Describe the procedures of Raine et al

Before 1997 there were not many studies into whether brain localisation affected criminal behaviour. In the late nineteenth century Lombrosso’s main explanation for criminality was that criminals were born with different facial features, however this theory has been disproven. It has been suspected for a long time that brain localisation/dysfunction has a hand in criminality, due in part to the strange case of Phineas Gage, however until recently we have not had the means to prove this. Recent technology has allowed less intrusive ways of viewing the brain, which allowed Adrian Raine, Monte Buchsbaum and Lori LaCasse to conduct a quasi-experiment (an experiment in which the independent variable isn’t directly manipulated) into criminality in 1997.

Raine et al aimed to investigate whether forty-one violent criminals (thirty-nine men and two women) had a different brain structure to ‘normal’ individuals. The murderers had a mean age of 34.3 years old and all forty-one had been charged with murder or manslaughter, however what made these criminals unique was that they had all plead not guilty by reason of insanity (NGRI). This means that the criminal was deemed to not be responsible for the crime due to a psychiatric disease at the time of the crime.

To confirm their defence the forty-one participants were referred to the university of California for examination, where it was revealed that six of the criminals had schizophrenia, two had personality disorder while most of the rest had other issues such as learning disabilities or minor head injuries. Two of the criminals had epilepsy, while two had affective disorder and three had a history of psychoactive drug abuse.

The control group was formed using the matched pairs design – each murderer was matched to someone of the same age and sex. The six schizophrenics were matched to a non-murderous schizophrenic, while the rest of the control group had no history of psychiatric illness in themselves nor in their close relatives. They also had no significant physical illness. Neither the murderers nor the control group were on any type of medication to ensure that medication did not have an effect on the experiment.

The sample of participants was obtained using opportunity sampling, meaning that the two groups of people (murderers and non-murderers) were not artificially created groups, but groups that actually exist in the real world. All of the participants were tested using a positron emission tomography (PET) scan. They were asked to do a continuous performance task (CPT), and were given a chance to practice this before the experiment began. The participants started the CPT and then after 30 seconds they were injected with a ‘tracer’ of fluorodeoxyglucose (FDG), a radioactive sugar that is taken up by active parts of the brain.

After thirty-two minutes a PET scan was taken of each of the participants’ brains, and ten horizontal slices of their brains were recorded using the cortical peel and box technique, which takes a scan of different layers of the brain. The experiment found decreased levels of activity in the prefrontal cortex, left angular gurus, corpus callosum, and the left amygdala, thalamus and hippocampus, which are parts of the limbic