The prefrontal cortex and antisocial behaviour psychology essay

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Today’s society, where antisocial behaviour is seen in children and adults, seems to exhibit a greater need to understand its underlying causes. One’s ability to act in an appropriate manner in a given social context is quite unique to humans; along with the ability to reason and make conscious decisions. Therefore, it seems to suggest that such civilised behaviours are dictated by an area of the brain seen in only the most developed. Research into antisocial behaviour implicates the prefrontal cortex; an area of the frontal lobe involved in decision-making and the ability to inhibit undesirable social responses. The research to be discussed in this essay looks at how prefrontal cortex dysfunction affects judgement and how this, in turn, contributes to the decision to behave antisocially.

History is littered with cases of individuals whose behaviour changes drastically as the result of brain damage, however, these only represent patients in which brain functioning develops normally. Anderson, Bechara, Damasio, Tranel and Damasio (1999) presented the case of two individuals in which normal brain development was prevented by damage caused primarily to the prefrontal cortex before the age of sixteen months. This study involved a comparison between adult and early-onset patients to assess the differences caused by the repressed development of the prefrontal cortex. Findings show that the two different categories of patients were very similar in social impairments but the distinction can be seen in the fact that early-onset patients lacked the social and moral reasoning of the adults, hence suggesting that development of social and moral principles had been affected. This implies that the prefrontal cortex is involved in the

ability to make socially acceptable and moral decisions which are then applied in making appropriate behavioural responses.

Much research in this area makes use of diagnosed Psychopathic individuals (condition characterised by extreme antisocial behaviour towards others). Yang and Raine (2009) conducted a meta-analysis of 43 cases of varying ranges of antisocial behaviour- including psychopaths. Not only do the findings support the involvement of the prefrontal cortex in antisocial behaviour- increased antisocial behaviour is linked to reduced function of several prefrontal regions- but they propose some localisation of antisocial aspects in specific sub-regions of the cortex. They hypothesised that activity reduction in areas such as the orbitofrontal region are affiliated with emotional impairments and decision-making deficits, whereas, dorsal lateral prefrontal cortex dysfunction is more associated with characteristic impulsivity. Furthermore, brain imaging has highlighted orbitofrontal involvement in the reliving of one particular emotion known to underlie behavioural decisions: guilt (Wagner, N'Diaye, Ethofer and Vuilleumier, 2011). Yang and Raine's (2009) theory seems to explain how prefrontal damage can account for a variety of behavioural aspects that fall under the umbrella term of ' antisocial.'

Psychopathy has also been linked to discrepancies in the process of moral judgement by way of amygdala and orbitofrontal/ventromedial prefrontal cortex (Blair, 2007). Blair (2007) theorises that the reduction in care-based morality seen in psychopaths can be explained in terms of dysfunction of the amygdala and ventromedial l prefrontal cortex as these are involved in learning and reinforcement; in that aversive reinforcement prevents a

person making immoral decisions. However, dysfunction in those with psychopathic tendencies means that such forms of learning do not occur and so they become unable to make moral decisions: leading to immoral behaviours. Verification is provided by Marsh, Finger, Fowler, Jurkowitz, Schechter, Yu, Pine and Blair (2011) who conducted brain imaging studies on patients with psychopathic traits whilst getting them to participate in a moral task. Although, by their own admission, the moral task was fairly minor, the results show that participants had reduced activity between the orbitofrontal cortex and amygdala during task completion (Marsh et al, 2011). This seemingly supports Blair (2007) in linking deficiencies of the two brain regions to moral judgment and psychopathic behaviour.

Damage to the ventromedial prefrontal cortex has further been linked to moral decision making in terms of beliefs about harmful intent behind certain behaviours. Young, Bechera, Tranel, Damasio, Hauser and Damasio (2010) conducted a study on patients with bilateral damage to the ventromedial prefrontal cortex in which they manipulated scenarios to depict varying degrees of harm: (intentional harm, deliberate-unsuccessful harm). They found that relative to healthy controls, participants judged accidental harms more severely than unsuccessful yet intentional harm. According to Young et al. (2010) participants came to this conclusion by neglecting negative behavioural intent and focusing only on the outcomes. Hence, it seems that damage to the ventromedial prefrontal cortex, impairs an individual’s ability to make moral decisions regarding behavioural intent. This has powerful implications: perhaps antisocial behaviour displayed in those with prefrontal dysfunction is born out of the inability to recognise the harmful intent behind

their actions, especially if the outcome is something they perceive as desirable.

In conclusion, the role of prefrontal cortex dysfunction in antisocial behaviour is corroborated in extensive research which suggests its involvement is not limited to one specific aspect of the behaviour, nor one particular brain sub-region. This appears to make the argument more comprehensive than if such complex behaviour was specified to one region alone. The prefrontal cortex seems to be involved in the motivation behind behaviours and the judgements that affect behavioural decisions. Therefore, dysfunction of the area leads to immoral decision making which causes the individuals to behave in ways that can be classed as antisocial (such as those behaviours shown by psychopaths). Particular involvement seems to be of the orbitofrontal region in influencing moral and emotional decisions into undesirable behavioural outcomes. Furthermore, connectional dysfunction of the area with other brain areas has been linked to learning processes involved in morality (Blair, 2007). This seems to explain the inability to learn what is considered morally right and wrong: shown in those with damage obtained in infancy (Anderson, Bechara, Damasio, Tranel and Damasio, 1999). Whatever its role, vast research support for prefrontal cortex dysfunction in antisocial behaviour somewhat validates its involvement and may question the extent to which an individual can be held accountable for such actions- which could have societal repercussions.