Turning to Crime: Biology

- What are the most influential factors on human behaviour from a biological perspective?

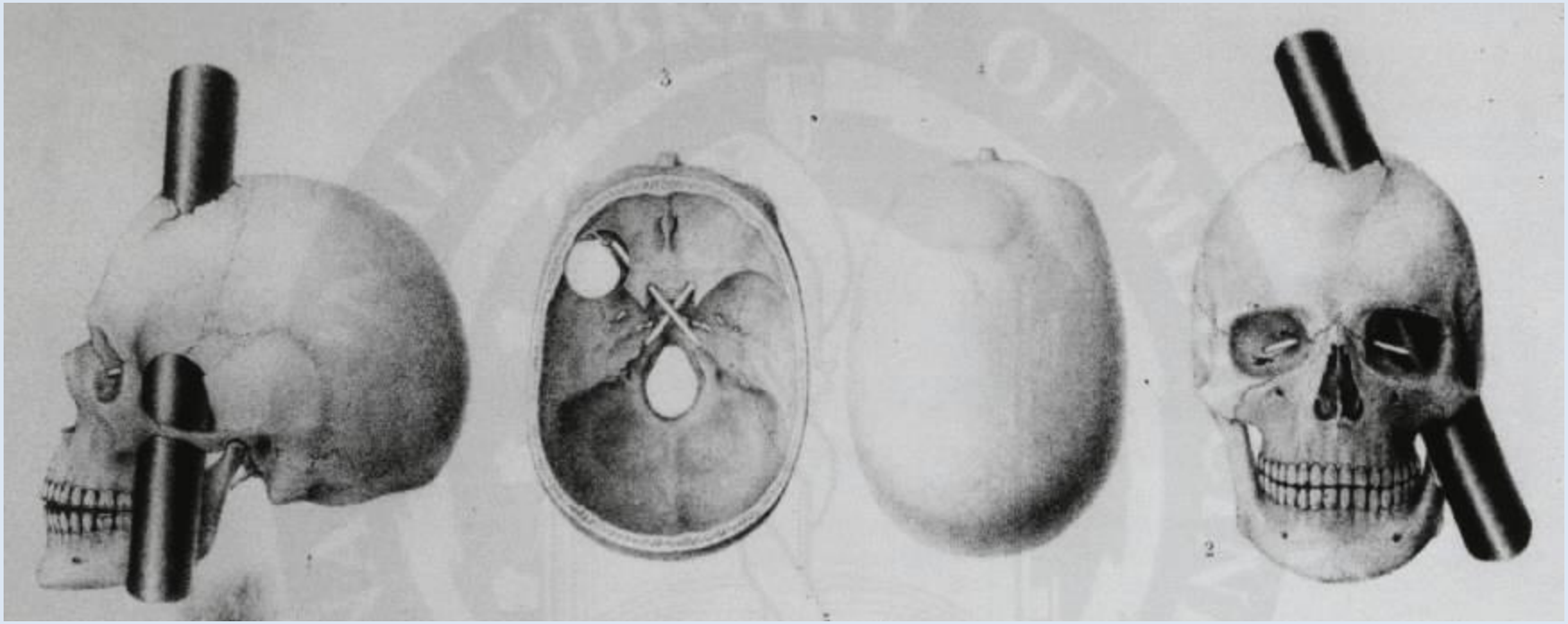
Turning to Crime: Biology

- The influential factors in biology:

- Genes
- Hormones
- Neurology
- Gender
- Pathology (the study and diagnosis of disease)
- Evolutionary explanations

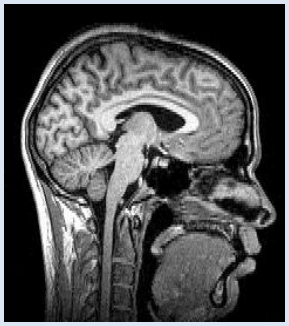
Turning to Crime: Biology

- Phineas Gage – an example of brain damage resulting in behavioural change

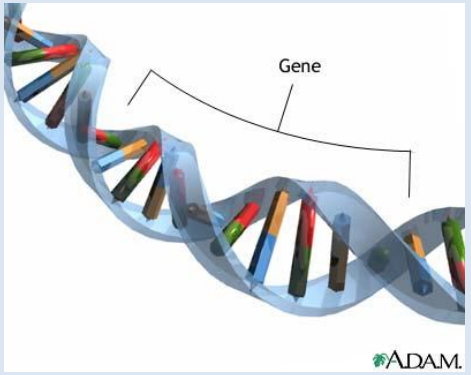


Turning to Crime: Biology

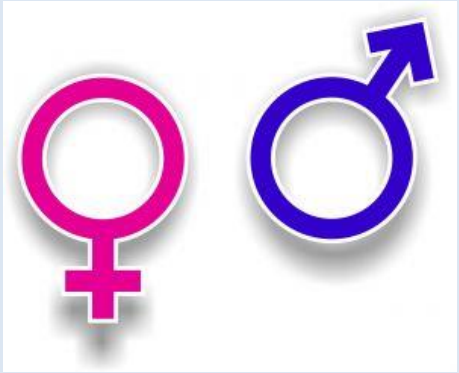
- Three areas to study:
- **Brain dysfunction**



- **Genes & Serotonin**

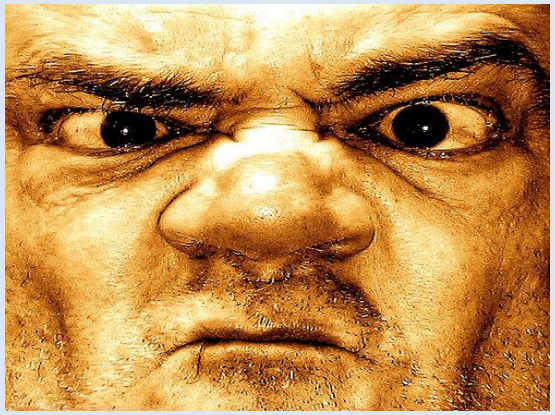


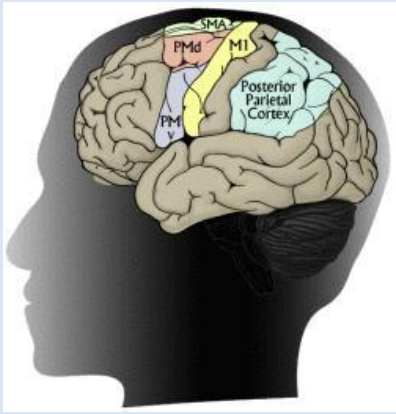
- **Gender**



Biology: Brain Dysfunction

- **Raine (2002)** Investigated the development of antisocial and aggressive behaviour.



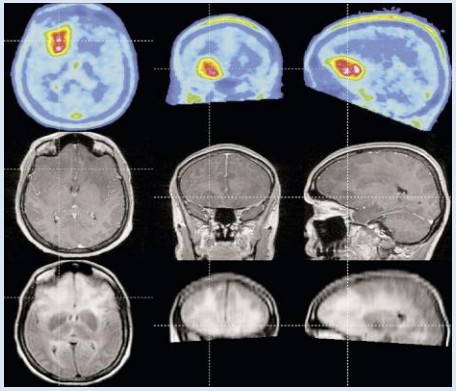


- Believed that violent criminals: abnormal differences in metabolic activity in the brain.
- Like Farrington, Raine is looking for risk and protective factors in the development of criminal behaviour.

Biology: Brain Dysfunction

- **Key Study: Raine (2002): Biological predispositions to violence**
- **Aim**: Review study: Recent studies looking at biological risk factors for violence & crime
- **Method**: Review article that summarised the key findings of neuropsychological, neurological and brain-imaging studies relating to antisocial and aggressive behaviour through childhood.

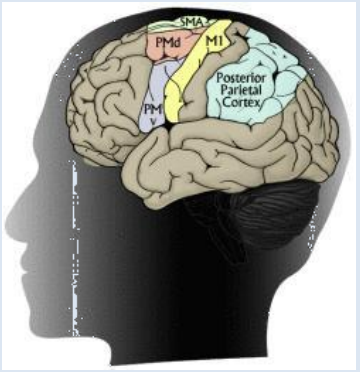
  PET scans used study brain metabolism
- Correlational Study



Biology: Brain Dysfunction

- **Results**: Good predictors of criminal behaviour include:

- A low resting heartbeat
- Low activity in the prefrontal lobes during adolescence
- Birth complications
- Smoking and drinking during pregnancy

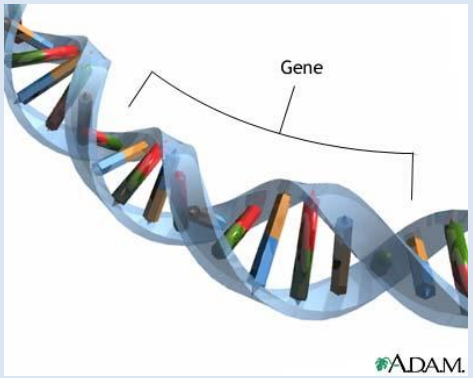


Biology: Brain Dysfunction

- **Conclusions**:
- Early intervention and prevention could be used to protect against these biological predispositions.
- Evaluation:
- This study focuses on biological factors in explaining why people turn to crime. Why is it *not* reductionist?
- Ethics?
- Usefulness: Findings suggest that an interaction of biological predispositions and poor environmental factors increase the risk of criminality. What does this suggest for crime prevention?

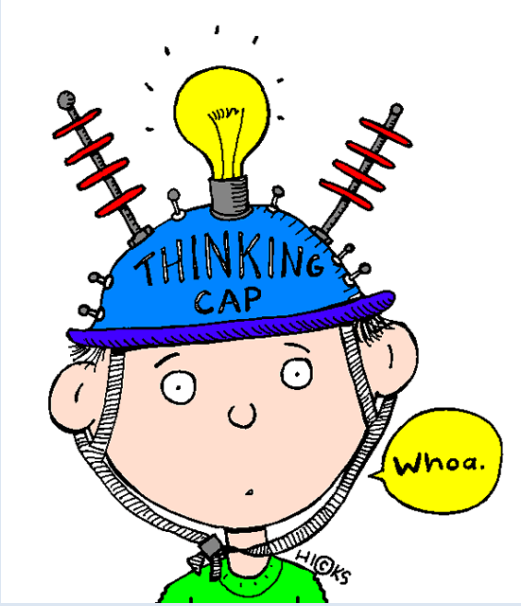
Biology: Genes and Serotonin

- Past Research:
- Genetic explanations of criminal behaviour have ranged from the "XYY Theory" of the 1960s to the twin studies of the 1970s.
- All have tried to find a link between genes and criminal behaviour, but research is flawed or evidence is contradictory.



Biology: Genes and Serotonin

- How do researchers investigate genetic links?
- What are the advantages and disadvantages of such an approach?



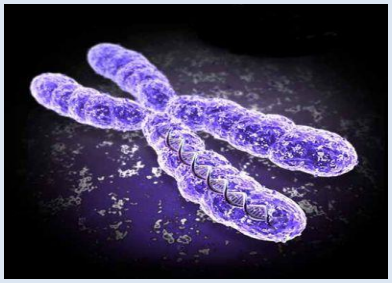
Biology: Genes and Serotonin

- **Key Study: Brunner et al. (1993) A study of violence in a family of genetic abnormality.**
- **Aim**: To explain the behaviour of a large family in the Netherlands of which the males were affected by a syndrome of borderline mental retardation and abnormal violent behaviour.
- **Participants**: 5 affected males from the family
- **Method**: Data collected from urine samples over a 24 hour period.

Biology: Genes and Serotonin

- **Results**: The samples showed disturbed monoamine metabolism associated with a deficit of the enzyme monoamine oxidase A (MAOA). A mutation was found in the X chromosome of the gene responsible for

  producing MAOA.



- **Conclusions**: As MAOA is involved in serotonin metabolism, the defect in the gene could be the cause of the mental retardation seen in this family; which in turn could lead to violent behaviour.

Biology: Genes and Serotonin

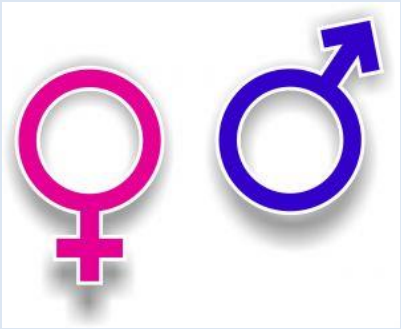
- **Conclusions**: Brunner concluded that this deficit resulted in a behavioural *phenotype* (i.e. A trait that is observable such as hair colour) that accounted for the aggression and lack of self-control.

An “evil” gene??

Biology: Genes and Serotonin

- **Brunner et al (1993)**
- Evaluation:
- Sample? Generalisability….
- Reductionism…
- Determinism

Biology: Gender



- Gender gives an *evolutionary* explanation for human behaviour.
- This assumes that behaviour has an *adaptive* quality (more likely that it will be passed on biologically as it is a quality that will aid survival.)
- Male violent crime far greater than female crime across all cultures (although recent changes: more girl gangs etc.)
- Two studies have referred to "risk-taking" in offenders. ??
- Why might risk-taking/impulsiveness be advantageous to survival?

Biology: Gender

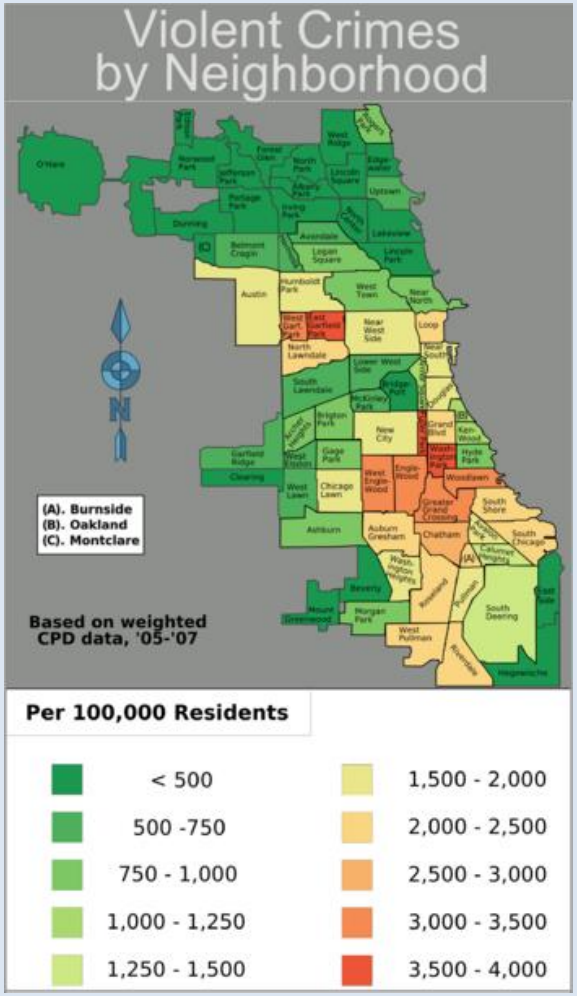
- Demographers find that young men are more likely to be appear in mortality statistics as a result of *external* causes such as homicide or accident (compared to internal causes such as disease/illness)

Biology: Gender

- Other research has found that young males are more likely to take risks in front of other men and women.
- This is seen as adaptive as men have to “win” women from other males.

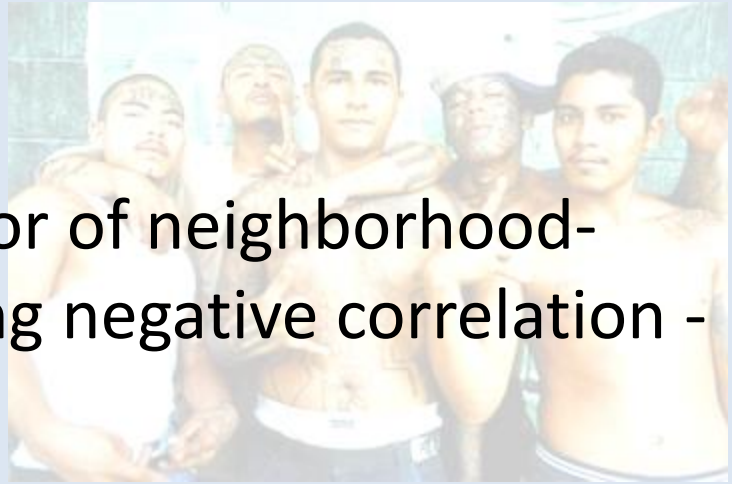
Biology: Gender

- **Key Study**: **Daly and Wilson (2001): Investigation of gender-related life expectancy**
- Aim: To find out if homicide rates would vary as a function of life-expectancy in Chicago
- Sample: local communities in Chicago. Males aged from 54 - 77 years
- Method: correlational study. Survey data from police records, school records, local demographic records



Biology: Gender

- **Daly & Wilson (2001)**
- Results:
- Life expectancy: best predictor of neighborhood-specific homicide rates (strong negative correlation -0.88)



- Absenteeism from school negatively correlated with life expectancy (primary school -0.50, high school -0.32)
- Explanations:

Shorter life expectancy increases risk-taking for short term rewards

Inequality of wealth & resources - reckless behaviour

Question: Biological explanations for turning to crime

1 a) Describe one biological explanation for criminal behaviour. (10)

2 b) Using the nature-nurture debate, evaluate explanations of why a person might turn to crime. [15]