

## NILE TUITION ACADEMY

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## A-Level Psychology

## Biological Psychology · Key Studies

Edexcel Psychology (9PS0)

Key Studies

4 entries

The named classic and contemporary studies for Biological Psychology - aggression, the brain and hormones.

## Classic study

**Raine et al. (1997) - Brain abnormalities in murderers**

**Aim:** to test whether people who commit violent murder show different brain functioning from non-murderers, using brain imaging. **Method:** a quasi-experiment comparing 41 murderers pleading not guilty by reason of insanity with 41 matched controls; each was injected with a glucose tracer, completed a continuous-performance task, then had a PET scan to measure glucose metabolism across brain areas. **Findings:** the murderers showed lower activity in the prefrontal cortex and corpus callosum, plus asymmetrical activity in the amygdala, thalamus and hippocampus, compared with controls. **Conclusion:** violent offending is linked to dysfunction in brain regions that govern impulse control and the regulation of emotion, suggesting a biological predisposition rather than a single cause. **Evaluation:** + objective, well-matched PET-scan measures with high control raise validity; – the sample is a narrow, atypical group of offenders so findings are hard to generalise, and a correlation between brain activity and behaviour cannot prove the brain differences caused the violence.

## Contemporary studies

**Brendgen et al. (2005) - Social versus physical aggression in twins**

**Aim:** to find out whether physical and social aggression in young children are more strongly influenced by genes or by environment. **Method:** a natural experiment with 234 pairs of 6-year-old monozygotic and dizygotic twins; teacher ratings and peer nominations measured each child's physical aggression (hitting, fighting) and social aggression (spreading rumours, exclusion), and concordance between identical and non-identical pairs was compared. **Findings:** physical aggression showed higher concordance in identical than non-identical twins, pointing to a strong genetic basis, whereas social aggression was better explained by shared environment. **Conclusion:** aggression is not one trait; physical aggression is largely inherited while social aggression is mainly learned, so nature and nurture each dominate a different form. **Evaluation:** + a large twin sample with two measurement methods (teacher and peer) strengthens reliability; – teacher and peer ratings can be subjective and the assumption that identical and non-identical twins share equal environments may be flawed.

**Li et al. (2013) - Effects of mindfulness on smoking**

**Aim:** to investigate whether mindfulness meditation can reduce smoking and change activity in brain areas linked to self-control and addiction. **Method:** a laboratory experiment in which smokers and non-smokers were randomly allocated either to integrative body–mind training (a mindfulness condition) or to a relaxation-training control; smoking was recorded objectively using carbon-monoxide breath measures, and fMRI scans assessed activity in the anterior cingulate cortex and prefrontal cortex before and after training. **Findings:** the mindfulness group showed a marked drop in smoking and increased activity in self-control regions of the brain, while the relaxation control group showed no significant change. **Conclusion:** a brief psychological intervention can alter brain function in regions governing self-regulation, supporting the idea that addictive behaviour has a modifiable neural basis. **Evaluation:** + an objective biological measure of smoking (carbon monoxide) plus fMRI gives strong internal validity; – the small, self-selected sample of student smokers limits how far results generalise to long-term, heavily dependent smokers.

**Van den Oever et al.  
(2008) - Prefrontal  
cortex and relapse in  
rats**

**Aim:** to examine the role of the medial prefrontal cortex in cue-induced relapse to heroin seeking. **Method:** a laboratory experiment using rats trained to self-administer heroin; after extinction, cues previously paired with the drug were re-presented, and researchers measured changes in glutamate receptors (AMPA) in the medial prefrontal cortex, then used drugs to block the relevant receptors to see whether relapse behaviour changed. **Findings:** exposure to drug-associated cues produced rapid changes in prefrontal synapses, and blocking these receptor changes prevented the cue-triggered return to heroin seeking. **Conclusion:** the medial prefrontal cortex and its glutamate synapses play a causal part in relapse, identifying a neural target for treating addiction. **Evaluation:** + tight experimental control and direct manipulation of brain chemistry allow a genuine cause-and-effect conclusion; – extrapolating from rat brains to the complexity of human addiction is uncertain, and animal procedures raise ethical concerns.