

**Can our brain make
us do things we
didn't mean to?**

**Explore *our*
growing brain in
this debate**



OUR GROWING BRAIN

Debate Activity: Murder is murder, right? The end result and crime are the same. But does the crime reflect free will or is the person a victim of their *biology*? Was the brain to blame?

Read the account of Charles Whitman and consider this dilemma.

Whitman was an Eagle Scout (the highest rank in the Boys Scouts of America programme), a former marine and studied architectural engineering at University. Academically, he excelled and achieved such a high score in an IQ test that he was placed in the 99th percentile as a child. He was married to a woman he described as "as fine a wife as any man could ever hope to have".

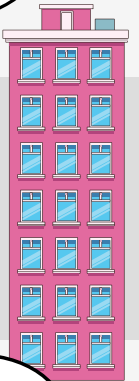


What words come to mind when you think of Whitman?

What kind of life do you think he lived?

Whitman volunteered as a scoutmaster. Seems the perfect candidate, right?

On an ordinary day in August 1966, 25-year old Whitman transported a trunk, loaded with guns and ammunition, to the top floor of a university building in Texas. From there, he killed 14 people indiscriminately including the receptionist, two families of tourists, a pregnant woman and her partner, pedestrians and an ambulance driver. He injured many more.



Does this surprise you based on what you read before?

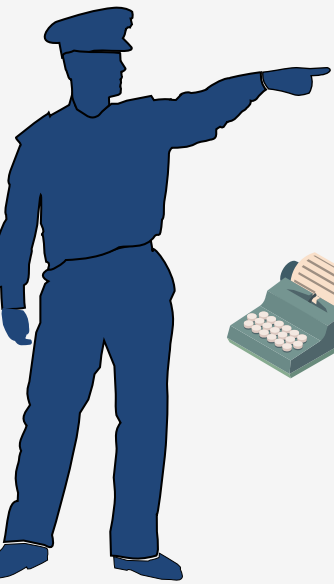
What punishment do you think Whitman should face?

Can you defend your choice of punishment? What are your reasons?



This video shows an animated account of Whitman's crimes. *This may alarm some viewers and should be reviewed prior to presenting in class.*



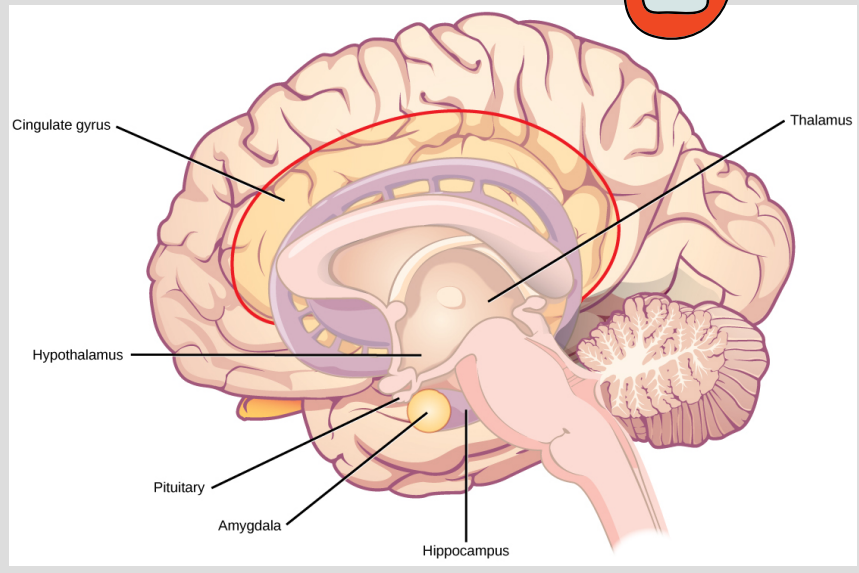


At Whitman's home, the police discovered he had also killed his mother and his wife. They discovered a note, typed by Whitman, in which he expressed concerns about his own health, requesting that his brain be formally examined after his death:



"I don't really understand myself these days. I am supposed to be an average, reasonable and intelligent young man. However, lately I have been a victim of many unusual and irrational thoughts...I talked to my Doctor...to convey to him my fears that I felt overwhelming violent impulses. I have not seen the doctor again and have been fighting my mental turmoil alone".

Upon post-mortem examination, a large tumour (nearly 2 cm in diameter) was found in his brain. The tumour was called a **glioblastoma**, and it was putting pressure on the thalamus, hypothalamus and the amygdala (all structures within the Limbic System). This brain region is involved in regulating emotions, including fear and aggression.



Does this change the way you feel about what Whitman did?

Was the tumour to blame? Is the tumour still *him*?

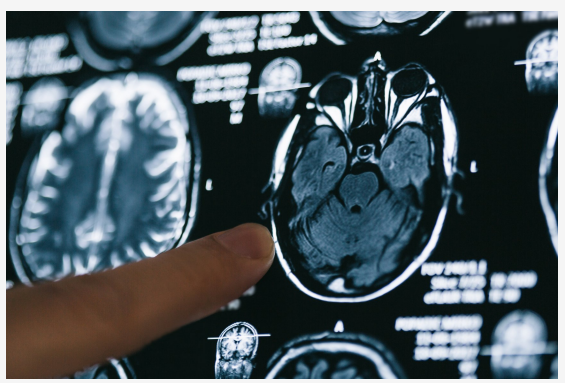


Watch from 7min 30s - 8min 30s

2-min neuroscience

Research has shown that damage to the amygdala causes social and emotional disturbances, e.g. reduced feelings of shame [1], deficient decision-making abilities and more impulsive and socially-unacceptable behaviour [2].

If Whitman had a tumour that changed his *normal* behaviour - making him more impulse and less fearful - was **he** to blame?



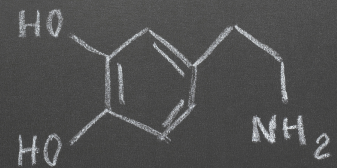
Can human behaviour be separated from human biology?
Here's another example...

When given a drug called **pramipexole**, some people with Parkinson's disease, who had no history of gambling or addiction, developed "dramatic, sudden-onset compulsive gambling habits" [3], resulting in huge financial loss.

In Parkinson's disease, people experience a reduction in dopamine levels in the brain. This neurotransmitter is central to our **reward pathway**, reinforcing certain behaviours and "makes us feel good".

Pramipexole is a dopamine impersonator (or agonist). When concentrations are not carefully controlled, the increased activation of dopamine receptors causes the drug to become the "object of compulsive desire; obtaining the drug compromises all other life activities, and even derails free will." Indeed, when doctors reduce the dose of pramipexole, patients experience reduced desire to gamble; when the drug was removed altogether, patients lost all gambling desires overnight.

DOPAMINE



But Whitman couldn't "reduce the dose" of his tumour. Did he have free will when his brain chemistry was changing beyond his control?

A change in biology results in a change in behaviour

Express your views

Proposition: "Everyone is free to make their own choices and therefore equally responsible for their actions. The same punishment for serious crimes should be imposed".

Form two teams, one "For" and one "Against" the proposition above. Defend your arguments through research and discussion.

Which team was the most convincing?

Debate formats suggested [here](#).

References

1. Piretti et. al (2020), The Role of Amygdala in Self-Conscious Emotions in a Patient With Acquired Bilateral Damage, *Frontiers in Neuroscience*, accessed [here](#) (26.01.22).
2. Gupta et. al (2011), The amygdala and decision making, *Neuropsychologia* 49(4): 760–766, accessed [here](#) (26.01.22).
3. Brower, V. (2006), Loosening addiction's deadly grip, *EMBO Rep.* 7(2): 140–142, accessed [here](#) (26.01.22).
4. Harvard Education, Want to facilitate debate in your class, accessed [here](#).