

A COMPARATIVE ANALYSIS OF THE LEGAL AND BIOLOGICAL
VIEWS ON MENTAL CAPACITY

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Chapter 1 - Introduction and Literature Review

This American legal system is far from perfect and this thesis should demonstrate the correlations and disparities in how the legal and scientific communities view people. For this thesis project, the legal and biological views on mental capacity will be compared. Anyone who remembers his or her eighteenth birthday can recall that there was no magical transformation. As people grow up, they mature gradually but each one at a different rate. As the brain develops along with the rest of the body, it undergoes subtle structural changes. The changes also correlate with how someone acts. One of the primary ideas behind anatomy and physiology is the idea that form dictates function. In other words, biological structures of similar construction can be expected to function in similar ways. For example, since bones are shaped a particular way and articulate with other bones in particular ways, the skeleton is afforded a particular shape and range of motion. When this idea is extended to the brain, it makes sense that a differently shaped brain would operate in different ways. This means that if someone has a brain that is significantly unique and different from the ordinary, he or she may not be able to act in the same way everyone does. The process by which someone understands the world is called cognition. Research into biological science is a continuing process and new theories about the brain, its functions, and cognition are being discovered frequently.

These new ideas which are the product of medical research, however, they are not always adopted into the legal system as rapidly as they are in the scientific community. One famous example is the case of Frye v. United States, in which a lie detector test became one of the key matters in dispute during this criminal case. The Supreme Court of the District of Columbia determined that lie detector tests had "not yet gained such standing and scientific recognition among ... [the scientific community] ... as would justify the courts in admitting expert testimony

..." (Id., 293, 2-3, (1923)). Although this standard was later superseded by Federal law in the case of Daubert v. Merrell Dow Pharmaceuticals, Inc., it reinforced the idea that the scientific community must thoroughly demonstrate an idea before it is accepted into the legal community. (Frye v. United States: Shepard's Summary) Although there was no bright line for this sufficient standing, it was stated that a topic, "must be sufficiently established to have gained general acceptance in the particular field in which it belongs." (Frye v. United States, 293, 1, (1923)) Since the accuracy of lie detector tests is still a matter of debate, it is no wonder that the case turned out as it did. Granted, both the scientific and legal communities seek to be as accurate as possible, but the legal community is often slower to accept change than the scientific community. It is my position that the legal community must become better acquainted with biology because of the disparity that is often present between these two fields when a new scientific idea is presented. If one understands biology, then human behavior may be better understood as it relates the law and society. Since human behavior is such an integral part of the law, it makes sense that understanding what causes a particular behavior would allow for the appropriate response by the judicial system.

Research on the biological side of understanding and explaining behavior is ongoing, and legal research on this issue is often performed only as the need arises. Unfortunately, there is very little overlap between the two concepts of cognition. One approach to resolving this matter is to see how a particular condition is treated by the legal and biological professionals. Therefore, to understand how the legal and biological concepts of cognition are defined, it is necessary to understand when someone is treated differently by the law because of his or her biological differences. In an ideal world, the American Judicial system is designed to ensure that the law is applied correctly to people, but law and justice are not the same thing. Nevertheless, the majority

of criminal acts are considered by many to be a violation of justice. For this thesis, the legal views on cognition will be limited to the criminal law system and compared with the biological interpretation of cognition.

Chapter 2-Youth

From the biological perspective, adolescence is empirically different than adulthood. While in groups, adolescents are more likely to engage in "risky, impulsive, and sensation-seeking behavior." (Rosenkranz and Schwegmann) They tend to be more emotional, more influenced by stress and peer pressure, and less capable of controlling impulses. Brain imaging studies have demonstrated that there are higher levels of neural activity in the areas that promote risky and reward-based behavior in adolescents. Impulse control is dominated by the prefrontal cortex. Since this area "is 'one of the last brain regions to mature.' ... [t]his, in turn, means that 'response inhibition, emotional regulation, planning and organization . . . continue to develop ... between adolescence and young adulthood.'" (Rosenkranz and Schwegmann) Much of this reward seeking behavior is also influenced by the exaggerated activity of the nucleus accumbens. In short, there are differences in the structure of the brain between adolescents and adults. (Rosenkranz and Schwegmann)

In addition to the presence of structural differences, there are also functional differences. The socioemotional system is a motivational force that is hardwired into a person's brain. Some of the earliest areas where the socioemotional system develops are the amygdale and the aforementioned nucleus accumbens. The amygdale is associated with aggressive and impulsive behavior, which is associated with the fight or flight responses to danger. The amygdale is closely associated with the prefrontal cortex. This allows the prefrontal cortex to somewhat regulate the influence that the amygdale has on the body. As mentioned previously, the prefrontal cortex develops relatively slowly compared to other portions of the brain. Since the prefrontal cortex is an area of the brain that is not on "autopilot," it makes sense that as a person

matures they are more able to regulate potentially harmful impulses. (Rosenkranz and Schwegmann)

If form and function were not enough, a qualitative approach may be used to explain the difference between adolescents and adults. Two neurotransmitters, dopamine and serotonin, have been cited as being imbalanced during adolescent years. Dopamine is associated with pleasure and motivation. Around puberty, dopamine levels increase drastically in the brain. During this time, the levels of serotonin decrease. Serotonin is associated with inhibition control. The imbalance between these two neurotransmitters has been documented in adolescents. This may contribute to the different trends in behavior that are demonstrated during and after puberty. “In sum, adolescent behavior is characterized ...by a hyperactive reward-driven system (involving the nucleus accumbens), a limited harm-avoidant system (involving the amygdale), and an immature cognitive control system (involving the prefrontal cortex). ...As a result, adolescent behavior is more likely to be impulsive and motivated by the possibility of reward, with less self-regulation and effective risk assessment.” (Rosenkranz and Schwegmann)

A familiar problem can be found when the treatment of minors in the criminal justice system is analyzed. To get to the heart of the matter, one can consider the death penalty, which many would call the ultimate punishment of the American Judicial system. In the 2004 case of Roper v. Simmons, the Court held that a minor could not be subject to the death penalty. Although there has been some negative treatment to this case, the ruling for the most part is still good law. ("Roper v. Simmons: Shepard's Summary") The case focused on whether someone between the ages of sixteen and eighteen could be subject to the death penalty. Both mental ability and maturity were weighed as elements of culpability. (Roper v. Simmons, 543, 39 (2004)) It has long been established that just because must be a line drawn to determine when

someone is legally eligible or not for something is not overly inclusive. (Id., 543, 4 (2004))

That being said, it seems reasonable that most adults today are familiar with how different people can be during adolescence, partly due to how much they have changed as they have matured. Most people would agree that, physically speaking, people do not change a great deal from being 17 years and 364 days old to being firmly 18 years old. That being said it makes sense for there to be some point at which society begins to treat a person with the full responsibilities and privileges of adulthood. The argument in brought forth by the petitioner was that a bright-line test should be applied to death penalty cases that concern minors. (Id., 543, 12 (2004)) A bright line test is one clearly delineates two groups and the matter is not up for debate. This is because of the fact that people are all not equally mature when they are sixteen or seventeen years old. (Id., 543, 12 (2004))

One of the major concerns of establishing a categorical exception for minors is the idea that some seventeen year olds may abuse such treatment by the court system. In the Roper v. Simmons case, Simmons broke into a woman's house, tied her up, and threw her off a bridge. It was pointed out by a State's witness that Simmons felt that the gang should commit illegal activities because they could "get away with it." (Id., 543, 13 (2004)) Despite Simmons' actions, he was not given the death penalty because of his age. The case of Roper v. Simmons established a bright-line test for all minors who commit criminal acts.

However, the scientific community's interpretation of the facts of normal human development becomes a point of contention here. On one hand, there is no single biological definition of when adolescence begins or ends. A battery of physical and psychological tests would have to be used to determine the maturity of an individual from a biological perspective.

The problem with this intensive case by case examination is that it would slow down and further complicate the legal system. This is further complicated with the natural variation found in the majority of biological systems. A feasible scientific "bright-line" is not compatible with the needs of the American Judicial system. The bright-line of protecting minors from the death penalty is simply a matter of convenience so that cases may proceed at more reasonable pace.

Now this can be further analyzed from the legal side by looking at the classic alternative to the death penalty, a sentence of life in prison. In 2010 the case of Graham v. Florida the Supreme Court of the United States drew a similar distinction to Roper v. Simmons. It was decided that in a case in which a juvenile, having committed a non-homicide crime, is charged as an adult and sentenced to life without parole is a violation of the Eighth Amendment by means of the Fourteenth Amendment. (Graham v. Florida, 130, 6, (2010)) In the opinion delivered by Justice Kennedy, it was stated that, "Many States have chosen to move away from juvenile court systems and to allow juveniles to be transferred to, or charged directly in, adult court under certain circumstances. Once in adult court, a juvenile offender may receive the same sentence as would be given to an adult offender, including a life without parole sentence. But the fact that transfer and direct charging laws make life without parole possible for some juvenile non-homicide offenders does not justify a judgment that many States intended to subject such offenders to life without parole sentences." (Id., 130, 12, (2010)) Later on this categorical difference between adults and adolescents is further explained later when it is stated that, "Juveniles are more capable of change than are adults, and their actions are less likely to be evidence of 'irretrievably depraved character' than are the actions of adults. ... It remains true that [f]rom a moral standpoint it would be misguided to equate the failings of a minor with those of an adult, for a greater possibility exists that a minor's ... character deficiencies ... will be

reformed.'" (Id., 130, 13, (2010)) In total this case has not established that a juvenile that has committed a non-homicide crime be imprisoned for a life sentence, but merely that he or she be granted "some realistic opportunity to obtain release before the end of that term." (Id., 130, 18, (2010))

It should be noted that the case of Graham v. Florida has not yet stood the test of time. More than a few Supreme Court cases have been extremely modified and overturned in a few short years after the opinion has been given. The case has not yet been used as precedent and it is uncertain which aspects of the decision may become controlling. Moreover, the 6-3 vote on which this decision stands is somewhat lessened by the fact that two of the six votes were concurring. This means that two of the Justices supported the final outcome but reached this conclusion by employing a different method of analysis and using different reasons. That being said, Graham v. Florida will likely play an important role in years to come.

Chapter 3 - Aspergers Syndrome

Autism is a disorder that has been recognized relatively recently by the medical community. The Diagnostic and Statistical Manual of Mental Disorders, more commonly referred to as simply DSM, added autism in 1980. ("Doctors Independent Network")The DSM is, "published by the American Psychiatric Association, and is the main diagnostic reference of mental health professionals in the U.S." For the sake of this thesis, I have chosen to look into Aspergers Syndrome, a form of autism that has traditionally been characterized by high-functioning individuals. ("Autism Society of America: Pervasive Development Disorders (PDD).") The first set of diagnostic criteria for Aspergers Syndrome was published in 1989. (Brian Wauhop) Aspergers Syndrome was added to the DSM five years later. (Dingfelder 48) Since the American medical community has recognized such disorders only recently, it logically follows that the American legal community may not be approaching individuals with such disorders appropriately. This disparity is apparent when one considers that it is estimated that between 1.5 and 2.4 percent of the American prison population has Aspergers Syndrome, while about 0.4 percent of the total population may have Aspergers Syndrome, the equivalent of one out of 250. It is important to be clear at this point. Aspergers Syndrome is not a mental illness but a developmental disorder. (Brian Wauhop) Autism spectrum disorders (ASD) are the fastest growing developmental disability at a rate between ten and seventeen percent annually. About one percent of the American children and one percent of adults in the United Kingdom have an ASD. ("Autism Society of America: What is Autism: Facts and Stats.") The odds of a boy being born with an ASD are four times greater than for a girl to be born with one. (Kogan) Autism spectrum disorders are called spectrum disorders because they have a range of severity for the

developmental delay. ("Autism Society of America: Pervasive Development Disorders (PDD).")

ASD were first researched during World War II. However, these disorders did not receive any notice from the scientific community for over a decade. Initially, the parents, specifically the mothers, of autistic children were blamed as the cause of these disorders. It was not until 1977 that there was a genetic link to autism. ("Doctors Independent Network") Presently, ASD are being researched in order to find the precise cause of these disorders. Not only are the genetic causes being pursued, but the proper treatments are being researched as well. As more attention is being brought to these disorders, it is more likely that the appropriate diagnosis can be applied to a person with ASD and the appropriate treatments can be administered.

However, on the legal side of this issue, there has not been much recognition of this disorder and how it impairs a person's capacity to commit a crime. Typically, the judicial branch of the government has always been reactionary and relatively slow to change itself. As of 2009, the United States has only seen twenty-two cases where Aspergers Syndrome has been used as part of a criminal defense. (Brian Wauhop) A notable article analyzing the treatment of Aspergers Syndrome in the United States, the United Kingdom, and Australia was conducted by Brian Wauhop. However, the very nature of judicial precedent and appeal lends itself to the treatment of such a disorder being revised slightly every time a case arises. So unless a large number of cases arise with defendants who have Aspergers Syndrome, it appears that the research of the legal community into this matter will be limited.

Aspergers syndrome is diagnosed by observing a series of behavioral patterns, which are broken down into specific areas so that a diagnosis can be made impartially. As given by the DSM-IV, the currently used edition of the DSM, Aspergers syndrome is characterized by,

"severe and sustained impairment in social interaction and the development of restricted, repetitive patterns of behavior, interest, and activity. The disturbance must clinically show significant impairment in social, occupational, and other important areas of functioning. "However, unlike the traditional idea of autism, Aspergers Syndrome does not include any important delays in language development. There is also no delay in cognitive development. ("Autism Society of America: Pervasive Development Disorders (PDD).") In fact, the IQ of those with Aspergers syndrome typically falls in the normal or superior range for the appropriate age group. Thus, the main difficulty for those with this disorder is social interaction. ("Autism Speaks") Specifically, those with Aspergers Syndrome have, "qualitative impairment in social interaction," and "restricted repetitive and stereotyped patterns of behavior, interests, and activities," ("Autism Society of America: Pervasive Development Disorders (PDD).") The disorder also manifests itself physically. Those with Aspergers Syndrome can exhibit a lack of coordination in their motor skills, an inappropriate or limited use of facial expressions, and irregularities in speech. (Brian Wauhop)

Anatomically speaking, this social awkwardness can be attributed to subtle differences in the formation of the brain. A study compared people with Aspergers Syndrome to people without this disorder, but ensured that there were no other significant differences between or among the two groups. The volume occupied by the brain was no different for either group. Other forms of ASD's may demonstrate a larger brain volume, technically referred to as megalencephaly. There were also some indications that there may be differences in the neurogenesis (formation of brain cells) and programmed cell death between the two experimental groups. The study also found that there were reduced areas of gray matter and increased areas of white matter in the Aspergers Syndrome brains. (McAlonan 1594-1606) Gray matter is made up of nerve cell bodies and

dendrites. Gray matter forms the nuclei in the brain and ganglia in the peripheral nervous system. White matter is made up of bundles of axons. These make up the ascending and descending tracts of the central nervous system and the nerves in the peripheral nervous system. (VanPutte, Regan, and Russo 192-237) The areas where those test subjects with Aspergers Syndrome featured a lower level of gray matter were the medial frontal lobe, the basal ganglia, and the thalamus. These first two systems, which can collectively be referred to as the fronto-striatal region, are reciprocally connected to each other, as well as the thalamus. The fronto-striatal region is also reciprocally linked with the cerebellum. The cerebellum of the Aspergers Syndrome subjects showed a lower level of white matter. This lack of white matter in the whole brain was more prominent in the left hemisphere of the brain. (McAlonan 1594-1606)

One can consider these areas by how they act independently or by how the entire brain interacts as a whole. The frontal lobe controls the voluntary motor functions, the sense of smell, aggression, and emotional states. The basal nuclei control organization, planning, the coordination of muscle groups, and posture. The thalamus allows for sensory input to be filtered, pain to be interpreted, and mood to be influenced. The cerebellum controls balance, muscle tone, and fine motor coordination. (VanPutte, Regan, and Russo 192-237)

It has been proposed previous to the study discussed here, that a dysfunction in the areas between the fronto-striatal region and thalamus may be responsible for the problems with motor function and the difficulty in social communication. The lack of gray matter in the fronto-striatal regions of the brain may also cause a deficit in the pre-pulse inhibitions that prevent repetitive thoughts and actions. The lack of white matter in the left hemisphere of the brain may be linked to the language anomalies of Aspergers Syndrome. If the genetic cause of this disorder did not

clearly demonstrate that a person with Aspergers Syndrome has limited choice about his or her behavior, the fact that the brain anatomy of a person with Aspergers Syndrome should.

(McAlonan 1594-1606)

On the legal aspects of this issue can be illustrated by the case of State of New Jersey v. Burr. This case was appealed to the Supreme Court of New Jersey. Burr was convicted of "second-degree sexual assault and third-degree endangering the welfare of a child." (Id. 392, 5 (2008)) The alleged incidents involved Burr fondling a seven-year-old piano student through her clothing and placing her on his lap. (Id. 392, 6 (2008)) During the preliminary hearing of the trial, Burr was noted to have acted in an odd manner. He appeared in court with a bag on his head. When he was asked about this, Burr replied with quotes from the book of Deuteronomy. (Brian Wauhop) This prompted the court to have Burr evaluated psychiatrically. An evaluation by Dr. Kleinmann revealed that Burr had Aspergers Syndrome. (State of New Jersey v. Burr 392, 3 (2008))

Dr. Kleinmann was not allowed to be present by the defense as an expert witness. This was because the defense counsel was not attempting to support a diminished capacity defense but rather use this expert testimony to explain why Burr behaved the way he did. The distinction here was an attempt to explain "not criminal judgments, but inappropriate social judgments." (Id. 392, 6 (2008)) Burr was convicted but appealed the case. The Court found that the expert testimony was an important part of Burr's defense. (Id. 392, 11 (2008)) They stated, "Dr. Kleinmann's testimony to explain how defendant's actions in allowing children to sit on his lap might have been innocent of a nefarious purpose, and to show that defendant might not have understood that his conduct could have been perceived as socially unacceptable. ... [T]he expert

also would have testified that persons with Aspergers Disorder generally do not have the ability to manipulate people easily because of their weakness in detecting social cues that other persons readily recognize.” It was also pointed out that such expert testimony might have provided Burr with a good opportunity to take the stand in his own defense. This is due to the fact that Burr’s fears that his odd speaking patterns would alienate the jury would have been allayed. The Supreme Court of New Jersey found in favor of Burr, vacated the convictions, and remanded the matter to the Law Division for retrial. (Id. 392, 4 (2008))

In this particular case, Aspergers Syndrome was the crucial element. The proof that the mens rea, the criminal intent or knowledge that an act is wrong, of the State was built upon the idea that Burr could “groom” the victim for future sexual acts, and was well aware of what he was doing. However, the social aspects of Burr’s actions could very well have been beyond his grasp. Even after it was established that Burr had a mental disorder, the court still did not allow such matters to be used as part of his defense. It was not until the appellate level that Burr’s condition began to receive the appropriate attention. This case clearly illustrates how in the matter of people with Aspergers Syndrome the biological perspective, seeing these people as intelligent but socially impaired individuals, are not be given sufficient weight with the legal perspective, which can sometimes overlook these social problems. (Id. 392, 4 (2008)) This is evidenced by the fact that the trial court did not allow Dr. Kleinmann's testimony "because the court found that it did not tend to prove that defendant had a mental defect that prevented him from understanding his actions." (Id. 392, 3 (2008)) The fact that neither the defense counsel nor the trial court was able to give Aspergers Syndrome the appropriate treatment demonstrates that a little bit of biological experience can save everyone involved a great deal of time and aggravation. (Id. 392, 3 (2008))

Chapter 4 - Schizophrenia

With the more established subjects tackled, the subject of schizophrenia crops up. Although schizophrenia has been recognized by the medical community for over a century, the advance of technology, particularly the advent of MRI scans, has allowed for a more precise idea of what this disease is. (Shenton, et al.) Schizophrenia is not a disease that can be defined simply, and many subtypes exist. However, evidence indicates that there are at least two structurally different types of schizophrenia. Both groups had cognitive impairment but each group had a differently structured brain. The cortical subtype featured a distinctly smaller temporal lobe with lower rates of metabolic activity, particularly in areas linked to language and memory. These patients were all classified as having "disorganized schizophrenia" based upon the DSM-IV standards. This means that they could not as easily pay attention, express ideas, or organize their thoughts. On the other hand, the sub-cortical subtype featured enlarged ventricles, and the frontal lobe was peppered with reductions in gray matter. This was consistent with the symptoms that they presented. Thus, even if two separate people are diagnosed with schizophrenia, it can be a mistake to treat them the same medically or legally. (Turetsky)

The difference between a typical brain and one with schizophrenia is often found in several locations. The enlargement of the ventricles is a symptom that is also shared with Alzheimer's disease and Huntington's chorea. There is also a decrease in gray matter of the temporal lobe, including the amygdale, the hippocampus, the parahippocampal gyrus, and the superior temporal gyrus. These areas are closely associated with speech and may be responsible for the auditory hallucinations, memory problems, and organizational thinking problems. The frontal lobe often features some abnormality but these differences are often slight. Yet, even

slight differences in this area can have relatively large effects, depending upon the location. There are also reductions in the parietal lobe and slight differences in the sub-cortical brain regions. (Shenton, et al.)

The biggest problem with analyzing schizophrenia is that the regions of the brain that are associated with cognition are all connected to the rest of the brain. Scientists do not always agree upon the significance of these connections because of the complexity of the brain. From a legal standpoint, this may mean that the different subtypes of schizophrenia, when they are finally understood, may be treated differently. This, of course, assumes that there will eventually be a clear distinction between the subtypes of schizophrenia and that the symptoms and treatments will reflect this difference.

In the case of Atkins v. Virginia, the Supreme Court held that the death penalty for the mentally retarded "is excessive and that the Constitution 'places a substantive restriction on the State's power to take the life' of a mentally retarded offender." (Atkins v. Virginia, 536, 15 (2002)) This was based upon the "evolving standards of decency test." Given that the objective evidence was that the defendant was mildly mentally retarded and there was a growing body of opinion against executing the mentally retarded, it was unlikely to properly achieve either deterrence or retribution, and the difficulties that would be associated with defending someone who was mentally retarded in court. (Bryant 1-33)

Moreover, the case of Roper v. Simmons extended this Eighth Amendment protection to juveniles. Until this point it could have been considered that, "the United States now stands alone in a world that has ... turned its face against the juvenile death penalty." (Roper v. Simmons, 543, 22 (2005)) Once again, the national and international body of opinion was that executing a juvenile was morally wrong, the severity of the crime was a balance against the mitigating factor

of youth, and a juvenile was too immature to participate in many important activities of, much less face the same level of culpability, of an adult. (Bryant 1-33)

Although these cases provide a foundation for a categorical ban on executing someone with schizophrenia, the matter has not yet been settled. As technology evolves and the understanding of this disease grows, a more clear determination will be reached. As it stands now, the treatment of schizophrenia is dubious and it may become the subject of debate in the not too distant future.

Chapter 5 - Conclusion

The link between biology and cognition has been firmly established by science. Ideas regarding the nature of the cognition continue to evolve as scientific studies proceed. However, members of the legal profession are not often aware of such developments and the treatment of individuals with different cognitive capacities may not be treated appropriately. The American Judicial system has attempted to adjust for this by using categorical exceptions such as the bright-line test that can be used to exempt minors or the mentally retarded from the death penalty. It should be noted that the recently discovered disorders of the mind are more subject to being misunderstood than those that have been known about for centuries. When one considers how Aspergers Syndrome can easily be misunderstood despite the fact that the medical community has widely recognized for a decade, the gravity of the situation becomes apparent. Even schizophrenia, a disease which has been recognized for over a century, has become a subject of increasing debate in recent years. The current situation is that the biological understanding of cognition is changing much faster than the legal understanding. The American Judiciary system is hesitant to break from precedent and the reactionary nature of the judicial system further slows down the incorporation of new ideas. It makes sense that the legal community should not be too hasty in adopting a new scientific idea until it has been established, lest they incorporate a precedent that is founded upon bad data. However, it should also avoid any unnecessary delay. By understanding biology and following developments of biological research, lawyers may be able to demonstrate how a defendant views the world and the legal community as a whole can ensure that people are treated more fairly.

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