



The Criminal's Brain – Neuroscience in the Courtroom A Talk with Deborah Denno

I. Neuroscience Evidence Uses

- A. Neuroscience evidence types
 1. Brain imaging tests include CAT Scans, MRI, EEG, QPEEC, among others. Non-image tests include Rorschach Inkblot Test, General Adaptive Behavior Testing, Bender-Gestalt Test, IQ tests, among others.
 2. Neuroscience evidence is typically presented in cases where the defendant is facing a severe sentence such as the death penalty or life imprisonment.
 3. Most neuroscience evidence is admissible during both the trial and sentencing phases.
- B. *U.S. v. McCluskey*
 1. After he escaped from prison, John McCluskey and two accomplices killed a retired couple and stole their camping vehicle. At trial, the defense introduced neuroscience evidence that indicated structural abnormalities in his frontal lobe.
 2. The jury ultimately rejected the death penalty and sentenced McCluskey to life in prison without possibility of parole.¹
- C. Impact of neuroscience evidence
 1. Research shows that introducing testimony from neurological experts and brain scans are more persuasive to jurors than other kinds of expert and non-expert evidence.
 2. In the sentencing phase of capital trials, expert evidence is more persuasive if it is accompanied by neurological images and scans.
- D. To show lack of capacity:
 1. Brain abnormalities
 - a. *People v. Weinstein*, 591 N.Y.S.2d 715 (N.Y.Sup.Ct. 1992): 65 year-old-Weinstein strangled his wife to death and tossed her body out the window to make it look like a suicide. At trial, the defense introduced a PET scan that showed a small brain cyst in Weinstein's frontal lobe. The defense asserted that the cyst severely impaired Weinstein's ability to distinguish between right and wrong. Weinstein was allowed to plead guilty to manslaughter rather than murder.
 - b. Peter Bradley broke into the cockpit of an Alaska Airlines flight to attempt to take control of the plane. Prosecutors accepted the defense's neurological evidence that indicated delirium from encephalitis. The judge dismissed all charges against him.²
 2. Impairment as a result of a drug
 - a. Ilo Grunberg shot and killed her 83-year-old mother. She argued that she

¹ "John Charles McCluskey Arraigned on Federal Carjacking and Murder Charges." *IMF Staff Country Reports* 14.221 (2014): 01. *Justice.gov*. The United States Department of Justice, 20 June 2011. Web. 7 Aug. 2015. <http://www.justice.gov/sites/default/files/usao-nm/legacy/2014/02/03/2011-06-30_mccluskey_pr.pdf>.

² Curtis, Kim. "Cockpit Attacker Suffered From Encephalitis." *ABC News*. ABC News Network, n.d. Web. 07 Aug. 2015. <<http://abcnews.go.com/Travel/story?id=118685>>.



- acted under the influence of the sleeping pill Halcion and was acquitted.
- b. She later sued Upjohn, the manufacturer of Halcion, and won.³
- E. To bolster insanity defense
1. Insanity defenses are rarely successful.
 2. In states that do allow defendants to enter an insanity plea, neuroscience evidence may help overcome jury skepticism by providing hard science evidence and a more precise description of the brain dysfunction.
 3. Both prosecution and defense will introduce expert testimony and present brain scans to bolster their arguments. When neuroimages accompany expert testimony, jurors are more likely to move in the direction of the party offering the evidence.
- F. History of use in courts
1. Psychiatric evidence has long been considered in determining culpability. Neuroscience has been widely used in the American judicial system for decades.
 2. Neuroscientists will compare normal brain scans and scans of defendants' brains to show that there is some abnormality or deviation.
- G. Causal connection
1. There is a shaky causal connection between propensity for violence crime to dysfunction or damage to parts of the brain, like the prefrontal cortex and the amygdala.
 2. Simply because a defendant has a damaged brain may not necessarily explain their violent behavior or cause violent behavior.

II. Counsel's Role

- A. Ineffective assistance of counsel claim
1. *Strickland v. Washington*, 466 U.S. 668 (1984): to prove ineffective assistance of counsel, the defendant must show that: 1) counsel was deficient, and 2) but for counsel's deficient performance, the result would have been different.
- B. Neuroscience evidence is frequently presented in ineffective assistance of counsel claims, mainly to show that counsel failed to present adequate neurological evidence to the court. Counsel may be ineffective in many ways:
1. Failing to introduce neurological evidence at all or failing to offer mitigating evidence;
 2. Relying on an expert not qualified to testify on the issue; and
 3. Failing to prepare an expert to testify.
- C. Most *Strickland* claims centering on neurological evidence are based on trial counsel's failure to adequately present mitigating evidence.
1. This includes failure to sufficiently investigate or present evidence of psychological impairment, neurological impairment, history of mental dysfunction, mental health history, etc.
 2. Mitigating factors may include childhood trauma, mental disorders, cognitive deficiency, post-traumatic stress disorder, etc.

³ "The Price of a Good Night's Sleep." *The New York Times*. The New York Times, 25 Jan. 1992. Web. 07 Aug. 2015. <<http://www.nytimes.com/1992/01/26/weekinreview/the-price-of-a-good-night-s-sleep.html>>.



- D. Defense counsel can damage their client's case by presenting certain types of neuroscience evidence that would tend to aggravate rather than mitigate.

III. To Predict Future Dangerousness

- A. Myth of the double-edge sword
 - 1. The myth of the double-edged sword is that neuroscience evidence is used to show future dangerousness or propensity to commit crimes in the future and used to aggravate sentences.
 - 2. This is a myth because neuroscience evidence is generally presented by the defense to mitigate, rather than by the prosecution as an aggravating factor. When the prosecution does use neurological evidence, it is to show that the defendant's neuroscience evidence is not sufficient to prove innocence or mitigate.
 - 3. Prosecutors will typically counter the defense's neuroscience evidence by deemphasizing the probative value of the evidence.
- B. Neuroscience may develop in the future to become a more reliable means of predicting future dangerousness.
 - 1. For example, functional magnetic resonance imaging can measure activity in the region of the brain linked to impulse control. Those with low activity in this region have been found to have higher rates of repeated criminal behaviors.
 - 2. When these predictors of future dangerousness are taken into account, it may potentially create ethical concerns regarding the use of neuroscience evidence in trials in the future.

IV. Lesser Crimes, Competency, and Juveniles

- A. To show incompetency to stand trial on lesser crimes
 - 1. *U.S v. Gigante*, 982 F.Supp. 140 (E.D.N.Y. 1997), defendant Gigante was a mafia boss charged with conspiracy and racketeering. His counsel used a PET scan to show Gigante suffered from Alzheimer's-type dementia. The court allowed those pieces of evidence to be admitted to determine competence to stand trial.
- B. Competency
 - 1. A defendant must be competent to stand trial, meaning he must be able to understand the charges against him and to assist his attorney in his own defense. Competency relates to competency at the time of the trial, not during the commission of the crime.
 - 2. If a defendant is determined to be incompetent to stand trial, the trial is delayed until competency is restored.
- C. Juveniles
 - 1. *Roper v. Simmons*, 543 U.S. 551 (2005): the Supreme Court held that juvenile offenders under the age of 18 at the time they committed a capital crime cannot be sentenced to death.
 - 2. In its opinion, the Court relied heavily on amicus briefs indicating that juveniles were not capable of fully appreciating the consequences of their actions.

V. Neuroscience Evidence of Victims' Injuries



- A. Neuroscience evidence of victims
 1. Used to show the extent of the injuries the victim experienced.
 2. Such evidence is typically introduced by the prosecution.
 3. Has been used particularly in cases involving shaken baby syndrome.
- B. To assess whether a child had died as a result of being shaken, the courts will assess the bleeding and swelling in the brain and retinal bleeding.
 1. The prosecution will present expert testimony and brain scans to show that the baby was shaken in child abuse and child homicide cases.
 2. Shaken baby evidence is so effective and compelling in these cases because they are often the only types of evidence available.
- C. Critics point out that the diagnostics used in the courts, namely brain swelling and bleeding, is not caused by shaking alone. They also content that diagnosing abusive head trauma solely on those three injuries can lead to false accusations of abuse or homicide.