relevance of Neuroscience in Adjudicating Criminal Culpability*, Journal of Law and the Biosciences, Vol. 4, Issue 3, 2017, p. 577-593.
[395] *Ibid.*, p. 587.

with this categorization.

a) *Evidence of abnormality*: is evidence purporting to show that the defendant's brain is structurally or functionally different from a "healthy" or "normal" brain due to a neurological impairment. [396] For example, based on the results of structural magnetic resonance imaging (sMRI), this type of evidence might show a "reduced volume" in the frontal lobe (area associated with executive functions such as planning, decision making and regulation of impulses) or "reduced volume" in the left side of the limbic system (associated with regulation of emotions, decision making and regulation of impulses).

b) *"Cause-of-an-effect" evidence*: is evidence showing that the defendant's neurological impairment is common in criminals that display a certain antisocial behavior.[397] In other words, the defense attempts to show that the defendant's abnormality is similar to those seen in research with similarly impaired individuals that shows a higher occurrence of criminal behavior. If the defense is able to demonstrate this connection, the chances to be received by the court could be higher. An example here would be what the statisticians call the cause (e.g. frontal lobe damage or abnormality) of an effect (e.g. violence).[398]

c) *"Effect-of-a-cause" evidence*: is evidence that shows that the defendant's neurological impairment predisposed him to commit the crime.[399] This compares the prevalence of morally and criminally reprehensible behavior among those with neurological impairment to those who do not have such an impairment. An example would be research that would indicate that the rate of violence among people with frontal lobe damage is higher than in people without such damage.

d) *Individualized neuro-psychological findings compared against known performance baselines*: neurological testing results that show that the defendant has behavioral impairments that are legally relevant.[400] This is a type of evidence that might be

[396] For more details on this type of evidence, *See* SLOBOGHIN, C., *Ibid.*, p. 587-590.
[397] For more details on this type of evidence, *See* SLOBOGHIN, C., *Ibid.*, p. 590-591.
[398] There are studies showing the prisoners convicted of violent crimes have more incidence of frontal lobe damage than those who committed non-violent crimes. *See* BRYANT, E., SCOTT, M., GOLDEN, C., TORI, C., *Neurophysiological Deficits, Learning Disabilities and Violent Behaviour*, Journal of Consulting and Clinical Psychology, Vol. 52, 1984, p. 323.
[399] For more details on this type of evidence, *See* SLOBOGHIN, C., *Ibid.*, p. 591-594.
[400] For more details on this type of evidence, *See* SLOBOGHIN, C., *Ibid.*, p. 594-595.

combined with the third category above in order to show the criminogenic effects. For instance, these are standardized tests administered by neuroscientists and neuropsychologists to evaluate various domains such as an individual's capacity to control conduct, ability to plan, form intent and be cognizant of risks etc. This type of information is useful as it provides insights into the particular defendant's brain functioning.

e) *Individualized neuroscience findings compared against known legal baselines*: is evidence that the defendant's impairments are similar to impairments the law has recognized as exculpatory or mitigating in some areas where the Courts have already made this determination.[401] For instance, Sloboghin notes, if an expert could compare in a legally meaningful way the structure or functioning of a defendant's brain with the average of analogous results for juveniles or people with disabilities, the testimony could be considered highly relevant.[402] This use of neuroscience has been called "scientific stare decisis" – the notion that scientifically similar groups should be treated the same for legal purposes.

In the following, we will discuss the results, as well as the issues and main problems that were raised by the respondents. Each case scenario contains the presentation of an offence and the type of neuroscientific evidence that the defendant invoked in order to either excuse his/ her behavior or diminish his/ her legal responsibility. After reading the scenarios, the legal practitioners were asked to perform three tasks in order to determine:

a) whether the individual in the scenario should be held responsible for the act;

b) the kind of punishment or treatment that should be applied to the individual; and

c) the length of punishments (if any).

Just like in the first part of the questionnaire, for the first task, the legal practitioners circled a number from 1 to 6, showing whether they (1) strongly disagree, (2) disagree, (3) somewhat disagree, (4) somewhat agree, (5) agree or (6) strongly agree that the individual should be held responsible for the act. For the second task, the legal practitioners had to choose among a number of provided solutions. For the second task, regarding the type of treatment, the legal practitioners were allowed to select more than

[401] For more details on this type of evidence, *See* SLOBOGHIN, C., *Ibid.*, p. 19-20.
[402] SLOBOGHIN, C., *Ibid.*, p. 19.

one checkbox, hence the reason why the percentages may not add up to 100%. We decided to allow this option as, in practice, most legal systems allow for certain medical treatment and prison punishment to be combined. By proceeding this way, we wanted to bring these scenarios as close as possible to "real life cases". For the third task, legal practitioners were asked to choose the length of a punishment between 0 and 25 years.

6.3.1. Results of Case scenario 1

The first case scenario was formulated as follows:

Mr. Smith, aged 37, is a teacher and he is being tried for having made sexual advances on his young stepdaughter. He was found to have a tumor in the right frontal lobe of his brain. His medical results showed that when the tumor was removed, his pedophilic behavior stopped. When the tumor recurred, the behavior also resumed.

CASE 1						
Should be held responsible for sexual advances						
	SLOVENIA		ROMANIA		MIXED GROUP	
Strongly disagree	1 respondent	(2.4%)	2 respondents	(9.1%)	1 respondent	(3.6%)
Disagree	4 respondents	(9.8%)	10 respondents	(45.5%)	7 respondents	(25%)
Somewhat disagree	2 respondents	(4.9%)	1 respondent	(4.5%)	3 respondents	(10.7%)
Somewhat agree	4 respondents	(9.8%)	1 respondent	(4.5%)	6 respondents	(21.4%)
Agree	13 respondents	(31.7%)	8 respondents	(36.4%)	6 respondents	(21.4%)
Strongly agree	17 respondents	(41.5%)	0 respondents	(0%)	5 respondents	(17.9%)
Kind of treatment/ punishment*						
	SLOVENIA		ROMANIA		MIXED GROUP	
Be found innocent and put in liberty	0 respondents	(0%)	1 respondent	(4.5%)	0 respondents	(0%)
Liberty with the obligation of not contacting the step daughter	6 respondents	(14.6%)	2 respondents	(9.1%)	9 respondents	(32.1%)
Compelled to medical treatment in a medical institution	24 respondents	(58.5%)	18 respondents	(81.8%)	21 respondents	(75%)
Sentenced for sexual advances and put into prison	20 respondents	(48.8%)	4 respondents	(18.2%)	7 respondents	(25%)
Other suggestion	7 respondents	(17%)	1 respondent	(4.5%)	4 respondents	(14.3%)

Average of punishment			
	SLOVENIA	ROMANIA	MIXED GROUP
Duration of punishment	6.38 years	6.34 years	3.17 years

*Table 12. General results Case 1 (*Respondents could select more than one checkbox, so percentages may add up to more than 100%)*

Determination of responsibility

When asked whether Mr. Smith should be held responsible for the sexual advances committed on his stepdaughter, a majority of the Slovenian and the Mixed groups, with 83% and 60.7%, respectively, agreed that the individual should be held responsible for sexual advances. However, the majority of Romanians (59%) disagreed, believing that in this case, the individual should not be held responsible for sexual advances.

We believe that the difference in the way Mr. Smith was evaluated by the three groups has to do with the type of neuroscientific evidence presented to the participants in the study. In this case, the legal practitioners were asked to evaluate evidence of a brain abnormality. The Slovenian and Mixed Group argued that since hypothetical cases like these are very rare in practice, very few defendants can present such a straightforward connection between neurology and behavior. As such, the majority of the respondents from those two groups believed that Mr. Smith's behavior could not be excused because this neurological abnormality provides an insufficient basis for making the necessary link to the immoral and unlawful behavior (in this case, the sexual advances).

Despite the fact that the abnormality in the brain is accepted as a mitigating circumstance for the behavior, it does not remove the culpability of Mr. Smith entirely for the Slovenian and Mixed Groups. That was not the case for the Romanian Group, who in a proportion of 59.1% believed that Mr. Smith should not be held responsible for sexual advances. In this situation, Romanian legal practitioners admitted the neuroscientific evidence on the presumption that the medical conclusions were correct. Compared to the Slovenian and Mixed Groups, the Romanian Group did not challenge the accuracy of the medical results and/ or of the neuroscientific evidence that was brought to be examined in the case.

Kind of punishment

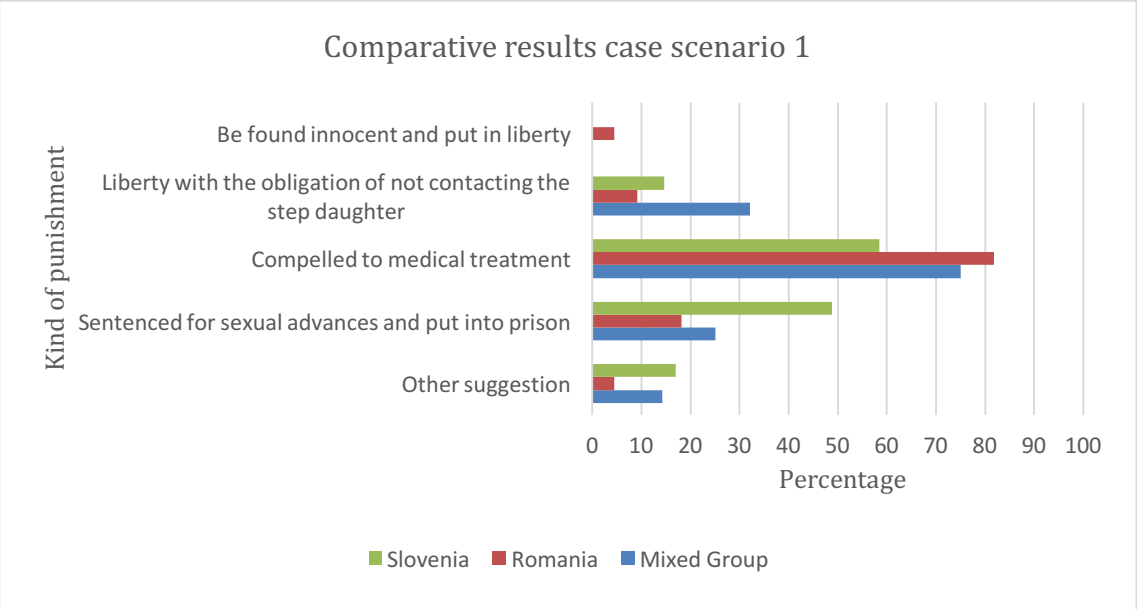

Chart 1: Kind of punishment case scenario 1

From the graph above, we can see that the greatest number of responses in all groups noted that Mr. Smith should be compelled to medical treatment in a medical institution. However, additionally it should be noted that the number of responses from the Slovenian group who believe that Mr. Smith should be put in prison is almost two times higher (48.8%) than in the other two groups – 18.2% for the Romanian and 25% for the Mixed Group. This would seem to indicate that many Slovenian respondents chose medical treatment *and* a prison sentence. This confirms the conclusions obtained in the first part of the questionnaire, according to which the Slovenian group placed a greater importance on punishment than on rehabilitation.

Interestingly enough, despite of their contrasting opinions of whether or not Mr. Smith should be held responsible, the majority of participants across all groups chose medical treatment as an appropriate solution to deal with Mr. Smith's condition. By choosing medical treatment, majority of all legal practitioners have understood that Mr. Smith requires medical attention for a condition that should not be imputable to him. Despite this, almost half of the Slovenian respondents (48.8%) decided that Mr. Smith should also serve some prison time.

Severity in punishment

Interestingly enough, when comparing the average punishment proposed by the

Slovenian (6.38 years) and Romanian respondents (6.34 years), we can note almost no differences. This result may seem confusing given that a majority of Romanian respondents agreed that the individual should not be held responsible for this action. It should be noted then that this result was skewed by a few Romanian responses which assigned much higher prison sentences.

It is also interesting to note the disparity with the Mixed Group, which reported lower punishments (3.17 years) that amounted to almost half of the average of the other groups. The difference can be potentially due to cultural issues or difference between the punishment systems of civil/ continental law judicial systems (Romania and Slovenia) and other judicial systems (the Mixed Group contained many legal practitioners for the common law legal system).

6.3.2. Results of Case scenario 2

The second case scenario was formulated as follows:

Mr. Jones, aged 35, was arrested for having raped three young women. In the pre-trial investigation, a scan of Mr. Jones' brain using PET (positron emission tomography) revealed serious damage to his frontal lobe, apparently as a result of a stroke. The medical expert showed that during the stroke, the frontal lobe (which is involved in judgment, impulse control and sexual behavior) has been irreversibly damaged and this explains Mr. Jones' abnormal sexual behavior.

CASE 2						
Should be held responsible for raping						
	SLOVENIA		ROMANIA		MIXED GROUP	
Strongly disagree	1 respondent	(2%)	2 respondents	(9.1%)	2 respondents	(7.1%)
Disagree	6 respondents	(14.6%)	10 respondents	(45.4%)	4 respondents	(14.3%)
Somewhat disagree	1 respondent	(2.4%)	1 respondent	(4.5%)	4 respondents	(14.3%)
Somewhat agree	6 respondents	(14.6%)	1 respondent	(4.5%)	5 respondents	(17.9%)
Agree	12 respondents	(29.3%)	8 respondents	(36.4%)	6 respondents	(21.4%)
Strongly agree	15 respondents	(36.6%)	0 respondents	(0%)	7 respondents	(25%)
Kind of treatment/ punishment						
	SLOVENIA		ROMANIA		MIXED GROUP	
Be found innocent and put in liberty	0 respondents	(0%)	1 respondent	(4.5%)	0 respondents	(0%)
Liberty under	7 respondents	(17.1%)	2 respondents	(9.1%)	3 respondents	(10.7%)

supervision						
Compelled to medical treatment in a medical institution	24 respondents	(58.5%)	18 respondents	(81.82 %)	20 respondents	(71.4%)
Sentenced for rape and put into prison	21 respondents	(51.2%)	4 respondents	(18.2%)	9 respondents	(32.1%)
Other suggestion	3 respondents	(7.3%)	1 respondent	(4.5%)	1 respondent	(3.6%)
Average of punishment						
	SLOVENIA		ROMANIA		MIXED GROUP	
Duration of punishment	7.52 years		5.04 years		7.10 years	

*Table 13. General results Case 2 (*Respondents could select more than one checkbox, so percentages may add up to more than 100%)*

Determination of responsibility

In this scenario, the legal practitioners were presented "cause-of-an-effect" evidence, and asked to determine whether the evidence showing the link between the damage to the frontal lobe and abnormal sexual behavior is acceptable. The legal practitioners had to effectively decide whether they accept the causal link between the stroke and the immoral and unlawful behavior (the rape) in order to determine whether Mr. Jones is legally responsible.

In principle, "cause-of-an-effect" evidence could be highly exculpatory in order to decide on a volitional impairment. However, when considering this type of evidence, some Slovenian legal practitioners noted disparities in the way scientific conclusions could be interpreted. In their view, the conclusion presented in this case, which argues for a causal link between a stroke and abnormal behavior, could also be interpreted as accepting that a high proportion of people that commit rape had a frontal lobe stroke at some point, which, of course, is not necessarily true. In their view, the evidence submitted does not indicate the probability with which people with strokes would also commit rape, which is the central question that a judge would want to have answered and which was not done in a satisfactory manner here.

Because this kind of evidence does not indicate how the asserted stroke contributed to the rape, some Slovenian legal practitioners reported that this type of evidence is not very useful for them as a basis to decide the legal responsibility of the individual. Though this

argument was only presented by some Slovenian respondents, it could generally explain the answers of the Slovenian Group, which agreed by a large majority (80.2%) that Mr. Jones should be held responsible for rape. The same view was expressed in a proportion of 64.3% by the Mixed Group.

However, the Romanian judges were of a different opinion, with only 41% of them agreeing that Mr. Jones should be held responsible. The Romanian legal practitioners believed that the evidence was acceptable to diminish the responsibility of the defendant, but not sufficient to remove it completely. As in the previous case, the Romanian legal practitioners did not challenge the evidence *per se* in as much detail as the Slovenians did, but the Romanian legal practitioners that did agree that Mr. Jones should be held responsible also reported that they were not convinced beyond any reasonable doubt about the causal link between the stroke and the abnormal sexual behavior.

Kind of punishment

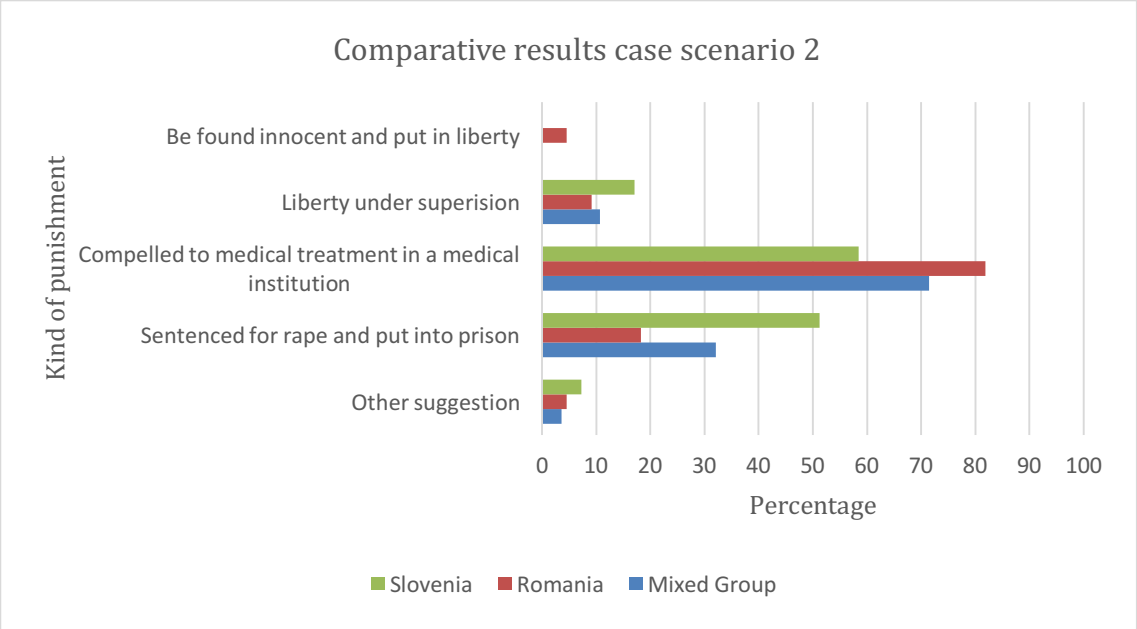

Chart 2: Kind of punishment case scenario 2

The graph above shows that the majority of responses indicated that medical treatment is required for Mr. Jones, with 81.1% of the Romanians and 71.4% of the Mixed Group supporting this solution, showing thus their preference for a rehabilitation measure.

The Slovenian group was almost equally divided between medical treatment (58.5%) and prison for rape (51.2%).

Severity in punishment

Similar to the previous case scenario, the respondents were asked to provide an average punishment for Mr. Jones. Despite the various views as concerns whether the individual is responsible, we can see that there were similarities in the average of punishment between the Slovenian Group (7.52 years) and the Mixed Group (7.10 years), with and average punishment of almost 2 years higher compared to the Romanian Group (5.05 years). It is more difficult to provide a valid reason for explaining why the Romanian Group has given this punishment given that the great majority had agreed before that the individual's behavior should be excused.

6.3.3. Results of Case scenario 3

The third case scenario was formulated as follows:

Mr. Green, aged 47 is brought in front of the criminal court for assault and injuries on a pedestrian. He assaulted the pedestrian on the reason that he almost generated an accident while walking on the lane destined only for bikers. Mr. Green's lawyer pleaded that the defendant is a peaceful person never having been involved in fights and that his violent behavior was the result of the defendant's level of testosterone which changed its normal level because of the ingestion of some steroids that Mr. Green took during sport training. The medical expert showed that the saliva samples collected from the defendant exhibited abnormal level of testosterone and this generated his aggressive behavior. He also added that there is no unanimity within the scientific community regarding the positive correlation between testosterone level and aggression in general, but that in his opinion, in this particular case, the correlation is evident.

CASE 3						
Should be held responsible for assault and injuries						
	SLOVENIA		ROMANIA		MIXED GROUP	
Strongly disagree	0 respondents	(0%)	0 respondents	(0%)	0 respondents	(0%)
Disagree	0 respondents	(0%)	0 respondents	(0%)	0 respondents	(0%)
Somewhat disagree	0 respondents	(0%)	2 respondents	(9.1%)	3 respondents	(10.7%)
Somewhat agree	3 respondents	(7.3%)	2 respondents	(9.1%)	3 respondents	(10.7%)
Agree	17 respondents	(41.5%)	11 respondents	(50%)	9 respondents	(32.1%)
Strongly agree	21 respondents	(51.2%)	7 respondents	(31.8%)	13 respondents	(46.4%)
Kind of treatment/ punishment*						
	SLOVENIA		ROMANIA		MIXED GROUP	

Be found innocent and put in liberty	0 respondents	(0%)	0 respondents	(0%)	0 respondents	(0%)
Sentenced for less than one year under parole	15 respondents	(36.6%)	9 respondents	(40.9%)	18 respondents	(64.3%)
Compelled to medical treatment in a medical institution	4 respondents	(9.8%)	3 respondents	(13.6%)	2 respondents	(7.1%)
Sentenced for assault and put into prison	27 respondents	(65.9%)	12 respondents	(54.5%)	11 respondents	(39.3%)
Other suggestion	1 respondent	(2.4%)	1 respondent	(4.5%)	2 respondents	(7.1%)
Average of punishment						
	SLOVENIA		ROMANIA		MIXED GROUP	
Duration of punishment	2.5 years		1.95 years		2 years	

*Table 14. General results Case 3 (*Respondents may select more than one checkbox, so percentages may add up to more than 100%)*

Determination of responsibility

When asked to evaluate whether Mr. Green should be held responsible for assault and injuries on a pedestrian, the great majority (94.5%) of respondents from all three groups agreed that he should be held responsible. Compared to the previous two case scenarios, this one contained less divergent views.

This case scenario contains "effect-of-a-cause" evidence, which basically compares the prevalence of criminal behavior among individuals presenting a neurological impairment to those that do not have such an impairment. More precisely, the evidence makes reference to research that indicates a higher prevalence rate of violence among people with high level of testosterone.[403]

As mentioned by the respondents in the comments sections, and confirmed by other studies, "evidence of clear association between androgen levels and aggression in human males is currently inconclusive".[404] Legal practitioners took note that behavioral "traits

[403] *See* HOYENGA, K., *The Question of Sex Differences: Psychological, Cultural and Biological Issues*, Issue 6-10, 1979, p. 615-671.
[404] DENNO, D., *Ibid.,* p. 625.

of dominance and aggression in the human male have been associated with higher levels of testosterone".[405] However, they were also aware that, as Archer concluded, "direct associations between androgen levels, primarily testosterone, and criminality show somewhat conflicting results, possibly because of the different types of hormone measures used".[406] Besides hormones levels, other biochemical factors have also been linked to aggressive or criminal behaviors. A list of these factors includes: diet and hypoglycemia, the effects of stress on hormonal and neural system levels, allergens and the use of drugs and alcohol.[407] Direct associations between these factors and hormone levels have also been noted. Yet, legal practitioners in this study argued that because research on some of these factors seems statistically weak, more carefully performed studies are needed before they can use this type of evidence in the courtroom.

Contrasted to mere evidence of abnormality (as presented in the previous case scenarios), this type of evidence could generally more useful in addressing causation. However, legal practitioners argue this type of data must be put in context.[408] In their view, without knowing the general base rate for violence in people who are not high in testosterone, crime prevalence in groups of people that *are* on testosterone is not of much help to legal practitioners. Therefore, it seems this evidence did not convince the great majority of respondents who agreed that Mr. Green should be held responsible for assault and injuries on the pedestrian (100% of the Slovenians, 90.9% of the Romanians and 89.2% of the Mixed Group).

Kind of punishment

As we can see from the graph below, when asked to determine the appropriate kind of punishment for Mr. Green, the largest number of Slovenian and Romanian responses indicated that Mr. Green should be sentenced to prison for more than a year, while a great number of responses from the Mixed Group indicated a more lenient punishment (< 1 year under parole) was more appropriate. Nonetheless, unlike the first two scenarios, it seems that the majority of respondents did not believe that sufficient evidence was

[405] DENNO, D., *Ibid.,* p. 626.
[406] ARCHER, J., *The Influence of Testosterone on Human Aggression*, British Journal of Psychology, Vol. 82, 1991, p. 8.
[407] DENNO, D., *Ibid.,* p. 629.
[408] SLOBOGHIN, C., *Ibid.*, p. 585.
[408] *Ibid.*, p. 17.

presented to demonstrate that specialized treatment was necessary.

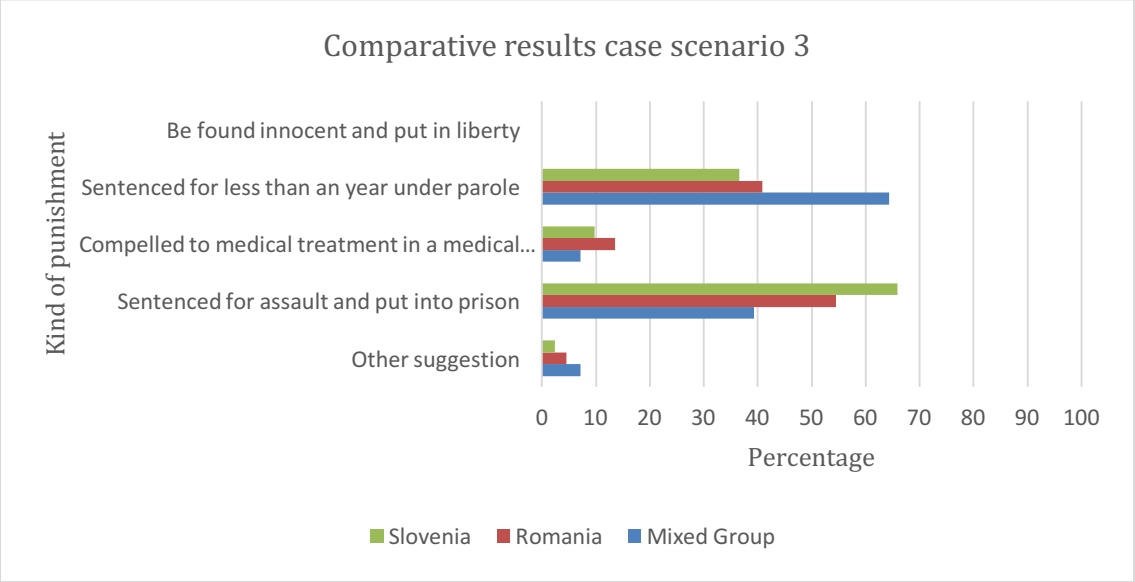

Chart 3: Kind of punishment case scenario 3

Severity of punishment

The results from this third case did not provide a large disparity between the three groups in terms of punishment, with all of them assessing an average punishment between 2 and 2.5 years.

6.3.4. Results of Case scenario 4

The fourth case scenario was formulated as follows:

Mr. Johnson, aged 27, was brought in front of the court for having sold methamphetamines. The defense lawyers informed the judges that the defendant found out 8 years before that he had an unusually large pituitary tumor, which caused irreversible brain tumors. The medical expert showed that pituitary tumors may affect thyroid production, causing mood disorder and damage to the frontal, temporal and thalamic regions, which may cause problems in decision-making, mental flexibility and overall intellectual capacity. The medical expert supported the defense who claimed that because of the tumor, the defendant was more susceptible to be influenced and manipulated by the drugs dealers and that is why he accepted to sell the drugs.

CASE 4						
Should be held responsible for selling drugs						
	SLOVENIA		ROMANIA		MIXED GROUP	
Strongly disagree	1 respondents	(2.4%)	0 respondents	(0%)	1 respondent	(3.6%)
Disagree	3 respondents	(7.3%)	0 respondents	(0%)	2 respondents	(7.1%)
Somewhat disagree	1 respondents	(2.4%)	2 respondents	(9.1%)	1 respondent	(3.6%)
Somewhat agree	6 respondents	(14.6%)	3 respondents	(13.6%)	7 respondents	(25%)
Agree	14 respondents	(34.1%)	11 respondents	(50%)	10 respondents	(35.7%)
Strongly agree	16 respondents	(39%)	6 respondents	(27.3%)	7 respondents	(25%)
Kind of treatment/ punishment*						
	SLOVENIA		ROMANIA		MIXED GROUP	
Be found innocent and put in liberty	1 respondent	(2.4%)	0 respondents	(0%)	0 respondents	(0%)
Sentenced for less than an year under parole	14 respondents	(34.1%)	3 respondents	(13.6%)	9 respondents	(32.1%)
Compelled to medical treatment in a medical institution	11 respondents	(26.8%)	7 respondents	(31.8%)	14 respondents	(50%)
Sentenced for selling drugs and put into prison	27 respondents	(65.9%)	15 respondents	(68.2%)	10 respondents	(35.7%)
Other suggestion	2 respondents	(4.9%)	1 respondent	(4.5%)	3 respondents	(10.7%)
Average of punishment						
	SLOVENIA		ROMANIA		MIXED GROUP	
Duration of punishment	2.85 years		3.5 years		2.57 years	

Table 15. General results Case 4 (**Respondents may select more than one checkbox, so percentages may add up to more than 100%)*

Determination of responsibility

This scenario contained a type of evidence that can be categorized as an individualized neuro-psychological finding. In general, individualized neuro-psychological findings compared against known performance baselines (such as those in this scenario) are accepted in courts because they provide insight into the particular defendant's biological functioning. Despite this fact, according to several of our responders, considerable obstacles confront this approach. An argument invoked by the legal practitioners was that it is generally very difficult for scientists to come up with convincing and compelling data

relevant for all demographic groups that need to be considered in order to make a useful comparison with the defendant. That is because findings from neurological testing can vary significantly based on a series of variables such as gender, age, and education, just to mention a few. In the view of the legal practitioners, interpreting specific results can be very difficult without this baseline information.

Another concern noted by legal practitioners was that even if these baseline measurements would be obtained, a correct determination about relative impulsivity of the defendant at one point in time does not prove anything about the impulsivity of the defendant at the time the crime occurred (i.e. in our case when the defendant decided to sell the drugs). Consequently, legal practitioners in our study confirmed conclusions reached in various studies, which claim "that science cannot currently answer the normative question of how far below the average a defendant would have to register on a particular performance task to be considered legally impaired".[409] These concerns, as noted in the comments, were supported by the results, with a great majority of respondents across all three groups (average of 87.9%) reporting that Mr. Johnson should be held responsible for selling drugs.

Kind of punishment

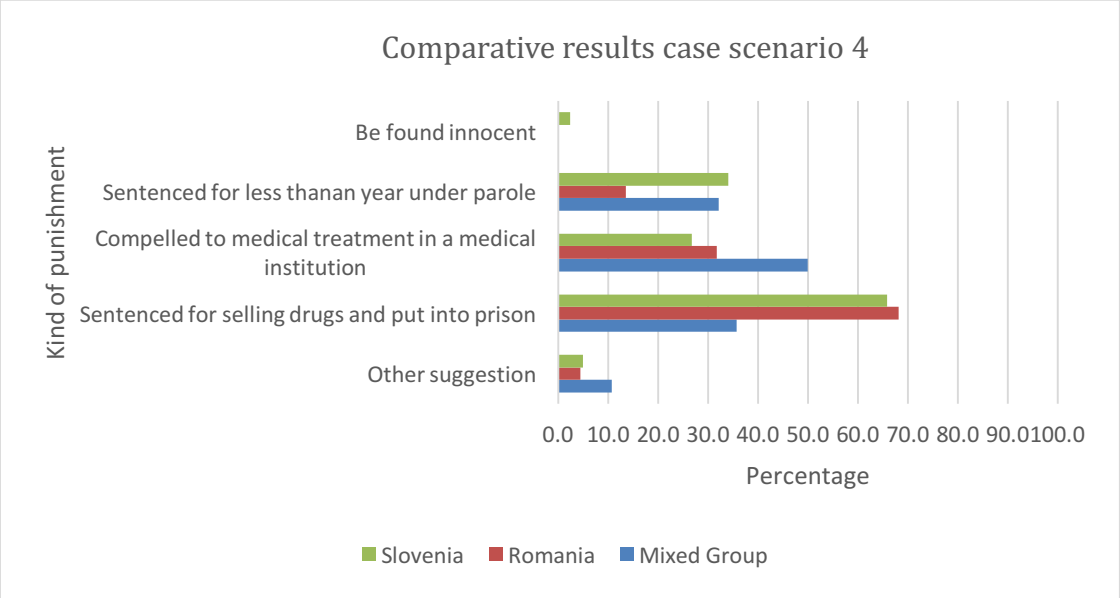

Chart 4: Kind of punishment case scenario 4

Related to the kind of punishment for selling drugs, the responses were much more varied

[409] SLOBOGHIN, C., *Ibid.*, p. 586.

than in the previous case scenarios. The majority of responses from the Slovenian (65.9%) and Romanian groups (68.3%) indicated that Mr. Johnson should be sentenced for selling drugs and put into prison. Another suggestion was to compel the defendant to medical treatment in a medical institution, which was agreed on by 50% of the respondents in the Mixed Group.

Interestingly, almost a third of the Slovenian responses (34.1%) and of the Mixed Group (32.1%) agreed that the individual should be sentence for less than a year under parole. There were very few Romanian responses (13.6%) which agreed to this suggestion. Once again, we believe that the discrepancy in these results is attributable to a mixture of cultural differences and differences in the way legal systems criminalize the offence of selling drugs. When we compared how Romanian and Slovenian legal system criminalize the offence of selling drugs, we found out that Slovenia criminalizes the offence between 1 to 10 years, while Romania is between 2 to 7 years. Comparatively, in the USA various states apply capital punishment for selling drugs, particularly if the victim of the crime died.

Severity of punishment

The Romania Group had a slightly higher average rate than the other groups (3.5 years), followed by the Slovenian group (2.85 years) and then the Control group (2.57 years).

6.3.5. Results of Case scenario 5

The fifth and last case scenario was formulated as follows:

Ms. Black, aged 47, accountant, was filed for conducting fraudulent insurance practices for a period of 8 years. She was diagnosed 10 years before with anoxic encephalopathy caused by a myocardial infarction. A SPECT (single-photon emission computed tomography) was performed, which indicated a reduction in blood flow in the temporal and frontal lobes (which are associated with executive functioning and memory). The medical expert showed that her fraudulent behavior could be explained by her impairment.

CASE 5						
Should be held responsible for fraudulent insurance practices						
	SLOVENIA		ROMANIA		MIXED GROUP	
Strongly disagree	1 respondent	(2.4%)	0 respondents	(0%)	0 respondents	(0%)
Disagree	1 respondent	(2.4%)	2 respondents	(9.1%)	0 respondents	(0%)
Somewhat disagree	0 respondents	(0%)	2 respondents	(9.1%)	4 respondents	(14.3%)
Somewhat agree	5 respondents	(12.2%)	2 respondents	(9.1%)	8 respondents	(28.6%)
Agree	17 respondents	(41.5%)	10 respondents	(45.5%)	10 respondents	(35.7%)
Strongly agree	17 respondents	(41.5%)	6 respondents	(27.3%)	6 respondents	(21.4%)
Kind of treatment/ punishment*						
	SLOVENIA		ROMANIA		MIXED GROUP	
Be found innocent and put in liberty	0 respondents	(0%)	0 respondents	(0%)	0 respondents	(0%)
Sentenced for one year under parole	15 respondents	(36.6%)	7 respondents	(31.8%)	14 respondents	(50%)
Compelled to medical treatment in a medical institution	5 respondents	(12.2%)	4 respondents	(18.2%)	4 respondents	(14.3%)
Sentenced for fraudulent insurance practices and put into prison	25 respondents	(61%)	13 respondents	(59.1%)	12 respondents	(42.9%)
Other suggestion	2 respondents	(4.9%)	0 respondents	(0%)	2 respondents	(7.1%)
Average of punishment						
	SLOVENIA		ROMANIA		MIXED GROUP	
Duration of punishment	2.83 years		3.36 years		2.21 years	

*Table 16. General results Case 5 (*Respondents may select more than one checkbox, so percentages may add up to more than 100%)*

Determination of punishment

In this last case scenario, the majority of the legal practitioners considered that the SPECT evidence that was brought to demonstrate reduction in blood flow in the temporal and frontal lobe should not be received as an exculpatory evidence. Their main argument was that neuro-abnormalities have minimal relevance far cause in this case, particularly when having to explain a causal link over such an extended period of time (we are dealing with a stroke that had happened 10 years before the trial).

The causal link between the stroke and the multiple fraudulent acts was impossible to

establish. Therefore, the majority discarded this evidence, with 95.2% of the Slovenian, 81.9% of the Romanian respondents and 85.7% showing that Ms. Black should be held responsible for fraudulent practices.

Kind of punishment

The respondents suggested for this case mostly prison as a type of punishment, with 39.4% of responses across the three groups opting for a sentence of one year under parole. Another 54.3% of responses opted for a prison sentence greater than one year, showing that for them the behavior represented a certain level of dangerousness.

As noted by the legal practitioners, a reason why they believed prison punishment was appropriate was because of the concern that, in this case, improperly used neuroscience evidence could be used to mitigate punishment and thereby present a greater risk of re-offense. The "double-edge sword" nature of neuroscience evidence is important and was not noted by the respondents prior to this case scenario.

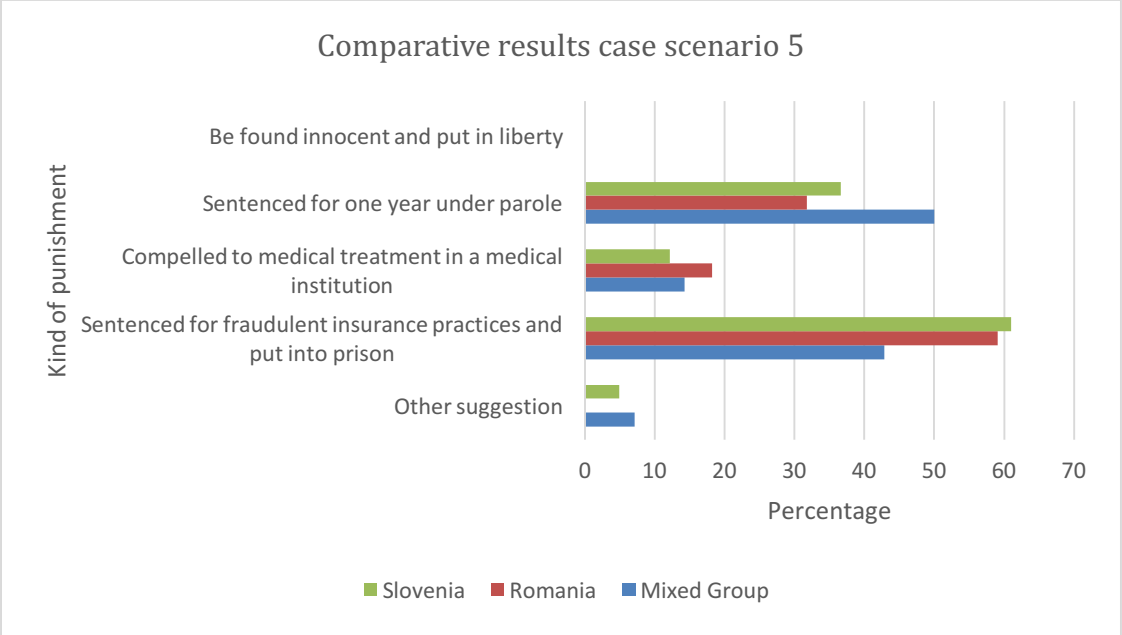

Chart 5: Kind of punishment case scenario 5

Severity of punishment

In the fifth case, the Romanian group had a higher average of punishment (3.36 years), followed by the Slovenian group (2.83 years) and the Control group (2.12 years).

7. Conclusions and cautionary words when interpreting scientific data

After conversations with some of the legal practitioners that participated in this empirical study, many of them noted that the application of scientific and neuroscientific data is not a straightforward matter. Among the problems that arise in practice is demonstrating causality. From their experience of working with expert scientists in legal cases, legal practitioners, particularly judges, noted that neuroscientific studies presented in courts can rarely be presumed to be fully conclusive, despite the fact that some researchers often invoke assumptions of cause and effect.

An interesting remark was that, in their view, the notion of "cause" presents differences in meaning between the social sciences and the criminal law. It might be that because of this reason the two fields frequently clash. According to many legal practitioners, scientists do not use that much terms such as "cause-and-effect", but instead use concepts such as "laws of change", "paradigms", "models and theories", "hypothesis testing" and "falsification".[410] According to them, these various "jargons" make their work more complicated. These results are in line with some of the theoretical conclusions presented in Chapter II, which looked at the question whether free will related issues can be studied using traditional scientific tools. Therefore, we argue that more efforts must be made by the scientific and legal community in order to harmonize these terminological differences.

Second, legal practitioners reported that they have been often cautioned by the scientists themselves that many of the studies in the fields discussed in this thesis have methodological weaknesses, which have an unknown degree of impact on the overall results. Therefore, when put into situations in which they have to choose between accepting or not probabilistic results as evidence, legal practitioners generally discard causal links that are assessed as not being fully convincible, regardless of the type of evidence, neuroscientific or otherwise.[411] Because of these methodological weaknesses, many Courts have showed certain resistance in considering certain statistical data in their

[410] DENNO, D., *Ibid.,* p. 650.
[411] DENNO argued that, although in a "perfect prediction world, social scientists would be able to predict 100% of an individual's future behavior, no such world exists, particularly in the science". To explain that, she provides as an example of certain studies in which "models of biological and environmental variables predict 25% of future adult criminality among males and 19% of future adult criminality among females. These percentages are statistically significant, as they do offer an acceptable level of predictability. However, they are not fully reliable, as 75% to 80% of behavior is left unexplained". *See* DENNO, D., *Ibid.,* p. 651.

decision-making. For example, in a famous case in the USA, in *McClesky v. Kemp,*[412] the Court refused to accept statistical evidence of racial discrimination in death penalty sentencing, by even challenging the social science research altogether. In courts in Europe, including Romania and Slovenia, there is a tendency to rely on scientific data once it has been accepted and determined as reliable in other national courts from which these legal systems were inspired, i.e. Germany and Austria for Slovenia, and France, Spain and Italy for Romania.

Third, legal practitioners noted that they could recall situations when they were presented studies that examined very few variables. By ignoring potential simultaneous effects and interrelationships that may exist among the numerous other biological, social, and economic factors, these studies were incomplete. Therefore, many judges continue to believe that "most biological and environmental studies of crime remain isolated in their particular disciplines",[413] which makes them unacceptable as evidence in the court. Curiously enough, however, it seems that judges, when confronted with the public pressure to ensure to that there is no risk of re-offense (as we saw in Case scenario 5), may tend to interpret neuroscientific knowledge and data as "an objective and reliable way of evaluating one's risk of reoffending".[414] Therefore, based on the results of the questionnaire, one could infer that the neuroscientific evidence will be used in the future as a means to evaluate or indicate an offender's level of dangerousness, rather than their responsibility.[415]

Fourth, connected to the conclusion above, an interesting comment made by many legal practitioners was that there is a certain level of acknowledgement that current neuroscience evidence is mostly focused on culpability issues (whether an individual is morally and legally responsible for their acts). Because of that, in deciding on the relevance of such evidence, legal practitioners and experts are aware that they have to pay attention both to the precise nature of the evidence in question and the specific legal

---

[412] *See* United States Supreme Court, *McCleskey v. Kemp* (1987), No. 84-6811.
[413] DENNO, D., *Ibid.,* p. 649.
[414] This conclusion is supported also by similar studies, *See* GOTSKI, G., GASSER, J., *Neuroscience in forensic psychiatry: From responsibility to dangerousness. Ethical and legal implications of using neuroscience for dangerousness assessments*, International Journal on Law and Psychiatry, Elsevier, Vol. 46, 2016, p. 58.
[415] *See* GOTSKI, G., GASSER, J., *Ibid.,* p. 60; AHARONI, E., VINCENT, G., HARENSKI, C., CALHOUN, V., SINNOTT-ARMSTRONG, W., GAZZANIGA, M., KIEHL, K., *Neuroprediction of Future Rearrest*, Proceedings of the National Academy of Sciences of the United States of America, Vol. 110, No. 15, 2013, p. 6223-6228.

doctrine to be addressed. As much as we would like to believe that neuroscience evidence alone could be sufficient at times to remove the responsibility of an individual, in reality, in most cases, it is not the case. A recommendation for the experts in the field of neuroscience would be to keep in mind that as much as legal practitioners would sometimes want to accept a certain type of neuroscientific evidence, specific constraints of the legal doctrine in which they work prevent them. Therefore, in our view, a legal reform to reorient the entire criminal justice system toward a more humane system, which addressing the causes of the criminal behavior, would be in our opinion a better solution in the long run.

Finally, as we have already noted in the conclusions of the first part of the questionnaire there are discrepancies that, in our opinion, are attributable to cultural differences. An example, could be that related to the severity of punishment. The comparative table below shows the punishments assessed by the respondents for the fictional scenarios in Case 1-Case 5 of the second part of the questionnaire.

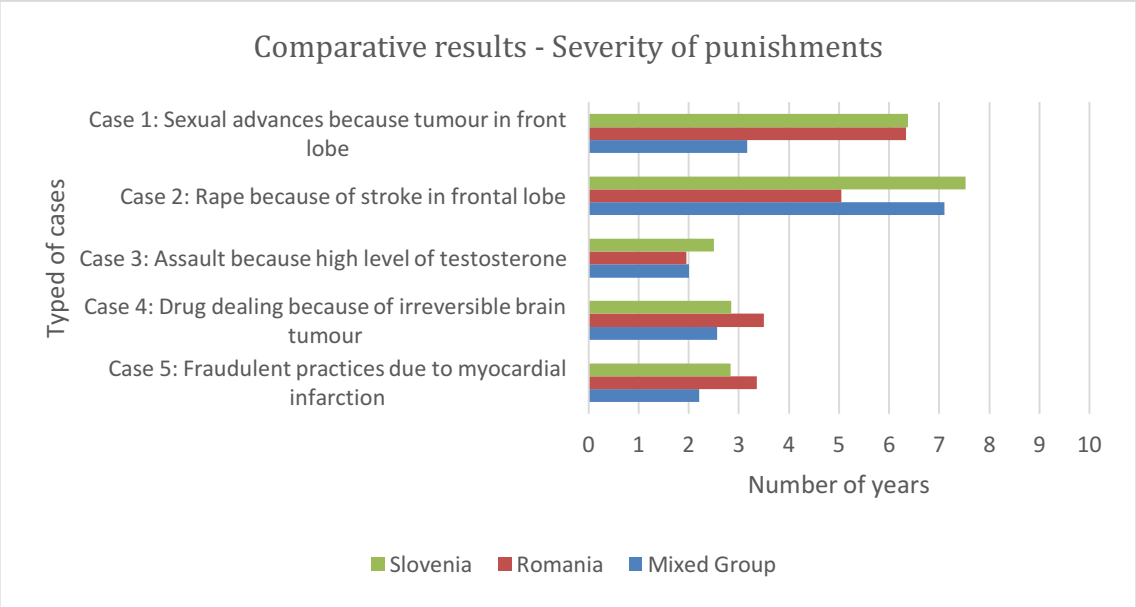

Chart 6: Comparative data on punishment duration

We are hopeful that the conclusions obtained in this study are sufficient to provide at least a more accurate picture of how various legal practitioners witness, from their positions, the new developments in science and how they corroborate them with older philosophical arguments already established for centuries.

We are also aware that this study might contain a few methodological weaknesses, which

could be due to a major challenge of the study – that the majority of the questionnaires were answered online and direct interaction with the legal practitioners was not possible in all cases. Moreover, we encourage the replication of this study on legal practitioners from more diverse legal systems, with a wider geographical representation.

Chapter V. Final Thoughts

"New neuroscience will affect the way we view the law,
not by furnishing us with new ideas or arguments about the
nature of human action, but by breathing new life into old ones."
Oliver Goodenough[416]

1. General remarks

As we have seen in the previous chapters, the application of neuroscientific tools in criminal law has great potential to change the way we understand free will and (moral and legal) responsibility. For that reason, this topic is particularly important for both the scientific and legal fields. We hope that the conclusions reached in this study have demonstrated that free will is an important concept which requires careful consideration by both scientific and legal community.

The second chapter of the dissertation considered the main philosophical views on free will, including those of the incompatibilists (libertarianism and hard determinism) and the compatibilists. These philosophical views were analyzed because it has been proposed that determinism poses a theoretical threat to free will and, consequently, to the concept of moral responsibility. However, as we have shown, compatibilism provides a satisfactory theoretical framework that reconciles determinism with the idea of free agency. In this regard, we also demonstrated that compatibilism requires a revisited understanding of the legal concept of "responsibility" by removing the idea of "ultimate" responsibility, which contradicts determinism, as defined by the compatibilists.

The third chapter of the dissertation considered the increasing use of neuroscientific tools in criminal law, their advantages and limitations and their relationship to the neuroscience of free will and criminal responsibility. We highlighted the idea that some claims made about the ability of neuroscience to solve legal and normative questions "neatly and cleanly is often exaggerated and hyped".[417] We also insisted on the fact that caution is needed in the discourse about neuroscientific evidence because, as it was already proven in certain cases, they could substantially distort public perception. Because of that, we argued that education of judges and other legal practitioners is essential to improving their

[416] ZEKI, S., GOODENOUGH, O., *Law and the Brain*, Oxford University Press, New York, 2004, p. 208.
[417] Presidential Commission for the Study of Bioethical Issues, *Ibid.*, 2015, p. 89.

understanding of neuroscientific evidence, as well as the current limitations, and future potential, of neuroscientific tools. At the same time, we concurred with the conclusion of other researchers who noted that the revolution in neurolaw will not necessarily arise from radical changes in our beliefs about criminal law, but from a wave of new brain technologies that "will change society and the law in many ways".[418]

Lastly, chapter IV which represents the core effort of this dissertation, presented the empirical data and conclusions reached from analysis of surveys conducted with 91 legal practitioners across three countries (Austria, Romania and Slovenia). The survey questions were designed to assist in understanding the views of legal practitioners on the admissibility of neuroscientific evidence in the courtroom. Importantly, the results demonstrated that a great majority of the legal practitioners agreed with the philosophy of compatibilism and degree determinism. Moreover, the empirical study revealed certain problems for legal practitioners when interpreting neuroscientific evidence. From the discussions we had with some of them, we inferred that, despite the fact that neuroscientific evidence is increasingly being used in criminal courtrooms in the USA and Europe as part of testimonies, up to now the use of neuroscience in legal contexts had been only scarcely regulated by legislation. Because of this, we argued that a solution for this would be more guidance for judges either through enactment of rules or regulations, or through an increased role of neuroscientific experts in court proceedings.

Finally, it is necessary to highlight once more the relevance of the philosophical debates around free will. Though it is doubtful that many legal practitioners have deeply considered the various philosophical positions on free will – compatibilism, incompatibilism, libertarianism – it is clear that most legal practitioners do hold strong opinions on free will as it relates to moral responsibility. As our results showed, even within the limited geographical constraints of central and Eastern Europe, opinions regarding neurological impairment and its effects on moral responsibility varied widely. Moreover, as neuroscience continues to advance, it is possible that inconsistencies in the perception of free will may be further exacerbated. Therefore, it is vitally important for legal systems to carefully assess the scientific and legal impacts of neuroscientific evidence and how it will be evaluated by legal practitioners, in terms of the moral responsibility of individuals. Coupled to this, it is our hope that society will be able to

[418] KOLBER, A., *Ibid.*, 2014, p. 807.

embrace the new discoveries in neuroscience related to free agency and use them as an opportunity to create legal reform, by challenging the idea of "retributive justice" and promoting a more "humane" version of justice.

2. Limits of the research

Being aware of the views of some scholars in the field of free will,[419] who claim some of the work on free will appears methodologically flawed and misrepresents the state of the academic knowledge, we would like to provide a few thoughts on the possible limits of our own research. Since our research is based on many of these studies, it is likely that our study may also contain some of these inconsistencies. With these possible deficiencies in mind, however, our results do confirm other recent studies performed on similar topic. Specifically, our results confirmed earlier conclusions that the challenges of evaluating the reliability of neuroscientific evidence will become more prominent in criminal law in the future as neuroscientific tools continue to develop.

Another potential limit of the research could arguably be found in the empirical study. Some methodological choices, such as the administration of most of the questionnaire online and the simplification of case scenarios, were made in consideration of time constraints. For example, a small number of surveys (approximately 15) were performed in person; unsurprisingly, the data from the surveys conducted in person were much richer than those conducted online. For a future research study, we would recommend in-person surveys, if resources are available, as the results of the survey could be more comprehensive. Moreover, some legal practitioners noted that some scenarios in the second part of the questionnaire did not provide all the information that they would normally need in a "real-life" scenario in order to make an informed legal decision. Of course, these scenarios were intentionally designed to be simple, in order to minimize the time needed in the busy schedules of the legal practitioners. However, by doing so, it is possible that some nuances of the results may have not been captured. These methodological shortcomings could certainly be avoided in a more specialized, better-resourced follow-on study.

[419] *See* MILES, J., *Irresponsible and a Disservice: The Integrity of Social Psychology turn on the Free Will Dilemma*, British Journal of Social Psychology, Vol. 52, 2013, p. 205-218. The author has convincingly demonstrated methodological flaws in previous research conducted on this topic.

3. Practical applications and further directions

The results of this thesis are addressed to both scientists and legal practitioners, who we hope will be able to draw some practical applications for their work. A first message for the scientists is to make sure that information they release publically is valid and clearly states the scientific limitations. A second message is addressed to legal practitioners, who should start thinking about how they can integrate new scientific discoveries and reform the legal systems in a way more person-oriented (humane) rather than punishment-oriented (retributive). They should use neuroscientific discoveries to provide a more nuanced understanding of neurological impairments that would humanize the system rather than creating a reason for discriminating against individuals, based on neurological differences. Furthermore, this more nuanced understanding should provide a more graded approach for assigning responsibility, by minimizing arbitrary incrimination or full exoneration based only on the premise that "my brain made me do it".

Moreover, in our view, if understood correctly, the lines of research in free will and neuroscience promises to potentially provide legal decision-makers and legislators with useful information that can improve the effectiveness of our laws and the consistency with which those laws are applied. In other words, neuroscience might contribute to more consistent decision making and fairer outcomes for defendants. To achieve this, it may be necessary to accept that some of the philosophical debates concerning the existence of free will are moot. In our view, a better use of future efforts is to conduct studies that answer the more relevant questions of how to qualify or quantify the constraints on free will due to neurological impairment, and consequently the assignment of responsibility. A suggestion for future work would be to find a consistent way to evaluate the impact of neurological impairments in terms of the effect on free agency. That would provide legal practitioners a standardized "matrix" that could guide them in the attribution of responsibility.

Finally, as noted in the conclusions of the chapter four, we hope this study will be replicated in the future in order to obtain data that is geographically more diverse. We also hope that this study will inspire greater interest by scientists and legal practitioners in the numerous interesting applications that cognitive science holds for the legal system.

University of Ljubljana

QUESTIONNAIRE (EN)

Do **not** put your name on this questionnaire**.** All responses and information are strictly CONFIDENTIAL and ANONYMOUS.

PERSONAL INFORMATION

Please provide the following information:

Age: _____

Sex: Male ☐ Female ☐

Educational level attained: graduate ☐ post-graduate ☐

Religious: yes ☐ no ☐

Occupation: _____

Marital status: married ☐ unmarried ☐

INSTRUCTIONS

This questionnaire is part of an intercultural study that will be mainly conducted in Austria, Romania, Slovenia and whose purpose is to research the interactions between science and law. This study is going to be applied on legal participants such as judges, lawyers etc.

Below you will find statements related to "science" and "free agency" and their interaction with law, especially in the assessment of the legal (and moral) responsibility of a person.

FIRST PART: Please read each affirmation carefully and then decide whether you agree or not with the statement. Circle a number from 1 to 6, showing whether you (1) strongly disagree, (2) disagree, (3) somewhat disagree, (4) somewhat agree, (5) agree or (6) strongly agree.

Please choose the number that represents what you honestly feel. We advise you to choose number (3) and (4) only when you are unsure or when it is difficult to choose a position. There are no RIGHT or WRONG responses to the questions listed below.

YOUR PARTICIPATION IN THIS STUDY IS VERY MUCH APPRECIATED.

1	2	3	4	5	6
Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

NOTE: F**ree agency** is referred to in the present questionnaire as the capacity of rational agents to choose a course of action from among various alternatives.

1. The essential me is something that science will never pin down.
   1 2 3 4 5 6
2. The explanation for my behavior and actions lies in science.
   1 2 3 4 5 6
3. There is a non-physical part of me (e.g. a soul, spirit etc.) which determines my actions but which is not itself determined by my genes, environment or other factors.
   1 2 3 4 5 6
4. My choices are limited by a superior force.
   1 2 3 4 5 6
5. My biological makeup generates my behavior and personality.
   1 2 3 4 5 6
6. I'm not just the product of genetic and biological factors.
   1 2 3 4 5 6
7. I believe that a person's biological makeup is the ultimate cause of their success and failure.
   1 2 3 4 5 6
8. My character and behavior are the result of environmental factors.
   1 2 3 4 5 6
9. I believe that environmental factors (such as climate or habitat) influence my physical and psychological predispositions.
   1 2 3 4 5 6
10. I believe that social phenomena (such as social expectations and interpersonal interactions) can determine an individual's behavior and personality.
    1 2 3 4 5 6
11. I believe that people's past and current experiences mold their abilities and personalities.
    1 2 3 4 5 6
12. I believe that my current choices are influenced by my upbringing and education.
    1 2 3 4 5 6
13. I believe that free agency manifests itself only when we are not the victims of oppressive social conditions such as wealth, class, race, gender etc.
    1 2 3 4 5 6

1	2	3	4	5	6
Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

14. I believe that health is not a factor in having free agency, as we have free agency as long as we are alive.

1 2 3 4 5 6

15. I believe there are physical problems (physical illness) and mental disturbances which may interfere with free agency.

1 2 3 4 5 6

16. When I make up my mind, it is not just a matter of how my brain works.

1 2 3 4 5 6

17. I believe levels of intelligence place restriction on free agency.

1 2 3 4 5 6

18. I believe free agency and intelligence are unrelated.

1 2 3 4 5 6

19. I believe that free agency starts manifesting at an early age.

1 2 3 4 5 6

20. I believe that free agency may not necessarily exist in small children, but gradually develops during an "age of accountability".

1 2 3 4 5 6

21. I believe that free agency is limited and manifests itself only in mature adults.

1 2 3 4 5 6

22. If all my choices were determined by environmental, genetic and other factors, then I cannot be responsible for my actions.

1 2 3 4 5 6

23. Even if my choices were completely determined, I would still have free choice.

1 2 3 4 5 6

24. I have free agency in that at least some of my choices are not determined by environmental, genetic or other factors.

1 2 3 4 5 6

25. I believe that behaviour must be based on free choice in order to be considered moral.

1 2 3 4 5 6

26. I believe that moral behaviour is not dependent on free agency because morality is just a label used to describe behaviours which are in accord with the society's norms.

1 2 3 4 5 6

27. I believe that human beings actively choose their actions and are responsible for the consequences of their actions.

1 2 3 4 5 6

28. I believe that when crimes are premeditated, we should think more in terms of punishment than rehabilitation.

1 2 3 4 5 6

1	2	3	4	5	6
Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

29. I believe that for premeditated crimes judges should apply the maximum of punishment provided by the criminal laws.

1 2 3 4 5 6

30. I believe that further offences could be prevented, if first offenders were not given light sentences.

1 2 3 4 5 6

SECOND PART: Please read the following **legal cases**. Just like in the previous part, please circle a number from 1 to 6, showing whether you (1) strongly disagree, (2) disagree, (3) somewhat disagree, (4) somewhat agree, (5) agree or (6) strongly agree. For any suggestion and comment, or in case you do not agree with the solutions provided, please use the comments part.

CASE 1

Mr. Smith, aged 37, is a teacher and he is being tried for having made sexual advances on his young stepdaughter. He was found to have a tumor in the right frontal lobe of his brain. His medical results showed that when the tumor was removed, his pedophilic behavior stopped. When the tumor recurred, the behavior also resumed.

Using the information provided, please assess the following statement/question:

Mr. Smith should be held responsible for sexual advances on his stepdaughter.

1 2 3 4 5 6

What kind of treatment/punishment should be applied to Mr. Smith?

a) be found innocent and put in liberty
b) be put in liberty with the obligation of not getting in contact with his stepdaughter or any other children for a determined period of time
c) be compelled to medical treatment in a medical institution
d) be sentenced for sexual advances and put into prison
e) none of the above (please write here your suggestion!)

Comments:

……
……..……
……..……..……..……
……..……..……..……
……

Choose a punishment between 0 and 25 years of imprisonment for the crime committed by Mr. Smith and mark it in the square below.

Mr. Smith should receive a punishment of ☐ years in prison.

CASE 2

Mr. Jones, aged 35, was arrested for having raped three young women. In the pretrial investigation, a scan of Mr. Jones' brain using PET (positron emission tomography) revealed serious damage to his frontal lobe, apparently as a result of a stroke. The medical expert showed that during the stroke, the frontal lobe (which is involved in judgment, impulse control and sexual behaviour) has been irreversibly damaged and this explains Mr. Jones' abnormal sexual behaviour.

Using the information provided, please assess the following statements/questions:

Mr. Jones should be held responsible for the raping of three women.

1 2 3 4 5 6

What kind of treatment/punishment should be applied to Mr. Jones?

a) be found innocent and put in liberty
b) be put in liberty under supervision
c) be compelled to take medical treatment in a medical institution
d) be sentenced for rape and put into prison
e) none of the above (please write here your suggestion!)

Comments:

……
……..……
……...…...…...…..……
……..…..……...…..……
……

Choose a punishment between 0 and 25 years of imprisonment for the crime committed by Mr. Jones and mark it in the square below.

Mr. Smith should receive a punishment of ☐ years in prison.

CASE 3

Mr. Green, aged 47 is brought in front of the criminal court for assault and injuries on a pedestrian. He assaulted the pedestrian on the reason that he almost generated an accident while walking on the lane destined only for bikers. Mr. Green's lawyer pleaded that the defendant is a peaceful person never having been involved in fights and that his violent behavior was the result of the defendant's level of testosterone which changed its normal level because of the ingestion of some steroids that Mr. Green took during sport training. The medical expert showed that the saliva samples collected from the defendant exhibited abnormal level of testosterone and this generated his aggressive behavior. He also added that there is no unanimity within the scientific community regarding the positive correlation between testosterone level and aggression in general, but that in his opinion, in this particular case, the correlation is evident.

Using the information provided, please assess the following statements/questions:

Mr. Green should be held responsible for assault and injuries on a pedestrian.

1 2 3 4 5 6

What kind of treatment/punishment should be applied to Mr. Green?

a) be found innocent and put in liberty
b) be sentenced for less than one year under parole (mandatory supervision)
c) be compelled to take medical treatment in a medical institution
d) be sentenced for assault and injuries and put into prison
e) none of the above (please write here your suggestion!)

Comments:

……
……..……
……..…….……..……
……..……..……..……
……

Choose a punishment between 0 and 25 years of imprisonment for the crime committed by Mr. Green and mark it in the square below.

Mr. Smith should receive a punishment of ☐ years in prison.

CASE 4

Mr. Johnson, aged 27, was brought in front of the court for having sold methamphetamines. The defense lawyers informed the judges that the defendant found out 8 years before that he had an unusually large pituitary tumor, which caused irreversible brain tumor. The medical expert showed that pituitary tumors may affect thyroid production, causing mood disorder and damage to the frontal, temporal and thalamic regions, which may cause problems in decision-making, mental flexibility and overall intellectual capacity. The medical expert supported the defense who claimed that because of the tumor, the defendant was more susceptible to be influenced and manipulated by the drugs dealers and that is why he accepted to sell the drugs.

Using the information provided, please assess the following statements/questions:

Mr. Johnson should be held responsible for drug dealing.

1 2 3 4 5 6

What kind of treatment/punishment should be applied to Mr. Johnson?

a) be found innocent and put in liberty
b) be sentenced under parole (mandatory supervision)
c) be compelled to medical treatment in a medical institution
d) be sentenced for drug dealing and put into prison
e) none of the above (please write here your suggestion!)

Comments:

……
……
……
……
……

Choose a punishment between 0 and 25 years of imprisonment for the crime committed by Mr. Johnson and mark it in the square below.

Mr. Smith should receive a punishment of ☐ years in prison.

CASE 5

Ms. Black, aged 47, accountant, was sued for conducting fraudulent insurance practices for a period of 8 years. She was diagnosed 10 years before with anoxic encephalopathy caused by a myocardial infarction. A SPECT (single-photon emission computed tomography) was performed, which indicated a reduction in blood flow in the temporal and frontal lobes (which are associated with executive functioning and memory). The medical expert showed that her fraudulent behaviour could be explained by her impairment.

Using the information provided, please assess the following statements/questions:

Mr. Black should be held responsible for having conducted fraudulent practices for 8 years.

1 2 3 4 5 6

What kind of treatment/punishment should be applied to Ms. Black?

a) be found innocent and put in liberty
b) be sentenced under parole (mandatory supervision) and interdicted to perform any accounting activities
c) be compelled to take medical treatment in a medical institution
d) be put into prison for fraudulent insurance practices
e) none of the above (please write here your suggestion!)

Comments:

……
……
……
……
……

Choose a punishment between 0 and 25 years of imprisonment for the crime committed by Mr. Black and mark it in the square below.

Mr. Smith should receive a punishment of ☐ years in prison.

THANK YOU FOR YOUR PARTICIPATION IN THIS STUDY!

FRAGEBOGEN (DE)

Alle Antworten und Informationen sind VERTRAULICH und ANONYM.

ANGABEN ZUR PERSON

Bitte geben Sie folgende Informationen ein:

Alter: _____

Geschlecht: männlich ☐ weiblich ☐

Abgeschlossene Ausbildung: Universitätsabschluss ☐ Doktorat ☐

Religiös: Ja ☐ Nein ☐

Beruf: _____

Familienstand: verheiratet ☐ ledig ☐

ANLEITUNG

Dieser Fragebogen ist Teil einer interkulturellen Studie, die in Österreich, Rumänien und Slowenien durchgeführt wird. Das Ziel ist es, die Wechselwirkungen zwischen Wissenschaft und Recht zu erforschen. Sie wird mit, in der Rechtssprechung tätigen Personen, wie Richtern, Anwälten und anderen Juristen durchgeführt.

Nachfolgend finden Sie Aussagen bezüglich "Wissenschaft" und "Entscheidungsfreiheit" und deren Wechselwirkung mit Recht, die sich insbesondere mit der Bewertung der rechtlichen (und moralischen) Verantwortung einer Person beschäftigen.

ERSTER TEIL: Bitte lesen Sie jede Aussage sorgfältig durch und entscheiden Sie, ob Sie der Aussage zustimmen. Kreisen Sie eine Zahl von 1 bis 6 ein, wenn Sie (1) überhaupt nicht zustimmen, (2) nicht zustimmen, (3) eher nicht zustimmen, (4) eher zustimmen, (5) zustimmen oder (6) völlig zustimmen.

Bitte wählen Sie die Zahl, die ihr tatsächliches Gefühl ausdrückt. Wir empfehlen Ihnen, die Zahl (3) und Zahl (4) nur dann zu wählen, wenn Sie unsicher sind oder wenn es schwierig ist, eine Position zu wählen. Auf die Fragen gibt es keine richtigen oder falschen Antworten.

ICH BEDANKE MICH SEHR HERZLICH FÜR IHRE TEILNAHME AN DIESER STUDIE.

1 Stimme überhaupt zu	2 Stimme nicht zu	3 Stimme eher nicht zu	4 Stimme eher zu	5 Stimme zu	6 Stimme völlig zu

HINWEIS: Entscheidungsfreiheit wird in dem vorliegenden Fragebogen als die Fähigkeit des rationalen Agenten bezeichnet, ein bestimmtes Verhalten unter verschiedenen Alternativen zu wählen.

1. Das wesentliche Ich ist etwas, dass die Wissenschaft niemals erfassen wird.
   1 2 3 4 5 6
2. Wissenschaft kann mein Verhalten und Handeln erklären.
   1 2 3 4 5 6
3. Es gibt einen nicht-physischen Teil von mir (z. B. eine Seele, Geist etc.), die mein Handeln beeinflusst, aber selbst nicht durch meine Gene, die Umwelt oder andere Faktoren bestimmt ist.
   1 2 3 4 5 6
4. Meine Entscheidungen sind durch eine höhere Macht begrenzt.
   1 2 3 4 5 6
5. Meine biologische Veranlagung ist die Ursache für mein Verhalten und meine Persönlichkeit.
   1 2 3 4 5 6
6. Ich bin nicht nur ein Produkt von genetischen und biologischen Faktoren.
   1 2 3 4 5 6
7. Ich glaube, dass die biologische Veranlagung einer Person der ultimative Grund für ihren Erfolg und Misserfolg ist.
   1 2 3 4 5 6
8. Mein Charakter und Verhalten sind Ergebnisse der Umwelteinflüssen.
   1 2 3 4 5 6
9. Ich glaube, dass Umweltfaktoren (wie Klima oder Lebensraum) meine körperlichen und psychologischen Prädispositionen beeinflussen.
   1 2 3 4 5 6
10. Ich glaube, dass soziale Phänomene (wie z. B. soziale Erwartungen und zwischenmenschliche Interaktion) das Verhalten einer Person und ihre Persönlichkeit bestimmen können.
    1 2 3 4 5 6
11. Ich glaube, dass die Fähigkeiten und die Persönlichkeit der Menschen durch vergangene und aktuelle Erfahrungen geformt werden.
    1 2 3 4 5 6
12. Ich glaube, dass meine aktuellen Entscheidungen durch meine Erziehung und Bildung beeinflusst sind.
    1 2 3 4 5 6

1 Stimme überhaupt zu	2 Stimme nicht zu	3 Stimme eher nicht zu	4 Stimme eher zu	5 Stimme zu	6 Stimme völlig zu

13. Ich glaube, dass sich Entscheidungsfreiheit nur dann manifestiert, wenn man keinen repressiven gesellschaftlichen Bedingungen (wie z. B. Reichtum, Klasse, Rasse, Geschlecht) ausgesetzt ist.

1 2 3 4 5 6

14. Ich glaube, dass Gesundheit die Entscheidungsfreiheit nicht beeinflusst, weil man über Entscheidungsfreiheit verfügt, solange man am Leben ist.

1 2 3 4 5 6

15. Ich glaube, dass es körperliche Probleme (körperliche Krankheiten) und psychische Störungen gibt, die die Entscheidungsfreiheit beeinträchtigen könnten.

1 2 3 4 5 6

16. Wenn ich mich für etwas entscheide, ist meine Wahl nicht lediglich eine Konsequenz dessen, wie mein Gehirn funktioniert.

1 2 3 4 5 6

17. Ich glaube, dass je nach Stufe der Intelligenz die Entscheidungsfreiheit einschränkt wird.

1 2 3 4 5 6

18. Ich glaube, dass Entscheidungsfreiheit und Intelligenz nicht zusammenhängen.

1 2 3 4 5 6

19. Ich glaube, dass sich Entscheidungsfreiheit schon in einem frühen Alter zu manifestieren beginnt.

1 2 3 4 5 6

20. Ich glaube, dass Entscheidungsfreiheit nicht unbedingt bei Kleinkindern existiert, aber dass sie sich nach und nach während einem "Alter der Verantwortlichkeit" entwickelt.

1 2 3 4 5 6

21. Ich glaube, dass Entscheidungsfreiheit begrenzt ist, und, dass sie sich nur in Erwachsenen manifestiert.

1 2 3 4 5 6

22. Wenn alle meine Entscheidungen durch Umwelteinflüsse, genetische und andere Faktoren bedingt sind, bin ich für meine Handlungen nicht verantwortlich.

1 2 3 4 5 6

23. Auch wenn meine Entscheidungen vollständig vorherbestimmt wären, würde ich immer noch frei entscheiden können.

1 2 3 4 5 6

24. Meine Entscheidungsfreiheit zeigt sich dadurch, dass zumindest einige meiner Entscheidungen nicht durch Umwelteinflüsse, genetische oder andere Faktoren bestimmt sind.

1 2 3 4 5 6

1	2	3	4	5	6
Stimme überhaupt zu	Stimme nicht zu	Stimme eher nicht zu	Stimme eher zu	Stimme zu	Stimme völlig zu

25. Ich glaube, dass Verhalten auf Entscheidungsfreiheit beruhen muss, um als moralisch angesehen werden zu können.

1 2 3 4 5 6

26. Ich glaube, dass moralisches Verhalten nicht von Entscheidungsfreiheit abhängt, weil Moral nur als Etikett für im Einklang mit gesellschaftlichen Normen stehende Verhaltensweisen verwendet wird.

1 2 3 4 5 6

27. Ich glaube, dass Menschen ihre Handlungen aktiv wählen, und für die Folgen ihres Handelns verantwortlich sind.

1 2 3 4 5 6

28. Ich glaube, dass man sich bei vorsätzlichen Verbrechen eher auf Bestrafung als auf Rehabilitation konzentrieren soll.

1 2 3 4 5 6

29. Ich glaube, dass Richter für vorsätzliche Straftaten die maximal vom Gesetz vorgesehene Strafe verwenden sollen.

1 2 3 4 5 6

30. Ich glaube, dass weitere Straftaten verhindert werden könnten, wenn Ersttäter keine milde Strafe bekommen würden.

1 2 3 4 5 6

ZWEITER TEIL: Bitte lesen Sie die folgenden Fälle. Wie im vorherigen Teil, kreisen Sie bitte eine Zahl von 1 bis 6 ein, wenn Sie (1) überhaupt nicht zustimmen, (2) nicht zustimmen, (3) eher nicht zustimmen, (4) eher zustimmen, (5) zustimmen oder (6) völlig zustimmen.

FALL 1

Herr Schmiedinger, 37, ist Lehrer und ist wegen sexueller Belästigung seiner jungen Stieftochter angeklagt. Ein Tumor wurde im rechten Frontallappen seines Gehirns gefunden. Die medizinischen Ergebnisse zeigten, dass, nachdem der Tumor entfernt wurde, Herr Schmiedinger mit seinem pädophilen Verhalten aufgehört hat. Als der Tumor wieder aufgetrat, trat auch das pädophile Verhalten wieder zutage.

Auf der Grundlage der oben erwähnten Informationen bewerten Sie die folgende Aussage:

Herr Schmiedinger soll für die sexuelle Belästigung seiner Stieftochter verantwortlich gemacht werden.

1 2 3 4 5 6

Wie soll Herr Schmiedinger bestraft (behandelt) werden?

f) Für unschuldig befunden und freigesprochen werden.

g) Freigesprochen werden, mit der Verpflichtung mit seiner Stieftochter oder anderen Kindern für einen bestimmten Zeitraum nicht in Kontakt zu treten.

h) Zur medizinischen Behandlung in einer medizinischen Einrichtung gezwungen werden.

i) Wegen sexueller Belästigung zu einer Freiheitsstrafe verurteilt werden.

j) Anderes (Bitte schreiben Sie Ihren Vorschlag nachfolgend hin.)

Kommentar:……
……
……...……...……
……...……...……
……

Schreiben Sie die Dauer der Haftstrafe zwischen 0 und 25 Jahren, zu der Herr Schmiedinger verurteilt werden sollte in das untenstehende Kästchen.

Dauer der Hafstrafe ☐

FALL 2

Herr Meier, 35, wurde wegen Vergewaltigung von drei jungen Frauen festgenommen. In der Voruntersuchung ergab eine PET (Positronen-Emissions-Tomographie) seines Gehirns schwere Schäden an seinem Frontallappen, offenbar als Folge eines Schlaganfalls. Der medizinische Sachverständige erklärte, dass während des Schlaganfalls der Frontallappen (welcher zur Steuerung von Urteilsvermögen, Impulskontrolle und sexuellem Verhalten beiträgt) irreversibel geschädigt wurde. Dies erklärt sein abnormes sexuelles Verhalten.

Auf der Grundlage der oben erwähnten Informationen bewerten Sie die folgende Aussage:

Herr Meier soll für die Vergewaltigung der drei Frauen verantwortlich gemacht werden.

1 2 3 4 5 6

Wie soll Herr Meier bestraft (behandelt) werden?

f) Für unschuldig befunden und freigesprochen werden.

g) Zu einer bedingte Freiheitsstrafe mit Aufsicht/Betreuung verurteilt werden.

h) Zur medizinischen Behandlung in einer medizinischen Einrichtung gezwungen werden

i) Wegen Vergewaltigungen zu einer Freiheitsstrafe verurteilt werden.

j) Anderes (Bitte schreiben Sie Ihren Vorschlag nachfolgend hin.)

Kommentar:……
……
……...……...……
……...……...……

Schreiben Sie die Dauer der Haftstrafe zwischen 0 und 25 Jahren, zu der Herr Meier verurteilt werden sollte in das untenstehende Kästchen.

Dauer der Hafstrafe ☐

FALL 3

Herr Gruber, 56, steht wegen Körperverletzung und Attake auf einen Fußgänger vor Gericht. Er fuhr mit seinem Fahrrad, als ein plötzlich auftauchender Fußgänger auf dem Radweg fast zu einem Zusammenstoß führte. Herr Gruber blieb stehen und fing an den Fußgänger zu schlagen, weil er widerrechtlich auf dem Radweg unterwegs war. Herr Gruber steht nun wegen tätlichem Angriff auf den Fußgänger vor Gericht. Der Fußgänger wurde so schwer verletzt, dass er zwei Monate im Krankenhaus verbringen musste. Herr Grubers Anwalt macht geltend, dass der Beklagte ein friedliebender Mensch sei und solch gewalttätiges Verhalten bei ihm vorher noch nie aufgetreten ist. Sein Verhalten war das Ergebnis des Testosteronniveaus in seinem Blut. Herr Gruber hat während seines Trainings Steroide eingenommen, die das Testosteronniveau beeinflussten. Der medizinische Sachverständige erklärte, dass die Speichelproben des Beklagten ein abnormales Niveau von Testosteron aufweisen, und, dass dies sein aggressives Verhalten erzeugte. Er sagte auch, dass es einige Wissenschaftler gibt, die die Ansicht über die positive Korrelation zwischen Testosteronniveau und Aggression nicht vertreten, aber, dass seiner Meinung nach in diesem Fall die Korrelation deutlich ist.

Auf der Grundlage der oben erwähnten Informationen bewerten Sie die folgende Aussage:

Herr Gruber ist für den Angriff auf den Fußgänger und Verletzung desselben verantwortlich.

1 2 3 4 5 6

Wie soll Herr Gruber bestraft (behandelt) werden?

b) Für unschuldig befunden und freigesprochen werden.

b) Zu einer bedingten Freiheitsstrafe mit Aufsicht/Betreuung von weniger als einem Jahr verurteilt werden.

c) Zur medizinischen Behandlung in einer medizinischen Einrichtung gezwungen werden.

f) Wegen Körperverletzung zu einer Freiheitsstrafe verurteilt werden.

g) Anderes (Bitte schreiben Sie Ihren Vorschlag nachfolgend hin.)

Kommentar:……
……
……...……...…….
……..……...…….
……
……

Schreiben Sie die Dauer der Haftstrafe zwischen 0 und 25 Jahren, zu der Herr Meier

verurteilt werden sollte in das untenstehende Kästchen.

Dauer der Hafstrafe ☐

FALL 4

Herr Jäger, 27, steht vor Gericht, weil er Methamphetamin und andere Drogen verkauft hat. Sein Verteidiger informiert das Gericht, dass der Beklagte vor 8 Jahren mit einem ungewöhnlich großen Hypophysentumor diagnostiziert wurde, der einen irreversiblen Gehirnschaden verursacht hatte. Der medizinische Sachverständige erklärte, dass Hypophysentumore die Schilddrüsen-Produktion beeinflussen können, welche eine Störung des Verhaltens und Schäden an den Stirn-, Schläfen- und thalamischen Regionen verursacht und zu Problemen bei der Entscheidungsfindung, geistigen Flexibilität und der allgemeinen intellektuellen Leistungsfähigkeit führen kann. Der medizinische Sachverständige unterstützte die Verteidigung dahingehend, dass wegen des Tumors der Beklagte anfälliger für Beeinflussung war und von Drogenhändlern manipuliert werden konnte. Daher willigte er ein die Drogen zu verkaufen.

Auf der Grundlage der oben erwähnten Informationen bewerten Sie die folgende Aussage:

Herr Jäger soll für den Drogenhandel verantwortlich gemacht werden.

1 2 3 4 5 6

Wie soll Herr Jäger bestraft (behandelt) werden?

f) Für unschuldig befunden und freigesprochen werden.

g) Zu einer bedingten Strafe mit Aufsicht/Betreuung verurteilt werden.

h) Zur medizinischen Behandlung in einer medizinischen Einrichtung gezwungen werden.

i) Wegen Drogenhandel zu einer Freiheitsstrafe verurteilt werden.

j) Anderes (Bitte schreiben Sie Ihren Vorschlag nachfolgend hin.)

Kommentar:……
……
……
……
……

Schreiben Sie die Dauer der Haftstrafe zwischen 0 und 25 Jahren, zu der Herr Meier verurteilt werden sollte in das untenstehende Kästchen.

Dauer der Hafstrafe ☐

FALL 5

Frau Schwarz, 47, Buchhalterin, steht wegen Versicherungsbetruges in einem Zeitraum von 8 Jahren unter Anklage. Sie wurde vor 10 Jahren mit anoxischer Enzephalopathie, die durch einen Herzinfarkt verursacht wurde, diagnostiziert. Eine SPECT (Single-

Photon-Emissions-Computertomographie) wurde durchgeführt und ergab eine Reduktion des Blutflusses in den Schläfen- und Stirnlappen, die für exekutive Funktionen und Gedächtnis zuständig sind. Der medizinische Sachverständige erklärte, dass ihr betrügerisches Verhalten durch ihre Beeinträchtigung erklärt werden könne.

Auf der Grundlage der oben erwähnten Informationen bewerten Sie die folgende Aussage:

Frau Schwarz soll für den Versicherungsbetrug verantwortlich gemacht werden.

1 2 3 4 5 6

Wie soll Frau Schwarz bestraft (behandelt) werden?

f) Für unschuldig befunden und freigesprochen werden.

g) Zu einer bedingten Strafe mit Aufsicht/Betreuung verurteilt werden, mit der Verpflichtung keine buchhalterischen Aktivitäten durchzuführen.

h) Zur medizinischen Behandlung in einer medizinischen Einrichtung gezwungen werden.

i) Wegen Versicherungsbetrug zu einer Freiheitsstrafe verurteilt werden.

j) Anderes (Bitte schreiben Sie Ihren Vorschlag nachfolgend hin.)

Kommentar:……
……
……...……...…….
……..……...……..
…….

Schreiben Sie die Dauer der Haftstrafe zwischen 0 und 25 Jahren, zu der Frau Schwarz verurteilt werden sollte in das untenstehende Kästchen.

Dauer der Hafstrafe ☐

ICH BEDANKE MICH SEHR HERZLICH FÜR IHRE TEILNAHME AN DIESER STUDIE.

CHESTIONAR (RO)

NU vă scrieţi numele pe acest chestionar. Toate răspunsurile şi informaţiile oferite în acest chestionar sunt strict CONFIDENŢIALE şi ANONIME.

INFORMAŢII PERSONALE

Vă rugăm să completaţi în spaţiul liber citeţ şi cu majuscule sau să bifaţi căsuţa corespunzătoare:

Vârstă: _____

Sex: Feminin □ Masculin □

Nivelul de educaţie: universitar □ postuniversitar □

Religios: Da □ Nu □

Ocupaţie: _____

Stare civilă: căsătorit □ necăsătorit □

INSTRUCŢIUNI

Prezentul chestionar face parte dintr-un studiu intercultural care va fi realizat în Austria, România, Slovenia şi care îşi propune să cerceteze modul în care dreptul interacţionează cu ştiinţa. Acest studiu se va aplica practicienilor de drept precum judecători, avocaţi şi jurişti. În paginile următoare veţi găsi diferite afirmaţii legate de ”ştiinţă” şi de ”libertatea de a alege” şi interacţiunea acestora în aplicarea dreptului şi stabiliriea responsabilităţii juridice (şi morale) a unei persoane.

PARTEA ÎNTÂI: Vă rugăm să citiţi pe rând, cu foarte multă atenţie, fiecare afirmaţie şi să decideţi în ce măsură sunteţi de acord sau nu cu afirmaţiile oferite. Încercuiţi în jurul unui număr de la 1 la 6, afilindu-vă pentru una dintre următoarele poziţii: (1) mă opun în totalitate, (2) mă opun, (3) mă opun oarecum, (4) sunt de acord oarecum, (5) sunt de acord, (6) sunt de acord în totalitate.

Vă rugăm să alegeţi numărul care descrie cât mai exact convingerile dumneavoastră. Vă sfătuim să alegeţi numerele (3) şi (4) doar în situaţia în care sunteţi nesigur(ă) sau consideraţi dificil să vă afiliaţi unei poziţii. Precizăm că nu există răspunsuri bune sau mai puţin bune.

VĂ MULŢIUMIM PENTRU PARTICIPAREA DUMNEAVOSTRĂ ÎN ACEST STUDIU.

1	2	3	4	5	6
Mă opun în totalitate	Mă opun	Mă opun oarecum	Sunt de accord oarecum	Sunt de acord	Sunt de accord în totalitate

NOTĂ: În chestionarul de faţă, **libertate de a alege** se referă la libertatea absolută a unui agent raţional de a lua hotărâri conform propiei voinţe şi de a alege dintr-un set de variante alternative.

1. Esenţa mea constă în ceva ce ştiinţa nu va reuşi niciodată să desluşească.
   1 2 3 4 5 6
2. Explicaţia pentru comportamentul şi alegerile mele poate fi regăsită în ştiinţă.
   1 2 3 4 5 6
3. Există în mine o parte imaterială (suflet sau spirit) care îmi determină acţiunile şi care nu este determinată în sine de gene, mediu sau alţi factori.
   1 2 3 4 5 6
4. Alegerile mele sunt limitate de o forţă superioară sau de un plan superior mie.
   1 2 3 4 5 6
5. Cred că substratul biologic al unui individ generează comportamentul şi personalitatea acestuia.
   1 2 3 4 5 6
6. Cred că sunt mai mult decât produsul factorilor genetici şi de mediu.
   1 2 3 4 5 6
7. Cred că compoziţia biologică a unui individ este cauza finală a succesului sau eşecului acestuia.
   1 2 3 4 5 6
8. Caracterul şi comportamenul meu sunt rezultatul factorilor de mediu.
   1 2 3 4 5 6
9. Cred că anumiţi factori de mediu precum clima şi condiţiile de viaţă influenţează predispoziţiile mele fizice şi psihologice.
   1 2 3 4 5 6
10. Cred că fenomenele sociale (printre care aşteptările din partea societăţii sau interacţiunile interpersonale) determină comportamentul şi personalitatea unui individ.
    1 2 3 4 5 6
11. Cred că experienţele trecute şi prezente ale unui individ formează abilităţile şi personalitatea acestuia.
    1 2 3 4 5 6
12. Cred că algerile mele curente sunt influenţate de creşterea şi educaţia mea.
    1 2 3 4 5 6
13. Cred că o persoană are libertatea de a alege şi acţiona doar atunci când nu este victima unor condiţii sociale opresive precum stare materială, clasă socială, rasă sau sex.
    1 2 3 4 5 6

1	2	3	4	5	6
Mă opun în totalitate	Mă opun	Mă opun oarecum	Sunt de accord oarecum	Sunt de acord	Sunt de accord în totalitate

14. Cred că sănătatea nu constituie un factor pentru a avea libertatea de a alege, deoarece un individ posedă aceste calităţi atât timp cât este în viaţă.

1 2 3 4 5 6

15. Cred că există probleme fizice (boli fizice) şi tulburăti mentale care interferează cu liberatea de a alege.

1 2 3 4 5 6

16. Când iau o decizie, aceasta nu este doar rezultatul proceselor biologice care au loc la nivel cerebral.

1 2 3 4 5 6

17. Cred că nivelul de inteligenţă pune restricţii asupra libertăţii de a alege.

1 2 3 4 5 6

18. Cred că nu există o legătură între libertatea de a alege şi inteligenţă.

1 2 3 4 5 6

19. Cred că liberatea de a alege se manifestă încă de la o vârstă fragedă.

1 2 3 4 5 6

20. Cred că liberatea de a alege nu se regăseşte neapărat în copii (tineri), dar se dezvoltă continuu şi duce spre o perioadă a responsabilităţii.

1 2 3 4 5 6

21. Cred că liberatea de a alege este limitată şi se regăseşte doar în persoanele adulte.

1 2 3 4 5 6

22. Dacă toate alegerile mele ar fi predeterminate de factori genetici, de mediu şi/sau alţi factori, atunci nu aş putea fi declarat(ă) responsabil(ă) pentru acţiunile mele.

1 2 3 4 5 6

23. Chiar dacă alegerile mele ar fi complet determinate, aş continua să dispun în continuare de libertatea de a alege.

1 2 3 4 5 6

24. Dispun de liberatea de a alege cel puţin în măsura în care o parte dintre alegerile mele nu sunt predeterminate de factori ereditari, de mediu şi alţi factori.

1 2 3 4 5 6

25. Cred că comportamentul unui individ trebuie să fie bazat pe libertatea de a alege pentru a putea fi considerat moral.

1 2 3 4 5 6

26. Cred că un comportament moral nu depinde de libertatea de a alege deoarece moralitatea este doar o "etichetă" folosită pentru a descrie comportamente care nu sunt compatibile cu normele sociale.

1 2 3 4 5 6

27. Cred că toate fiinţele umane aleg într-o manieră activă şi de aceea sunt responsabile pentru consecinţele acţiunilor sale.

1	2	3	4	5	6
Mă opun în totalitate	Mă opun	Mă opun oarecum	Sunt de accord oarecum	Sunt de acord	Sunt de accord în totalitate

28. Cred că atunci când o infracţiune este premeditată ar trebui să gândim în termini de pedepsire a persoanei şi nu de reabilitare a acesteia.

1 2 3 4 5 6

29. Cred că pentru infracţiunile premeditate, judecătorul ar trebui să aplice pedeapsa maximă prevăzută de lege.

1 2 3 4 5 6

30. Cred că comiterea unor infracţiuni viitoare ar putea fi evitată dacă inculpaţilor nu li s-ar aplica pedepse uşoare la prima comitere de infracţiuni.

1 2 3 4 5 6

PARTEA A DOUA: Vă rugăm să citiţi următoarele **speţe juridice**. Evaluaţi, ca şi în partea precedentă, afirmaţiile oferite. Încercuiţi în jurul unui număr de la 1 la 6, afilindu-vă pentru una dintre următoarele poziţii: (1) mă opun în totalitate, (2) mă opun, (3) mă opun oarecum, (4) sunt de acord oarecum, (5) sunt de acord, (6) sunt de acord în totalitate. Pentru orice sugestie sau comentariu, ori în cazul în care nu sunteţi de acord cu variantele propuse, vă rugăm să folosiţi partea liberă aferentă comentariilor.

SPEŢA 1

Domnul Popescu, în vârstă de 37 de ani, este profesor de profesie şi este judecat pentru avansuri sexuale făcute asupra fiicei sale vitrege. În urma expertizelor medicale, s-a constatat că acesta are o tumoare în partea dreaptă a lobului temporal cranian. Rezultatele sale medicale au arătat că atunci când tumoarea a fost înlăturată, comportamentul său pedofilic a încetat. Însă, odată cu recreşterea tumorii, comportamentul său anormal a reapărut de asemenea.

Pe baza informaţiilor oferite, evaluaţi următoarele afirmaţii:

Domnul Popescu ar trebui să fie declarat responsabil pentru avansurile sexuale făcute asupra fiicei sale vitrege.

1 2 3 4 5 6

Ce tip de tratament/pedeapsă consideraţi că trebuie aplicat(ă) domnului Popescu?

a) ar trebui să fie găsit nevinovat şi pus în libertate
b) ar trebui pus în libertate sub condiţia de a nu intra în legătură cu fiica sa vitregă sau orice alt copil pentru o perioadă determinată de timp
c) ar trebui să fie supus unui tratament medical într-o instituţie medicală
d) ar trebui găsit vinovat pentru avansuri sexuale şi pus în închisoare
e) nici una dintre variantele de mai sus (vă rugăm să notaţi sugestia dumneavoastră)

Comentarii:

……

……
…...……...……
……..……..……..…
……

Alegeţi o pedeapsă cuprinsă între 0 şi 25 de ani de închisoare pentru fapta comisă de domnul Popescu şi notaţi-o în chenarul de mai jos.

Domnul Popsescu ar trebui condamnat la ☐ ani de închisoare.

SPEŢA 2

Domnul Georgescu, în vârstă de 35 de ani, a fost arestat pentru infracţiunea de viol asupra a trei tinere. În perioada de investigare, acestuia i s-a efectuat o tomografie cerebrală pe bază de emisie pozitronică (PET) care a arătat că lobul său temporal a fost serios afectat în urma unui infarct. Expertul medical a arătat că în timpul infarctului, lobul frontal (care este asociat cu funcţia executivă a creierului, ce cuprinde printre altele, luarea hotărârilor, controlul impulsurilor şi controlul comportamentului sexual) al domnului Georgescu a fost ireversibil afectat şi acest lucru explică comportamentul sexual anormal al acestuia.

Pe baza informaţiilor oferite, evaluaţi următoarele afirmaţii:

Domnul Georgescu ar trebui să fie declarat responsabil pentru avansurile sexuale făcute asupra fiicei sale.

1 2 3 4 5 6

Ce tip de tratament/pedeapsă consideraţi că trebuie aplicat(ă) domnului Goergescu?

a) ar trebui să fie găsit nevinovat şi pus în libertate
b) ar trebui pus în libertate sub supraveghere
c) ar trebui să fie supus unui tratament medical într-o instituţie medicală
d) ar trebui găsit vinovat pentru violarea celor trei tinere şi pus în închisoare
e) nici una dintre variantele de mai sus (vă rugăm să notaţi sugestia dumneavoastră)

Comentarii:

……
……
…...……...……
……..……..……
……

Alegeţi o pedeapsă cuprinsă între 0 şi 25 de ani de închisoare pentru fapta comisă de domnul Georgescu şi notaţi-o în chenarul de mai jos.

Domnul Georgescu ar trebui condamnat la ☐ ani de închisoare.

SPEȚA 3

Domul Ionescu, în vârstă de 47 de ani, a fost trimis în judecată pentru vătămarea corporală a unui pieton ce a necesitat spitalizare pentru o perioadă de două luni Aflat pe pista pentru bicicliști, domnul Ionescu i-a aplicat pietonului lovituri pe motiv că a nu a circulat în mod corespunzător și că astfel aproape a provocat un accident. Avocatul domnului Ionescu a arătat că învinuitul este în general o persoană pașnică, care nu a manifestat niciodată un asemena comportament agresiv. Expertul medical a arătat că proba de salivă care a fost colectată de la învinuit indică un nivel anormal al nivelului de testosteron, și în consecință, comportamentul său violent este rezultatul schimbului nivelului normal de testosteron datorită ingerării unor steroizi pentru îmbunătățirea performanței sportive. De asemenea, expertul medical a menționat că, pentru moment, nu există între specialiști un consens unanim asupra corelației pozitive dintre nivelul de testosteron și agresivitate în general, însă în opinia sa, în acest caz, corelația este evidentă.

Pe baza informațiilor oferite, evaluați următoarele afirmații:

Domnul Ionescu ar trebui să fie declarat responsabil pentru vătămarea corporală a pietonului.

1 2 3 4 5 6

Ce tip de tratament/pedeapsă considerați că trebuie aplicat(ă) domnului Ionescu?

a) ar trebui să fie găsit nevinovat și pus în libertate
b) ar trebui să fie lăsat în libertate sub supraveghere
c) ar trebui să fie supus unui tratament medical într-o instituție medicală
d) ar trebui găsit vinovat pentru vătămarea corporală a pietonului și pus în închisoare
e) nici una dintre variantele de mai sus (vă rugăm să notați sugestia dumneavoastră)

Comentarii:

……
……
…...……..……..……..…
……...……...……..…
…….

Alegeți o pedeapsă cuprinsă între 0 și 25 de ani de închisoare pentru fapta comisa de domnul Ionescu și notați-o în chenarul de mai jos.

Domnul Ionescu ar trebui condamnat la ☐ ani de închisoare.

SPEȚA 4

Domnul Popa, în vârstă de 27 de ani, a fost trimis în judecată pentru infracțiunea de vânzare de metamfetamine. Avocatul apărării a informat judecătorul asupra faptului că învinuitul descoperise în urmă cu 8 ani că avea o tumoare hipofizară care i-a provocat daune cerebrale ireversibile. Expertul medical a arătat că tumorile hipofizare pot afecta producția glandei tiroide, care la rândul ei poate cauza tulburări de dispoziție, daune în

regiunea frontală, temporală şi talamică a creierului şi astfel poate dăuna capacitatăţii intelectuale generale, cauzând probleme în luarea deciziilor şi în flexibilitatea mentală. Expertul medical a sprijint avocatul apărării care a susţinut că datorită tumorii, învinuitul a fost mai susceptibil de a fi influenţat şi manipulat de către traficanţii de droguri şi că din acest motiv a acceptat să comercializeze droguri.

Pe baza informaţiilor oferite, evaluaţi următoarele afirmaţii:

Domnul Popa ar trebui să fie declarat responsabil pentru infracţiunea de vânzare de metamfetamine.

1 2 3 4 5 6

Ce tip de tratament/pedeapsă consideraţi că trebuie aplicat(ă) domnului Popa?

a) ar trebui să fie găsit nevinovat şi pus în libertate
b) ar trebui să fie lăsat în libertate sub supraveghere
c) ar trebui să fie supus unui tratament medical într-o instituţie medicală
d) ar trebui găsit vinovat pentru infracţiunea de vânzare de metamfetamine şi pus în închisoare
e) nici una dintre variantele de mai sus (vă rugăm să notaţi sugestia dumneavoastră)

Comentarii:

……
……
…..……...……
……..……..……
……

Alegeţi o pedeapsă cuprinsă între 0 şi 25 de ani de închisoare pentru fapta comisă de domnul Popa şi notaţi-o în chenarul de mai jos.

Domnul Popa ar trebui condamnat la ☐ ani de închisoare.

SPEŢA 5

Doamna Munteanu, în vârstă de 39 de ani, a fost trimisă în judecată pentru savârşirea de practici frauduloase în materie de asigurări pentru o perioadă de 8 ani. În urmă cu 10 ani, doamna Munteanu fusese diagnosticată cu encefalopatie anoxică cauzată de un infarct miocardic. O tomografie computerizată cu emisie de fontoni (SPECT) a indicat o reducere a fluxului de sânge la nivelul lobilor frontal şi temporal (care sunt asociaţi cu funcţia executivă a creierului şi cu memoria). Expertul medical a arătat că comportamentul său fraudulos ar putea fi rezultatul daunelor existente la nivel cerebral.

Pe baza informaţilor oferite evaluaţi următoarele afirmaţii:

Domna Munteanu ar trebui să fie declarată responsabilă pentru săvârşirea pentru o

perioadă de 8 ani de practici frauduloase în materie de asigurări.

1 2 3 4 5 6

Ce tip de tratament/pedeapsă consideraţi că trebuie aplicat(ă) doamnei Munteanu?

k) ar trebui să fie găsită nevinovată şi pusă în libertate

l) ar trebui să fie lăsată în libertate sub supraveghere

m) ar trebui să fie supusă unui tratament medical într-o instituţie medicală

n) ar trebui găsit vinovată pentru săvârşirea de practici frauduloase în materie de asigurări şi pusă în închisoare

o) nici una dintre variantele de mai sus (vă rugăm să notaţi sugestia dumneavoastră)

Comentarii:

……..…

……..…

……

……

…….

Alegeţi o pedeapsă cuprinsă între 0 şi 25 de ani de închisoare pentru fapta comisa de doamna Munteanu şi notaţi-o în chenarul de mai jos.

Doamna Munteanu ar trebui condamnată la ☐ ani de închisoare.

VĂ MULȚUMIM PENTRU PARTICIPAREA DUMNEAVOASTRĂ ÎN ACEST STUDIU!

VPRAŠALNIK (SLO)

Vsi odgovori in podatki so strogo ZAUPNI in ANONIMNI.

PODATKI O ANKETIRANCU

Prosim, vpišite svoje podatke:

Starost: _____

Spol: moški ☐ ženski ☐

Stopnja izobrazbe: dodiplomski študij ☐ podiplomski študij ☐

Veren/a: da ☐ ne ☐

Poklic: _____

Zakonski stan: poročen/poročen ☐ samski/samska ☐

NAVODILA

Ta vprašalnik je del medkulturne raziskave, ki jo izvajam v Avstriji, Romuniji in Sloveniji in raziskuje povezavo med naravoslovnimi znanostmi in pravom ter procese odločanja pravnikov.

Spodaj se nahajajo izjave o "znanosti" in "svobodni volji" in njuni interakciji s pravom, predvsem pri ocenjevanju zakonske (in moralne) odgovornosti oseb.

PRVI DEL: Prosim pozorno preberite vsako od trditev in se se odločite, ali se z njo strinjate ali ne. Obkrožite (ali postavite križec ob) število od 1 do 6, ki kaže, da se z izjavo (1) nikakor ne strinjate, (2) ne strinjate, (3) delno ne strinjate, (4) delno strinjate, (5) strinjate ali (6) močno strinjate.

Prosim, izberite število, ki predstavlja, kar v resnici menite o posamezni izjavi. Števili (3) oziroma (4) izberite zgolj, ko se ne o tem morete odločiti. Pri izpolnjevanju vprašalnika ni PRAVILNIH ali NEPRAVILNIH odgovorov.

HVALA ZA VAŠE SODELOVANJE V TEJ ŠTUDIJI!

1	2	3	4	5	6
Nikakor ne stranjate	Ne stranjate	Delno ne stranjate	Delno stranjate	Stranjate	Močno strinjate

OPOMBA: Svobodna volja v tem vprašalniku pomeni "sposobnost razumnih agentov izbrati določeno ravnanje izmed različnih alternativ" (Stanford Encyclopedia).

1. Pravi jaz je nekaj, česar znanost nikoli ne bo definirala.
   1 2 3 4 5 6
2. Znanost lahko razloži moje vedenje in ravnanje.
   1 2 3 4 5 6
3. Obstaja ne-fizični del mene (denimo duša), ki določa moja ravnanja, a ni determiniran z mojimi geni, okoljem ali drugimi dejavniki.
   1 2 3 4 5 6
4. Moje izbire omejuje višja sila.
   1 2 3 4 5 6
5. Moja biološka sestava tvori moje vedenje in osebnost.
   1 2 3 4 5 6
6. Nisem zgolj proizvod okoljskih in genetskih dejavnikov.
   1 2 3 4 5 6
7. Menim, da je biološka sestava osebe odločilen razlog za njen uspeh oziroma neuspeh.
   1 2 3 4 5 6
8. Moj značaj in vedenje sta posledica okoljskih dejavnikov.
   1 2 3 4 5 6
9. Menim, da okoljski dejavniki (denimo podnebje ali življenjski prostor) vplivajo na moje fizične in psihološke predispozicije.
   1 2 3 4 5 6
10. Menim, da lahko družbeni pojavi, kot denimo običaji, pričakovanja in medsebojna interakcija, določajo človekovo vedenje in osebnost.
    1 2 3 4 5 6
11. Menim, da človekove izkušnje oblikujejo njegove sposobnosti in osebnost.
    1 2 3 4 5 6
12. Menim, da moja vzgoja in izobrazba vplivata na moje trenutne odločitve.
    1 2 3 4 5 6
13. Menim, da se svobodna volja izrazi zgolj tedaj, ko ljudje niso izpostavljeni zatiralnih družbenih pogojev, kot so denimo premoženje, razred, rasa ali spol.
    1 2 3 4 5 6
14. Menim, da zdravje ne igra vloge pri tem, ali svobodno voljo imamo ali ne, saj jo imamo, dokler smo živi.
    1 2 3 4 5 6
15. Menim, da lahko nekatere telesne težave (telesne bolezni) svobodno voljo ovirajo.
    1 2 3 4 5 6

1	2	3	4	5	6
Nikakor ne stranjate	Ne stranjate	Delno ne stranjate	Delno stranjate	Stranjate	Močno strinjate

16. Moje odločitve niso zgolj posledica načina delovanja mojih možganov.

1 2 3 4 5 6

17. Menim, da lahko stopnja inteligence omejuje svobodno voljo.

1 2 3 4 5 6

18. Menim, da svobodna volja ni povezana z inteligenco.

1 2 3 4 5 6

19. Menim, da se svobodna volja začne kazati v zgodnjih letih.

1 2 3 4 5 6

20. Menim, da se svobodna volja ne pokaže že pri malih otrocih, temveč se postopoma razvija kasneje.

1 2 3 4 5 6

21. Menim, da je svobodna volja omejena in se kaže zgolj pri zrelih odraslih.

1 2 3 4 5 6

22. Če bi bile vse moje odločitve determinirane z okoljskimi, genetskimi in drugimi vidiki, zanje ne bi mogel biti odgovoren.

1 2 3 4 5 6

23. Tudi, če bi bile moje odločitve popolnoma determinirane, bi še vedno razpolagal/a s svobodno voljo.

1 2 3 4 5 6

24. Moja svobodna volja se kaže v tem, da vsaj nekatere izmed mojih odločitev niso determinirane z okoljskimi, genetskimi ali drugimi dejavniki.

1 2 3 4 5 6

25. Menim, da mora vedenje temeljiti na svobodni izbiri s, da ga lahko obravnavamo kot moralno.

1 2 3 4 5 6

26. Menim, da moralno vedenje ni odvisno od svobodne volje, saj je morala zgolj oznaka za opis vedenja, ki ni v skladu z družbenimi normami.

1 2 3 4 5 6

27. Menim, da se človek aktivno odloča o svojih dejanjih in je za njihove posledice odgovoren.

1 2 3 4 5 6

28. Če je zločin načrtovan, se je potrebno prvenstveno osredotočiti na kaznovanje in ne na rehabilitacijo.

1 2 3 4 5 6

29. Menim, da bi morali sodniki pri naklepnih zločinih izreči najvišjo kazen, ki jo določa kazensko pravo.

1 2 3 4 5 6

1	2	3	4	5	6
Nikakor ne stranjate	**Ne stranjate**	**Delno ne stranjate**	**Delno stranjate**	**Stranjate**	**Močno strinjate**

30. Menim, da bi nadaljnje zločine lahko preprečili, če prestopnikom prvič ne bi naložili mile kazni.

1 2 3 4 5 6

DRUGI DEL: Prosim, preberite naslednje primere. Kot v prvem delu obkrožite število od od 1 do 6, ki kaže, da se z izjavo (1) nikakor ne strinjate, (2) ne strinjate, (3) delno ne strinjate, (4) delno strinjate, (5) strinjate ali (6) močno strinjate. Predloge in komentarje vpišite v polje, namenjeno komentarjem.

PRIMER 1

Gospod Novak je 37 let star učitelj, ki je v sodnem postopku zaradi spolnega nadlegovanja svoje pastorke. Ugotovljeno je bilo, da ima tumor v desnem frontalnem možganskem režnju. Ko je bil tumor odstranjen, je prenehal s pedofilskim vedenjem. Ko se je tumor znova pojavil, se je vedenje nadaljevalo.

Na podlagi navedenega prosim ocenite naslednje izjave/vprašanja:

Gospod Novak mora biti odgovoren za spolno nadlegovanje svoje pastorke.

1 2 3 4 5 6

a) Kako je potrebno ravnati z gospodom Novakom?
b) Potrebno ga je spoznati za nedolžnega in ga izpustiti na prostost.
c) Potrebno ga je izpustiti na prostost z obveznostjo, da v določenem času ne pride v stik s pastorko ali drugimi otroci.
d) Potrebno ga je prisiliti k zdravljenju v zdravstvenem zavodu.
e) Potrebno ga je obsoditi na zaporno kazen zaradi spolnega nadlegovanja.
f) Drugo (prosim, vpišite svoj predlog spodaj)

Komentar

……………………………………………………………………………………………
……………………………………………………………………………………………
……...……...………………………………………………………………………….…
…………………..………......…………………………………………………………
…………………………………………………………………………………………….

Izberite trajanje zaporne kazni med 0 in 25 leti za dejanje, ki ga je storil gospod Novak in ga vpišite v spodnji kvadrat.

Trajanje zaporne kazni v letih ☐

PRIMER 2

Gospod Kovač, star 35 let, je bil aretiran zaradi posilstva treh mladih žensk. V predkazenskem postopku je slikanje možganov s PET (pozitronska emisijska tomografija) pokazalo resne poškodbe frontalnega možganskega režnja, ki so nastale zaradi kapi. Sodni izvedenec s področja medicine je pojasnil, da je zaradi kapi frontalni reženj, ki vpliva na presojanje, nadzor in spolno vedenje) nereverzibilno poškodovan, kar pojasnjuje nenormalno spolno vedenje gospoda Kovača.

Na podlagi navedenega prosim ocenite naslednje izjave/vprašanja:

Gospod Kovač mora biti odgovoren za posilstvo treh žensk.

1 2 3 4 5 6

Kako je potrebno ravnati z gospodom Kovačem?

a) Potrebno ga je spoznati za nedolžnega in ga izpustiti na prostost.
b) Potrebno ga je izpustiti na prostost in ga nadzirati.
c) Potrebno ga je prisiliti k zdravljenju v zdravstenem zavodu.
d) Potrebno ga je obsoditi na zaporno kazen zaradi posilstev.
e) Drugo (prosim, vpišite svoj predlog spodaj)

Komentar

……..…
……..…
……...……...…….……
……..……....…….……
…….

Izberite trajanje zaporne kazni med 0 in 25 leti za dejanje, ki ga je storil gospod Kovač in ga vpišite v spodnji kvadrat.

Trajanje zaporne kazni v letih ☐

PRIMER 3

Gospod Benko, star 47 let, je kolesaril po kolesarski stezi. Nenadoma se je pred njim pojavil pešec in gospod Benko ga je s svojim kolesom skoraj povozil. To je gospoda Benka tako razjezilo, da je sestopil s kolesa in pričel brutalno pretepati pešca, ker je hodil po kolesarski stezi, ki je namenjena kolesarjem. Pešec je bil zaradi tega hospitaliziran za dva meseca. V kazenskem postopku zoper gospoda Benka je njegov odvetnik povedal, da je gospod Benko miren človek, ki se nikoli ne pretepa, njegovo nasilno vedenje pa je bilo posledica visoke ravni testosterona. Gospod Benko je namreč pred treningom užil steroide, ki so vplivali na raven testosterona. Sodni izvedenec je pojasnil, da vzorci

obdolženčeve sline vsebujejo nenormalno visoko raven testosterone, ki je povzročil njegovo nasilno vedenje. Dodal je tudi, da se znanstveniki ne strinjajo povsem o vzročni zvezi med nivojem testosterona in nasilnim vedenjem.

Na podlagi navedenega prosim ocenite naslednje izjave/vprašanja:

Gospod Benko mora biti odgovoren za napad na pešca.

1 2 3 4 5 6

Kako je potrebno ravnati z gospodom Benkom?

a) Potrebno ga je spoznati za nedolžnega in ga izpustiti na prostost.
b) Potrebno ga je pogojno obsoditi na eno leto zaporne kazni z obveznim nadzorstvom.
c) Potrebno ga je prisiliti k zdravljenju v zdravstvenem zavodu.
d) Potrebno ga je obsoditi na zaporno kazen zaradi napada in povzročitve poškodb.
e) Drugo (prosim, vpišite svoj predlog spodaj)

Komentar:

……..…
……..…
……...……...…….……..…
……..……....…….…
……

Izberite trajanje zaporne kazni med 0 in 25 leti za dejanje, ki ga je storil gospod Benko in ga vpišite v spodnji kvadrat.

Trajanje zaporne kazni v letih ☐

PRIMER 4

Gospod Horvat, star 27 let, je v sodnem postopku zaradi prodaje metamfetamina in drugih mamil. Njegov odvetnik je povedal, da je obdolženec pred osmimi leti izvedel, da ima nenavadno velik tumor na hipofizi, kar je povzročilo nereverzibilen možganski tumor. Sodni izvedenec je pojasnil, da lahko tumorji na hipofizi vplivajo na delovanje žleze ščitnice, kar ima za posledico razpoloženjske motnje in poškodbe frontalne, temporalne in talamične možganske regije. Te poškodbe povzročijo težave pri odločanju, duševni fleksibilnosti in splošni intelektualni zmožnosti. Pritrdil je obdolženčevi obrambi, da je bil obdolženec zaradi tumorja bolj dovzeten za vpliv in manipulacije preprodajalcev droge in je zato pričel preprodajati drogo tudi sam.

Na podlagi navedenega prosim ocenite naslednje izjave/vprašanja:

Gospod Horvat mora biti odgovoren zaradi preprodaje mamil.

1 2 3 4 5 6

Kako je potrebno ravnati z gospodom Horvatom?

a) Potrebno ga je spoznati za nedolžnega in ga izpustiti na prostost.
b) Potrebno ga je pogojno obsoditi na zaporno kazen z obveznim nadzorstvom).
c) Potrebno ga je prisiliti k zdravljenju v zdravstvenem zavodu.
d) Potrebno ga je obsoditi na zaporno kazen zaradi preprodaje mamil.
e) Drugo (prosim, vpišite svoj predlog spodaj

Komentar:

…….
……...……..
……...……...…..……
……..……...…….……...
…….

Izberite trajanje zaporne kazni med 0 in 25 leti za dejanje, ki ga je storil gospod Horvat in ga vpišite v spodnji kvadrat.

Trajanje zaporne kazni v letih ☐

PRIMER 5
Gospa Vidmar, računovodkinja stara 47 let, je pred sodiščem zaradi več zavarovalniških goljufij, ki jih je storila v obdobju osmih let. Pred desetimi leti je bilo ugotovljeno, da ima anoksično encefalopatijo, ki jo je povzročil miokardialni infarkt. SPECT (enofotonska emisijska računalniška tomografija) je pokazala znižan krvni obtok v temporalnem in frontalnem režnju (ki sta povezana z izvršilnimi funkcijami in spominom). Sodni izvedenec je povedal, da bi lahko bilo vedenje gospe Vidmar posledica njene prizadetosti.

Na podlagi navedenega prosim ocenite naslednje izjave/vprašanja:

Gospa Vidmar mora biti odgovorna zaradi zavarovalniških goljufij.

1 2 3 4 5 6

Kako je potrebno ravnati z gospo Vidmar?

a) Potrebno jo je spoznati za nedolžno in jo izpustiti na prostost.
b) Potrebno jo je pogojno obsoditi na zaporno kazen z obveznim nadzorom ter ji prepovedati opravljati računovodske aktivnosti.
c) Potrebno jo je prisiliti k zdravljenju v zdravstvenem zavodu.
d) Potrebno jo je obsoditi na zaporno kazen zaradi zavarovalniške goljufije.
e) Drugo (prosim, vpišite svoj predlog spodaj

Komentar:

……

……..…
……...……...…….……..…
……..…….....…….……
…….

Izberite trajanje zaporne kazni med 0 in 25 leti za dejanje, ki ga je storila gospa Vidmar in ga vpišite v spodnji kvadrat.

Trajanje zaporne kazni v letih ☐

HVALA ZA VAŠE SODELOVANJE V TEJ ŠTUDIJI!

REFERENCES

BOOKS

BASINGER, D., BASINGER, R. (eds.), *Predestination and Free Will: Four Views of Divine Sovereignty and Human Freedom*, InterVarsity Press, Downers Grove, 1986.

BEECH, A., CARTER, A., MANN, R., ROTSHTEIN, P. (eds.), *The Wiley Blackwell Handbook of Forensic Neuroscience*, Wiley Black, Hoboken, 2018.

CAMPBELL, N., *Physics the Elements*, Cambridge University Press, Cambridge, 1920.

CARUSO, G., *Exploring the Illusion of Free Will and Moral Responsibility*, Lexington Books, Plymouth, 2013.

CLARK, W., GRUNSTEIN, M., *Are we Hardwired?, The Role of Genes in Human Behavior*, Oxford University Press, New York, 2000.

DAVIS, S. (ed.), *Handbook of Research Methods in Experimental Psychology*, Blackwell Publishing Inc., Malden, 2003.

DENNETT, D., *Freedom Evolves*, Penguin Books, London, 2003.

DENNETT, D., *Elbow Room: The Varieties of Free Will Worth Wanting*, The MIT Press, Cambridge, 2015.

FISHER, J., KANE, R., PEREBOOM, D., VARGAS, M., *Four Views on Free Will*, Blackwell Publishing Inc., Malden, 2007.

GAUTHIER, D., *Morals by Agreement*, Oxford University Press, New York, 1986.

HARMON-JONES, E., MILLS, J. (eds.), *Cognitive Dissonance: Progress on a Pivotal Theory in Social Psychology*, American Psychological Association, Washington DC, 1999.

HARRIS, S., *Free Will*, Free Press, New York, 2012.

ILLES, J., (ed.), *Neuroethics: Defining the Issues in Theory, Practice and Policy*, Oxford University Press, New York, 2005.

INWANGEN, P., *An Essay on Free Will and Determinism,* Clarendon Press, Oxford, 1983.

JOHNSON, S., ROMMELFANGER, K., *The Routledge Handbook of Neuroethics*, Routledge, New York, 2018.

KANE, R., *A Contemporary Introduction to Free Will*, Oxford University Press, New York, 2005.

KANE, R. (ed.), *The Oxford Handbook on Free Will*, Oxford University Press, New York, 2011.

KANE, R., *The Significance of Free Will,* Oxford University Press, New York, 1998.

KELSEN, H., *Pure Theory of Law*, University of California Press, Berkley, 1967.

KUHN, T., *The Structure of Scientific Revolutions*, International Encyclopedia of Unified

Science, Second Edition enlarged, The University of Chicago Press, Chicago, 2012.

KINCAID, H., DUPRE, J., WHLIE, A., *Value-Free Science?: Ideals and Illusions*, Oxford University Press, New York, 2007.

LACEY, H., *Is Science Value Free?: Values and Scientific Understanding*, Routledge, New York, 1999.

LUMER, C., NANNINI, S., (eds.), *Intentionality, Deliberation and Autonomy, The Action-Theoretic Basis of Practical Philosophy*, Routledge, New York, 2016.

MCKENNA, M., PEREBOOM, D., *Free Will: Contemporary Introduction*, Routledge, New York, 2016.

MEDNICK, S., MOFFITT, T., STACK, S., *The Causes of Crimes: New Biological Approaches*, Cambridge University Press, New York, 1987.

MELE, A., *Surrounding Free Will: Philosophy, Psychology and Neuroscience*, Oxford University Press, New York, 2015.

MILES, J., *The Free Will Delusion: How we Settled for the Illusion of Morality*, Matador, Leicestershire, 2015.

MOORE, M., *Causation and Responsibility: An Essay in Law, Morals and Metaphysics*, Oxford University Press, New York, 2009.

MURPHY, N., ELLIS, G., O'CONNOR, T. (eds.), *Downward Causation and the Neurobiology of Free Will*, Springer, Heidelberg, 2009.

PATTERSON, D., PARDO, M. (eds.), *Philosophical Foundations of Law and Neuroscience*, Oxford University Press, New York, 2016.

PEREBOOM, D., *Living Without Free Will*, Cambridge University Press, Cambridge, 2001.

PUTNAM, H., *The Collapse of the Fact/ Value dichotomy and other Essays*, Harvard University Press, Cambridge, 2002.

RAILTON, P., *Facts, Values and Norms: Essay toward a Morality of Consequence*, Cambridge University Press, Cambridge, 2003.

REES, D., ROSE, S., (eds.), *The New Brain Sciences: Perils and Prospects*, Cambridge University Press, Cambridge, 2004.

ROXIN, C., *Einführung in das Strafrecht und Strafprozessrecht*, Müller Verlag, Heidelberg, 2006.

SEARLE, J., I*ntentionality: An Essay in the Philosophy of Mind*, Cambridge University Press, Cambridge, 1983.

SINNOTT-ARMSTRONG, W, *Conscious Will and Responsibility: A Tribute to Benjamin Libet*, Oxford University Press, New York, 2010.

SKINNER, B., *Beyond Freedom and Dignity*, Hackett Publishing Company Inc., Cambridge, 1971.

STERNBERG, E., My *Brain Made Me Do It: The Rise of Neuroscience and the Threat to Moral Responsibilit*y, Prometheus Books, New York, 2010.

STRAWSON, G., *Freedom and Belief*, Clarendon Press, Oxford, 1986.

ZEKI, S., GOODENOUGH, O., *Law and the Brain*, Oxford University Press, New York, 2006.

WALTER, H., *Neurophilosophy of Free Will: From Libertarian Illusions to a Concept of Natural Autonomy*, The MIT Press, Cambridge, Massachusetts, 2009.

PAPERS, ARTICLES AND OTHER ONLINE PUBLICATIONS

ADAMS, F., MELE, A., *The intention/ Volition Debate*, Canadian Journal of Philosophy, Vol. 22, 1992, p. 323-338.

AHARONI, E., FUNK, C., ARMSTRONG, W.S., GAZZANIGA, M., *Can Neurological Evidence Help Courts Assess Criminal Responsibility? Lessons from Law and Neuroscience*, Annual New York Academy Science, No. 1124, 2008, p. 145-160.

AHARONI, E., VINCENT, G., HARENSKI, C., CALHOUN, V., SINNOTT-ARMSTRONG, W., GAZZANIGA, M., KIEHL, K., *Neuroprediction of Future Rearrest*, Proceedings of the National Academy of Sciences of the United States of America, Vol. 110, No. 15, 2013, p. 6223-6228.

ALEXANDER, L., *Hard Incompatibilism and the Rejection of Moral Responsibility: A Skeptical Look at an Optimistic Account*, San Diego Legal Studies, Paper No. 17-259, 2017, p. 1-7.

ALLACHIN, D., *Values in Science: An Educational Perspective*, Science and Education, Kluwer Academic Publisher, No. 8, 1999, p. 1-12.

ANDREW, J., *Delinquency, Sex, and Family Variables*, Social Biology, Vol. 23, 1976, p. 168-171.

APINWALL, L., BROWN, T., TABERY, J., *The Double-Edge Sword: Does Biomechanism Increase or Decrease Judges' Sentencing of Psychopaths?,* Science, Vol. 337, 2012, p. 845-849.

ARCHER, J., *The Influence of Testosterone on Human Aggression*, British Journal of Psychology, Vol. 82, 1991, p. 1-28.

ARMINJON, M., *The Four Postulates of Freudian Unconscious Neurocognitive Convergences*, Frontiers in Psychology, Vol. 2:125, 2011, https://www.frontiersin.org/articles/10.3389/fpsyg.2011.00125/full.

ARNASON, G., *Neuroscience, free will and moral responsibility*, TRAMES, 15(65/60), Vol. 2, 2011, p. 147-155.

BAKER, L., *Moral Responsibility Without Libertarianism*, NOUS, Vol. 42, 2006, p. 307-330.

BALL, S., *Facts, Values and Interpretation in Law: Jurisprudence from perspectives in Ethics and Philosophy of Science*, The American Journal of Jurisprudence, Vol. 38, Issue 1, 1993, p. 15-61.

BAUMEISTER, R., BREWER, L., *Believing versus Disbelieving in Free Will: Correlates and Consequences*, Social and Personality Psychology Compass, Vol. 6, Issue 10, 2012, p. 736-745.

BAUMEISTER, R., *Free Will in Scientific Psychology*, Perspective in Psychological Science, Vol. 3, Issue 1, 2008, p. 14-19.

BAYNE, T., *Phenomenology and the feeling of doing: Wegner on the conscious will*, In S. POCKETT, W.P. BANKS, W.P., *Does Conscious Cause Behaviour?*, MIT Press, Cambridge, 2006, p. 169-186.

BEECH, A., FISHER, D., *Neuroscience in Forensic Settings: Origins and Recent Developments*, In BEECH, A., CARTER, A., MANN, R., ROTSHTEIN, P. (eds.), *The Wiley Blackwell Handbook of Forensic Neuroscience*, Wiley Black, Hoboken, 2018, p. 3-20.

BEECHER-MONAS, E., GARCIA-RILL, E., *Overselling Images: fMRI and the Search for Truth*, The John Marshall Law Review, Vol. 48, Issue 3, 2015, p. 651-692.

BERING, J., *Scientists say free will probably doesn't exist but urge "Don't stop believing"*, Scientific American, 2010, https://blogs.scientificamerican.com/bering-in-mind/scientists-say-free-will-probably-doesnt-exist-but-urge-dont-stop-believing/.

BERNARD, J., HAAS, K., SILER, B., WEATHERBY, A., *Perceptions of Rehabilitation and Retribution in the Criminal Justice System: A Comparison of Public Opinion and Previous Litera*ture, Journal of Forensic Sciences, Vol. 5, Issue 3, 2017, p. 1-14.

BREYER, S., *Science in the Courtroom*, Issues in Science and Technology, Vol. XVI, Issue 4, 2000, http://issues.org/16-4/breyer/.

BRYANT, E. SCOTT, M., GOLDEN, C., TORI, C., *Neurophysiological Deficits, Learning Disabilities and Violent Behaviour*, Journal of Consulting and Clinical Psychology, Vol. 52, 1984, p. 323-324.

BURMEISTER, S., *Innovation as a Possibility. Technological and Social Determinism in Their Dialectical Resolution*, In BURMEISTER, S., BERNBECK, R., The Interplay of People and Technologies. Archeological Cases on Innovations, Berlin Studies of Ancient World, Vol. 43, 2017, p. 21-42.

BURNS, K., BACHARA, A., *Decision Making and Free Will: a Neuroscience Perspective*, Behavioural Sciences and the Law, No. 25, 2007, p. 263-280.

BUSEY, T., LOFTUS, G., *Cognitive Science and the Law*, Trends in Cognitive Science, Vol. 11, No. 3, 2007, p. 111-117.

BYERLY, R., *Free Will Theodicies for Theological Determinism*, SOPHIA, Vol. 56, Issue 2, 2017, p. 289-310.

CABRERA, L., *Can Brain Scans Spot Criminal Intent?*, Bioethics in the News, 2017, https://msubioethics.com/2017/04/06/can-brain-scans-spot-criminal-intent/.

CABRERA, L., TESLUK, J., CHAKRABORTI, M., MATTHEWS, R., ILLES, J., *Brain Matters: From Environmental Ethics to Environmental Neuroethics*, Environmental Health, Vol. 15, Issue 20, 2016, p. 1-5.

CAOUETTE, J., *Hard Incompatibilism and Ethics: Some Concerns,* A Philosopher's Take, 2013, https://aphilosopherstake.com/2013/07/01/hard-incompatibilism-and-ethics-some-concerns/.

CAREY, M., PAULHUS, D., *Worldview Implications of Believing in Free Will and/or*

Determinism: Politics, Morality and Punitiveness, Journal of Personality, Vol. 81, 2013, p. 130-141.

CATLEY, P., CLAYDON, L., *The Use of Neuroscientific Evidence in the Courtroom by those Accused of Criminal Offenses in England and Wales*, Journal of Law and Bioscience, Vol. 2, Issue 3, 2015, p. 510-549.

CAVE, S., *There is No Such Thing as Free Will*, The Atlantic, 2015, https://www.theatlantic.com/magazine/archive/2016/06/theres-no-such-thing-as-free-will/480750/.

CHIESA, L., *Punishing Without Free Will*, Utah Law Review, 2011, p. 1403-1460.

CHILD TRENDS, Young Adults in Jail or in Prison, Data Bank, April 2012, https://www.childtrends.org/indicators/young-adults-in-jail-or-prison/.

CHURCH, D., *Neuroscience in the courtroom: An international concern*, William and Marry Law Review, Vol. 53, Issue 5, p. 1824-1854.

CLARK, C., *Free to Punish: A Motivated Account of Free Will Belief*, Journal of Personality and Social Psychology, Vol. 106, 2014, p. 501-513.

CLAYDON, L., *Reforming automatism and insanity: Neuroscience and claims of lack of capacity for control*, Medicine, Science and the Law, Vol. 55, Issue 3, 2015, p. 162-167.

COPPOLA, F., *Mapping the Brain to Predict Antisocial Behaviour: New Frontiers in Neurocriminology*, UCL Journal of Law and Jurisprudence, Special Issue 1, Article 5, 2018, p. 103-126.

DALEY, J., *Freud and Determinism*, The Southern Journal of Philosophy, Vol. 9, Issue 2, 1971, p. 179-188.

DANQUAH, A., FARREL, M., BOYLE, D., *Biases in the subjective timing of perceptual events: Libet et al. (1983) revisited*, Consciousness and Cognition, Vol. 17, 2008, p. 616-627.

DARBY, R., HORN, A., CUSHMAN, F., FOX, M., *Lesion network localization of criminal behaviour*, Proceedings of the National Academy of Sciences of the United States of America, Vol. 115, 2018, p. 601-606.

DENNETT, D., *The Scientific Study of Religion* (Podcast), Point of Inquiry, 2011, http://www.pointofinquiry.org/daniel_dennett_the_scientific_study_of_religion/.

DENNO, D., *Human Biology and Criminal Responsibility: Free Will or Free Ride*, University of Pennsylvania Law Review, Vol. 137, 1988, p. 615-671.

DENNO, D., *The Place for Neuroscience in Criminal Law*, In PATTERSON, D., PARDO, M. (eds.), *Philosophical Foundations of Law and Neuroscience*, Oxford University Press, New York, 2016, p. 68-83.

DWYER, C., MCALISTER, S., *Raising the Age of Criminal Responsibility: Endless debate, Limited Progress*, ARK Feature, No. 3, 2017, p. 1-3, https://pure.qub.ac.uk/portal/files/139101063/Ark_Feature_MACR.pdf.

EARMAN, J., *Aspects of Determinism in Modern Physics*, Handbook of the Philosophy of Science, Vol. 2, Elsevier, 2006, p. 1369-1434.

EDERSHEIM, J., '*Your Honour, My Genes Made Me Do It'*, Wall Street Journal, October 2012, https://www.wsj.com/articles/SB10000872396390444592404578030652157630958.

EHRENREICH, H., *The Impact of Environment of Abnormal Behaviour and Mental Disease*, Science and Society, Vol. 18, Issue 5, 2017, p. 661-665.

ELLWOOD. C., *Lombroso's Theory of Crime*, Journal of Criminal Law and Criminology, Vol. 2, Issue 5, p. 716-723.

ERICKSON, M., *Delinquency in a Birth Cohort: A new Direction in Criminological Research*, Journal of Criminal Law and Criminology, Vol. 64, Issue 3, 1974, p. 362-366.

ESHLEMAN, A., *Moral Responsibility*, The Stanford Encyclopedia of Philosophy, 2016, https://plato.stanford.edu/archives/win2016/entries/moral-responsibility/.

FAHRAH, M., *Neuroethics: the practical and the philosophical*, Trends in Cognitive Science, Vol. 9, No. 1, 2005, p. 34-40.

FARAHNY, N., *Neuroscience and Behavioural Genetics in US Criminal law: An Empirical Analysis*, Journal of Law and Bioscience, Issue 2, 2016, No. 3, p. 485-509.

FAZEL, S., HAYES, A., BARTELLAS, K., CLERICI, M., TRSETMAN, R., *The mental health of prisoners: a review of prevalence, adverse outcomes and interventions*, Lancet Psychiatry, Issue 3, No. 9, 2016, p. 871-881.

FEKADU, K., *The Paradox in Environmental Determinism and Possibilism: A Literature Review*, Journal of Geography and Regional Planning, Vol. 7, Issue 7, 2014, p. 132-139.

FELDMAN, G., FARH, J., WONG, F., *Agency Beliefs Over Time and Across Cultures*, Personality and Social Psychology Bulletin, Vol. 44, Issue 3, 2018, p. 304-317.

FELDMAN, G., *Making Sense of Agency: Belief in Free Will as Unique and Important Construct*, Social and Personality Psychology Compass, Vol. 11, 2017, p. 1-15.

FERZAN, K., *Does Hard Determinism Require "Funishment": instead of Punishment?*, Criminal Law Jotwell, 2011, https://crim.jotwell.com/does-hard-determinism-require-funishment-instead-of-punishment/.

FISHER, H., HOPKINS, P., *Getting Inside the Employee's head: Neuroscience, Negligent Employment Liability and the Push and Pull for New Technology*, Boston University Journal of Science and Technology Law, Vol. 1, 2017, p. 44-89.

FLETCHER, G., *The Recidivist Premium*, Criminal Justice Ethics, Vol. 1, 1982, p. 54-59.

FREEMAN, J., *The Relationship Between Lower Intelligence, Crime and Custodial Outcomes: A Brief Literary Review of a Vulnerable Group*, Vulnerable Groups and Inclusion, Vol. 3, Issue 1, 2012, p. 1-15.

FUREY, J., *A Consistent Approach to Assessing Mens Rea in the Criminal Law of England and Wales*, University of Exeter, 2010, p. 1-301, https://ore.exeter.ac.uk/repository/bitstream/handle/10036/117790/FureyJ.pdf?sequence=2.

GENSCHOW, O., RIGONI, D., BRASS, M., *Belief in Free Will Affects Causal Attribution when Judging Others' Behaviour,* Proceedings of National Academy of Sciences of the United States

of America, 2017, p. 1-6.

GINTHER, M., *Neuroscience or neurospeculation? Peer commentary on four articles examining the prevalence of neuroscience in criminal cases around the world*, Journal of Law and the Biosciences, 2016, p. 342-329.

GINTHER, M., SHEN, F., BONNIE, R., HOFFMAN, M., JONES, O., SIMONS, K., *Decoding Guilty Minds: How Jurors Attribute Knowledge and Guilt*, Vanderbilt Law Review, Vol. 71, Issue 241, 2018, p. 241-283.

GKOTSKI, G., MOULIN, C., GASSER, J., *Neuroscience in the Courtroom: From Responsibility to dangerousness, ethical issues raised by the new French law*, Encephale, Vol. 41, Issue 5, 2015, p. 385-393.

GLANNON, W., *The Case for Libertarian Free Will*, An Interdisciplinary Journal of Philosophy, Vol. 42, Issue 2, 1999, p. 285-303.

GOLDSTEIN, J., KATZ, J., *Why an Insanity Defense*, Daedalus, Vol. 92, No. 3, 1963, p. 549-563.

GOODENOUGH, O., TUCKER, M., *Law and Cognitive Neuroscience,* Annual Review of Law and Social Science, Vol. 6, 2010, p. 61-92.

GORSKI, P., *Beyond the Fact/Value Distinction: Ethical Naturalism and the Social Sciences*, Symposium: Facts, Values and Social Science, Vol. 50, 2013, p. 543-553.

GOTSKI, G., GASSER, J., *Neuroscience in forensic psychiatry: From responsibility to dangerousness. Ethical and legal implications of using neuroscience for dangerousness assessments*, International Journal on law and Psychiatry, Elsevier, Vol. 46, 2016, p. 58-67.

GRAFTON, S., *Has neuroscience already appeared in the courtroom?*, In MANSFIELD, A. (ed.), *A judge's guide to neuroscience: a concise introduction*, University of California, Santa Barbara, 2010, p. 54,
https://www.sagecenter.ucsb.edu/sites/staging.sagecenter.ucsb.edu/files/file-and-multimedia/A_Judges_Guide_to_Neuroscience%5Bsample%5D.pdf.

GREELY, H., *The Social Consequences of Advances in Neuroscience: Legal problems, Legal Perspectives*, ILLES, J., (ed.), *Neuroethics: Defining the Issues in Theory, Practice and Policy*, Oxford University Press, New York, 2005, p. 245-265.

GREELY, H., *Law and the Revolution in Neuroscience: An Early Look at the Field*, Akron Law Review, Vol. 42, Issue 3, 2009, p. 687-715.

GREELY, H., *Neuroscience and Criminal Justice: Not Responsibility but Treatment*, Kansas Law Review, 2008, p. 1103-1137.

GREEN, J., COHEN, J., *For the law neuroscience changes nothing and everything*, Philosophical Transactions, Royal Society, London, Vol. 359, 2004, p. 1775-1785.

GREENE, S., *Biological Determinism*, The Wiley Blackwell Encyclopaedia of Gender and Sexuality Studies, Vol. 1-3, 2016, p. 431-435.

GREENFIELD, K., *Free Will Paradigms*, Duke Journal of Constitutional Law and Public Policy, Vol. 7, 2011, p. 1-24.

GROTTA, F., *The Freedom of What We care About: Revisiting Frankfurt's Hierarchical Theory of Free Will*, King's College, 2017, p. 1-117, https://www.repository.cam.ac.uk/handle/1810/270312.

GRUNTHALER, A., *The Challenge of Determinism*, Sophia Project, Ethics Archives, p. 1-5, http://www.sophia-project.org/uploads/1/3/9/5/13955288/grunthaler_determinism.pdf.

HAGGARD, P, EIMER, M., *On the relation between brain potentials and the awareness of voluntary movements*, Experimental Brain Research, No. 126, 1999, p. 128-133.

HAGGARD, P., *Human volition: Towards a Neuroscience of Will*, Nature Reviews Neuroscience, Vol. 9, 2008, p. 934-946.

HARDCASTLE, G., *My Brain Made Me Do It? Neuroscience and Criminal responsibility*, In JOHNSON, S., ROMMELFANGER, K. (eds.), *The Routledge Handbook of Neuroethics*, Routledge, New York, 2018, p. 185-198.

HARDCASTLE, V., *Would a Neuroscience of Violence aid in Understanding Legal Culpability?*, Cognitive Systems Research, Vol. 34-35, 2015, p. 44-53.

HARDIN, G., *Environmental Determinism: Broken Paradigm or Viable Perspective*, Electronic Theses and Dissertations, 2009, https://dc.etsu.edu/etd/1839/.

HARTJEN, C., *Humanistic Criminology: Is it Possible?*, The Journal of Sociology and Social Welfare, Vol. 12, Issue 3, 1985, p. 444-468.

HARTON, C., YADAV, A., *Frontal Cortex Area 10 Cytoarchitecture*, Centre for Academic Research and Training in Anthropogeny, https://carta.anthropogeny.org/moca/topics/frontal-cortex-area-10-cytoarchitecture.

HAYNES, J., *Decoding and Predicting Intentions*, Annals of the New York Academy of Science, 2011, p. 9-21.

HEEKIN, K., POLIVKA, L., *Environmental and Economic Factors Associate with Mental Illness*, The Claude Pepper Centre, 2015, p. 1-15, https://coss.fsu.edu/subdomains/claudepeppercenter.fsu.edu_wp/wp-content/uploads/2016/02/Environmental-and-Economic-Factors-Associated-with-Mental-Illness-Manuscript.pdf.

HEWITT, A., *Biological Determinism, Free Will and Moral Responsibility: Insights form Genetics and Neuroscience*, The New Bioethics, Vol. 23, Issue 2, 2017, p. 188-190.

HODGSON, D., *Criminal Responsibility, Free Will and Neuroscience*, In MURPHY, N., ELLIS, G., O'CONNOR, T. (eds.), *Downward Causation and the Neurobiology of Free Will*, Springer, Heidelberg, 2009, p. 227-241.

HORGAN, T., TIMMONS, M., *Introspection and the Phenomenology of Free Will: Problems and Prospects*, Journal of Consciousness Studies, Vol. 18, No. 1, 2011, p. 180-205.

HOYENGA, K., *The Question of Sex Differences: Psychological, Cultural and Biological Issues*, Issue 6-10, 1979, p. 615-671.

IGBOKWE, A., *Free Will and Determinism*, Global Journal of Arts Humanities and Social Sciences, Vol. 3, No. 2, 2015, p. 75-82.

INWANGEN, P., *The Incompatibility of Free Will and Determinism,* Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition, Vol. 27, No. 3, 1975, p. 185-199.

JAMES, D., GLAZE, L., *Mental health problems of prison and jail inmates*, Bureau of Justice Statistics, US Department of Justice, September 2006, p. 1-12, https://www.bjs.gov/content/pub/pdf/mhppji.pdf.

JONATHAN, W., Karl Marx, The Stanford Encyclopedia of Philosophy, 2017, ZALTA, E. (ed.), https://plato.stanford.edu/archives/win2017/entries/marx/.

JONES, O., BUCKHOLTZ, J., SCHALL, J., MAROI, R., *Brain Imaging for Legal Thinkers: A Guide for the Perplexed*, Stanford Technological Law Review, No. 5, 2009, http://www.antoniocasella.eu/archipsy/jones-brain-imaging_2009.pdf.

JOSHI, A., *Likert Scale: Explored and Explained*, Current Journal of Applied Science and Technology, Vol. 7, Issue 4, 2015, p. 396-403.

JUN, J., YOO, S., *Three Research Strategies of Neuroscience and the Future of Legal Imaging Evidence ,* Frontiers in Neuroscience, Vol. 12:120, 2018, https://www.frontiersin.org/articles/10.3389/fnins.2018.00120/full.

KANE, R., *Free Will: New Directions for an Ancient Problem*, In KANE, R. (ed.), Blackwell Publishers Malden, 2002, p. 222-249.

KATZ, J., GOLDSTEIN, J., *Abolish the Insanity Defence – Why Not?*, Faculty Scholarship Series 2453, 1963, http://digitalcommons.law.yale.edu/fss_papers/2453.

KAYE, A., *Resurrecting the Causal Theory of Excuses*, Nebraska Law Review, Vol. 83, Issue 4, 2005, p. 1116-1177.

KHAZAN, O., *Most prisoners are mentally ill: Can mental health courts, in which people are sentenced to therapy, help?*, The Atlantic, April 2015, https://www.theatlantic.com/health/archive/2015/04/more-than-half-of-prisoners-are-mentally-ill/389682/.

KLEMM, W., *Free Will Debates: Simple Experiments are Not so Simple*, Advanced Cognitive Psychology, Vol. 6, 2010, p. 47-65.

KNOBE, J., BUCKWALTER, W., NICHOLS, S., ROBBINS, P., HAGOP, S., SOMMERS, T., *Experimental Philosophy*, Annual Review of Psychology, Vol. 63, Issue 1, 2012, p. 81-89.

KOLBER, *Will there be a Neurolaw Revolution?*, Indiana Law Journal, Vol. 89, 2014, p. 807-845.

LAFARGUE, G., DUFFAU, H., *Awareness of intending to act following parietal cortex resection*, Neuropsychology, No. 46, 2008, p. 2662-2667.

LAHITI, R., *Towards a more efficient, fair and humane criminal justice system: Developments of criminal policy and criminal sanctions during the last 50 years in Finland*, Journal of Cogent Social Sciences, Vol. 3, Issue 1, 2017, p. 1-9.

LAVAZZA, A., *Free Will and Neuroscience: From Explaining Freedom Away to New Ways of Operationalizing and Measuring It*, Frontiers in Human Neuroscience, Vol. 10:262, 2016, https://www.frontiersin.org/articles/10.3389/fnhum.2016.00262/full.

LAVAZZA, A., *Neurolaw and Punishment: a Naturalistic and Humanitarian View, and its Overlooked Perils*, Ethics, Law and Cognitive Science, Vol. 87, Issue 81, 2017, p. 81-97.

LEVY, N., Neuroscience, *Free Will and the Responsibility: the Current State of Play*, In CLAUSEN, J., LEVY, N., *Handbook of Neuroethics*, Springer, 2015, p. 204-209.

LIBET, B., *Do We Have Free Will?,* Journal of Consciousness Studies, Vol. 6, No. 8-9, 1999, p. 47-57.

LIBET, G., GLEASON, E., WRIGHT, E., PPEARL, D., *Time of Unconscious Intention to Act in Relation to Onset of Cerebral Activity (Readiness-Potential)*, Brain, No. 106, 1983, p. 623-642.

LIPTON, P., *Genetic and Generic Determinism: A new Threat to Free Will?*, In REES, D., ROSE, S., (eds.), *The New Brain Sciences: Perils and Prospects*, Cambridge University Press, United Kingdom, 2004, p. 88-100.

MAHLMANN, M., *Ethics, Law and the Challenge of Cognitive Science*, German Law Journal, Vol. 8, No. 6, 2005, p. 577-616.

MAHLMANN, M., *Mind and Rights: Neuroscienc*e, Philosophy and the Foundations of Legal Justice, In SELLERS, M. (ed.), *Law, Reason and Emotion*, Cambridge University Press, United Kingdom, 2017, p. 80-137.

MANNOZZI, G., *Towards a "humanism of justice" through restorative justice: a dialogue with history*, Restorative Justice, An International Journal, Vol. 5, Issue 2, 2017, p. 145-157.

MANSFIELD, A., (ed.), A *judge's Guide to Neuroscience: A Concise Introduction*, University of California, Santa Barbara, 2010, https://www.sagecenter.ucsb.edu/sites/staging.sagecenter.ucsb.edu/files/file-and-multimedia/A_Judges_Guide_to_Neuroscience%5Bsample%5D.pdf.

MARON, D., *"My brain made me do it" is becoming a more common criminal defense*, Scientific American, March 2018, https://www.scientificamerican.com/article/my-brain-made-me-do-it-is-becoming-a-more-common-criminal-defense/.

MARTIN, N., RIGONI, D., VOHS, D., *Free Will Beliefs Predict Attitudes Toward Unethical Behaviour and Criminal Punishment*, Proceedings of National Academy of Science of United States of America, Vol. 114, 2017, p. 7325-7330.

MCCORD, W., *The Effects of Parental Role Model on Criminality*, Reading in Juvenile Delinquency, Vol. 14, Issue 3, 1958, p. 66-75.

MCKENNA, M., COATES, J., *Compatibilism*, The Stanford Encyclopaedia of Philosophy, 2016, ZALTA, E. (ed.), https://plato.stanford.edu/archives/win2016/entries/compatibilism/.

MELE, A., *Free Will: Action Theory Meets Neuroscience,* In LUMER, C., NANNINI, S., (eds.), *Intentionality, Deliberation and Autonomy, The Action-Theoretic Basis of Practical Philosophy*, Routledge, New York, 2016, p. 257-273.

MELE, A., *Does Free Will exist?, (Podcast) Big Think,* 2010*,* http://bigthink.com/videos/does-free-will-exist.

MILES, J., *Irresponsible and a Disservice: The Integrity of Social Psychology turn on the Free Will Dilemma*, British Journal of Social Psychology, Vol. 52, 2013, p. 205-218.

MOBBS, D., LAU, H.C., JONES, O., FRITH, C., *Responsibility and the Brain*, In MURPHY, N., ELLIS, G., O'CONNOR, T. (eds.), *Downward Causation and the Neurobiology of Free Will*, Springer, Heidelberg, 2009, p. 243-261.

MONROE, A., MALLE, B., *From uncaused will to conscious choice: the need to study, not speculate about people's folk concept on free will*, Review of Philosophy and Psychology, Vol. 1, Issue 2, p. 211-224.

MOORE, M., *Intention, Responsibility and the Challenges of Recent Neuroscience*, Stanford Technology Law Review, 2009, www.stlr.stanford.edu.

MOORE, M., *Causation and Excuses*, California Law Review, Vol. 71, Issue 4, 1985, p. 1114-1118.

MOORE, M., *The Various Relations between Law and Morality in Contemporary Legal Philosophy*, An International Journal of Jurisprudence and Philosophy of Law, Ratio Juris, Vol. 25, Issue 4, 2012, p. 435-471.

MOORE, M., *Values, Objectivity and Relationism*, The Journal of Value Inquiry, Vol. 38, 2004, p. 75-90.

MORRIS, S., *The Impact of Neuroscience on the Free Will Debate*, Florida Philosophical Review, Vol. 9, Issue 2, 2009, p. 56-78.

MORSE, S., *Determinism and the Death of Folk Psychology: Two Challenges to Responsibility From Neuroscience*, Minnesota Journal of Law, Science and Technology, Vol. 9, No. 1, 2008, p. 29-31.

MORSE, S., *Rationality and Responsibility*, Southern California Law Review, Vol. 74, 2000, p. 251-268.

MORSE, S., *Law and the Science of the Brain/Min*d, Penn Legal Scholarship Repository, Faculty Scholarship Paper 1642, 2016, p. 1-52, http://scholarship.law.upenn.edu/faculty_scholarship/1642.

MUELLER, C., DWECK, C., *Intelligence praise can undermine motivation and performance*, Journal of Personality and Social Psychology, Vol 75, 1998, p. 33-52.

MUNRO, G., MUNRO, C., *"Soft" versus "hard" psychological evidence: Biased evaluations of scientific evidence that threatens or supports a strongly held political identity*, Basic and Applied Social Psychology, Vol. 36, No. 6, p. 533-543.

MURPHY, J., *Kant's Theory of Criminal Justice*, Retribution, Justice and Therapy, Philosophical Studies Series in Philosophy, Vol. 16, Springer, p. 82-92.

NADELHOFFER, T., SHEPARD, J., SRIPADA, C., ROSS, L., *The free will inventory: Measuring beliefs about agency and responsibility, Consciousness and Cognition*, Issue 25, 2014, p. 27-41.

NAHMIAS, E., MORRIS, S., NADELHOFFER, T., TUNER, J., *The Phenomenology of Free Will*, Journal of Consciousness Studies, Vol. 11, No. 7-8, 2005, p. 162-179.

NAHMIAS, E., MORRIS, S., NADELHOFFER, T., TURNER, T., *Is Incompatibilism Intuitive?*, Philosophy and Phenomenological Research, Vol. 73, No. 1, 2006, p. 28-53.

NAHMIAS, E., *When Consciousness Matters: A Critical Review of Daniel Wegner's The Illusion of Conscious Will*, Philosophical Psychology, No. 15, 2002, p. 527-541.

NAHMIAS, E., COATES, J., KVARAN, T., *Free Will, Moral Responsibility and Mechanism: Experiments on Folk Intuitions*, Midwest Studies in Philosophy, Vol. 31, Issue 1, 2007, p. 214-242.

NICHOLS, S., *Folk Intuitions on Free Will*, Journal of Cognition and Culture, Vol. 6, Issue 1, 2006, p. 57-86.

NICHOLS, S., KNOBE, J., *Moral Responsibility and Determinism: The Cognitive Science of Folk Intuitions*, NOUS, Vol. 41, Issue 4, 2007, p. 663-685.

NICHOLS, S., *The Folk Psychology of Free Will: Fits and Starts, Mind and Language*, Vol. 19, Issue 5, 2004, p. 473-502.

OTSUKA, M., *Incompatiblism and the Avoidability of Blame*, Ethics, Vol. 108, No. 4, 1998, p. 685-701.

OVERBYE, D., *Free Will: Now You Have It, Now You Don't*, New York Times, 2007, https://www.nytimes.com/2007/01/02/science/02free.html.

PALMER, R., *Time to take Brain-Fingerprinting Seriously?*, Te Wharenga New Zealand Criminal Law Review, Issue 330, 2018, p. 316-365.

PAPADODIMITRAKI, Y., *Minimum Age of Criminal Responsibility – Comparative Analysis*, Centre for Youth and Criminal Justice, UK, 2016, p. 1-5, http://www.cycj.org.uk/wp-content/uploads/2016/03/MACR-International-Profile-Sweden.pdf.

PATTERSON, D., *Criminal law, neuroscience and voluntary acts*, Journal of Law and the Biosciences, Vol. 3, Issue 2, 2016, p. 355-358.

PAULHAUS, D., CAREY, M., *The FAD-Plus: measuring lay beliefs regarding free will and related constructs*, Journal of Personal Assessment, Issue 93, Vol. 1, 2011, p. 96-104.

PEARCE, J., *Is Society Accepting that Free Will is an Illusion?*, Humanist Living, June-July 2015, p. 55-58.

PEET, R., *The Social Origins of Environmental Determinism*, Annals of the Association of American Geographers, Vol. 75, Issue 3, 1985, p. 309-333.

PEREBOOM, D., *Defending Hard Incompatibilism*, Midwest Studies in Philosophy, Vol. 29, 2005, p. 228-247.

POCKETT, S., *The Concept of Free Will: Philosophy*, *Neuroscience and Law*, Behavioural Sciences and Law, No. 25, 2007, p. 281-293.

POLDRACK, R., MONAHAN, P., IMREY, P., REYNA, V., RAICHLE, M., FAIGMAN, D., BUCKHOLTZ, J., *Predicting Violent Behaviour: What can Neuroscience add?*, Trends in Cognitive Science, Vol. 22, Issue 2, 2018, p. 111-123.

POSA, F., LOSA, G., *Neuroscience in Criminology*, Fractal Geometry and Nonlinear Analysis in Medicine and Biology, Vol. 2, Issue 2, 2016, p. 1-7.

Presidential Commission for the Study of Bioethical Issues, *Gray Matters: Integrative*

Approaches for Neuroscience, Ethics and Society, Vol. I, Washington DC, 2014, https://repository.library.georgetown.edu/bitstream/handle/10822/709231/Gray%20Matters%20Vol%201.pdf?sequence=1.

Presidential Commission for the Study of Bioethical Issues, *Gray Matters: Topics at the Intersection of Neuroscience, Ethics and Society*, Vol. II, Washington DC, 2015, https://bioethicsarchive.georgetown.edu/pcsbi/sites/default/files/GrayMatter_V2_508.pdf.

President's Council on Bioethics, *Staff Working Paper: An Overview of the Impact of Neuroscience Evidence in Criminal Law*, 2004, https://bioethicsarchive.georgetown.edu/pcbe/background/neuroscience_evidence.html.

RAKOFF, S, *Science and the Law: Uncomfortable Bedfellows*, Seton Hall Law Review, Vol. 38, Issue 4, 2008, p. 1379-1393.

ROLSTON, H., *Are Values in nature Subjective or Objective?*, Environmental Ethics, Vol. 4, 1982, p. 125-151.

ROSEN, J.. *The Brain on the Stand*, New York Times Magazine, 3 November 2011, https://www.nytimes.com/2007/03/11/magazine/11Neurolaw.t.html.

ROSKIES. A., *How does Neuroscience Affect our Conception of Volition?*, Annual Review of Neuroscience, Vol. 33, 2010, p. 109-130.

ROSKIES. A., *Neuroscientific Challenges to Free Will and Responsibility*, Trends in Cognitive Science, Vol. 10, No. 9, 2006, p. 419-423.

ROSS, P., *Empirical Constraints on the Problem of Free Will*, In POCKETT, S., BANKS, W.P., *Does conscious cause behaviour?*, MIT Press, Cambridge, 2006, p. 125-144.

RUHL, J., *Reconstructing the wall of virtue: maxims from the co-evolution of environmental law and environmental science*, Environmental Law, Vol. 37, No. 274, 2007, p. 1755-1758.

SARKISSIN, H., CHATTERJEE, A., BRIGARD, F., KNOBE, J., NICHOLS, S., SIRKER, S., *Is Belief in Free Will a Cultural Universal?*, Mind and Language, Vol. 25, Issue 3, 2010, p. 346-358.

SCARPAZZA, C., PELLEGRINI, S., PIETRINI, P., SARTORI, *The Role of Neuroscience in the Evaluation of Mental Insanity: on the Controversies in Italy*, Neuroethics, Vol. 11, Issue 1, 2018, p. 83-95.

SCHAUERT, F., *Can bad science be good science? Neuroscience, lie detection and beyond*, Cornell Law Review, Vol. 95, No. 6, 2010, p. 1191-1220.

SHARIFF, A., GREENE, J., KARREMANS, J., LUGURI, J., CLARK, C., SCHOOLER, J., BAUMEISTER, R., VOHS, K., *Free Will and Punishment: A Mechanistic View of Human Nature Reduces Retribution*, Psychological Science, 2014, p. 1-8.

SHERMAN, H., *Marx and Determinism*, Journal of Economic Issues, Vol. 15, 1981, p. 61-71.

SINGH, R., *Law as a system of values*, Judiciary of England and Wales, 2013, p. 1-51, https://www.judiciary.gov.uk/wp-content/uploads/JCO/Documents/Speeches/singh-law-as-system-of-values20131031.pdf.

SHNIDERMAN, A., *No Such Thing as a Sure Thing: Neuroscience*, The Insanity Defense and

Sentencing Mitigation, The Jury Expert, Vol. 26, No. 1, 2014, p. 11-14.

SLATTERY, T., *Why I am a Hard Incompatibilist, Not a Hard Determinism*, Breaking the Free Will Illusion, 2014, https://breakingthefreewillillusion.com/hard-incompatibilist-not-hard-determinist/.

SLOBOGHIN, C., *Neuroscience Nuance: Dissecting the Relevance of Neuroscience in Adjudicating Criminal Culpability*, Journal of Law and the Biosciences, Vol. 4, Issue 3, 2017, p. 577-593.

SMILANSKY, S., *Hard Determinsim and Punishment: A practical Reductio*, Law and Philosophy, Vol. 30, Issue 3, p. 353-367.

SMITH, K., *Neuroscience versus Philosophy: Taking Aim at Free Will*, Nature, No. 477, 2011, p. 23-25.

SNEAD, C, *Cognitive Science and the Future of Punishment*, Governance Studies of Brookings, 2010, p. 1-22, https://www.brookings.edu/wp-content/uploads/2016/06/1228_neuroscience_snead.pdf.

SOMMERS, T., *Experimental Philosophy and Free Will*, Philosophy Compass, Vol. 5, Issue 2, 2010, p. 199-212.

STATISTA, *Number of examination with computer tomography in selected countries as of 2015*, https://www.statista.com/statistics/283085/computer-tomography-examinations-in-selected-countries/.

STILLMAN, T., BAUMEISTER, R., MELE, A., *Free will in everyday life: autobiographical accounts of* free and unfree *actions*, Philosophical Psychology, Vol. 24, Issue 3, p. 381-394.

STILLMAN, T., BAUMEISTER, R., VOHS, K., LAMBERT, N., FINCHMAN, F., BREWER, L., *Personal Philosophy and Personnel Achievement: Belief in Free Will Predicts Better Job Performance*, Social Psychology and Personality Science, Vol. I, 2010, p. 43-50.

STROESSNER, S., GREEN, C., *Effects of Belief in Free Will or Determinisms on Attitudes toward Punishment and Locus of Control*, The Journal of Social Psychology, Vol. 130, Issue 6, 1990, p. 789-799.

TOMPKINS, A., *Science in the courtroom: is there, and should there, be a better way?*, Australian Journal of Forensic Sciences, Vol. 49, Issue 5, 2017, p. 579-588.

TREVENA, J., MILLER, J., *Cortical movement preparation before and after a conscious decision to move*, Journal of Conscious Cognition, No. 11, 2002, p. 162-190.

UDELL, M., *Neuroscience, Free Will and Criminal Justice,* Stanford University, 2009, p. 1-16, http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.368.7474&rep=rep1&type=pdf.

VICENS, L., *Theological Determinism*, Internet Encyclopaedia of Philosophy, 2018, http://www.iep.utm.edu/theo-det/.

VIHVELIN, K., *Arguments for Incompatibilism*, Stanford Encyclopedia of Philosophy, 2017, ZALTA, N. (ed.), https://plato.stanford.edu/entries/incompatibilism-arguments/.

VILHAUER, B., *Hard Determinsim, Humeanism and Virtue Ethics*, The Southern Journal of Philosophy, Vol, 45, Issue 1, 2008, p. 121-144.

VOHS, K., SCHOOLER, J., *The Value of Believing in Free Will: Encouraging a Belief in Determinism Increases Cheating*, Psychological Science, Vol. 19, No. 1, 2008, p. 49-54.

VUKOV. J., *Is Neuroscience Relevant for Our Moral Responsibility Practice?*, Journal of Cognition and Neuroethics, Vol. 2, Issue 2, 2014, p. 61-82.

WALDRON, J., *Judges as Moral Reasoners*, International Journal of Constitutional Law, Vol. 7, Issue 1, 2009, p. 2-24.

WALMSLEY, R., *World Prison Population List*, World Prison Brief, Institute of Criminal Policy Research, 2016, p. 1-15, http://www.prisonstudies.org/sites/default/files/resources/downloads/world_prison_population_list_11th_edition_0.pdf.

WARFIELD, T., *Determinism and Moral Responsibility are Incompatible*, Philosophical Topics, Vol. 24, No. 2, 1996, p. 215-226.

WEGNER, D, WHEATLEY, T., *Apparent Mental Causation: Sources of the Experience of Will*, American Psychologist, Vol. 54, No. 7, 1999, p. 480-492.

WENTE, A., BRIDGERS, S., ZHAO, X., SEIVER, E., ZHU, L., GOPNIK, A., *How Universal Are Free Will Beliefs? Cultural Differences in Chinese and US 4- and 6-Year-Olds*, Child Development?, Vol. 87, Issue 3, June 2016, p. 666-676.

WILLMOT, C., *Are We Ready for an Expanded Use of Neuroscientific Evidence in the Courtroom?,* In Springer Briefs in Ethics, *Biological Determinism, Free Will and Moral Responsibility*, Springer, 2016, p. 65-84.

WOJCIKIEWICZ, J., *Judges' Attitude Towards Scientific Evidence*, Revija za kriminalistiko in kriminologijo, Ljubljana, Vol. 64, Issue 3, 2013, p. 249-255.

LIST OF CITED LEGAL CASES

Court of Appeals of the State of Oregon, *State v. Kinkel (2002)*, No. A108593.

State of Michigan Court of Appeals, *Angela Fini v. General Motors Corporation* (2003), No. 227592.

State of Michigan Courts of Appeals, *Rodney Van Middlesworth and Sue A. Van Middlesworth v. Century Bank & Trust Company* (2000), No. 215512.

Supreme Court of Pennsylvania, *Commonwealth of Pennsylvania v. Pirela* (2007), J-74-2005.

Supreme Court of Kansas, *State of Kansas v. Earl Wilburn* (1991), No. 65525.

Supreme Court New York County, *People v. Weinstein* (1992), No. 591 N.Y.S.2d 715.

Supreme Court, Appellate Division, New York, *People v. Goldstein* (2004).

Supreme Court of Tennessee, *Coe v. State* (2000), No. M1999-01313-SC-DPE-PD.

United States Supreme Court, *Roper Superintendent Correctional Center v. Simmons* (2005), No. 03-633.

United States Supreme Court, *McCleskey v. Kemp* (1987), No. 84-6811.

United States Court of Appeals, *Hinckley v. United States* (1998), No. 973094.