



Egocentric, Thief and/or Murderer: Damage to the Ventromedial Prefrontal Cortex Interferes with Normal Social and Moral Functioning, But When?

Benmerkezci, Hırsız ve/veya Katil: Ventromedial Prefrontal Korteks Hasarı Normal Sosyal ve Ahlaki İşlevselliği Olumsuz Etkiler; Ama Ne Zaman?

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"An inflated consciousness is always egocentric and conscious of nothing but its own existence. It is incapable of learning from the past, incapable of understanding contemporary events, and incapable of drawing right conclusions about the future. It is hypnotized by itself and therefore cannot be argued with. It inevitably dooms itself to calamities that must strike it dead."

Carl Jung (1875–1961), Swiss psychiatrist

Would you put false information on your resume in order to help yourself find employment? Would you pretend that certain personal expenses are business expenses in order to lower your taxes? Would you push your boss off of the building in order to get him out of your life? Would you employ your daughter in the child pornography industry in order to feed your family? Would you kill your oldest son in order to save your husband and your other three children?

Studies in the last two decades aiming to elicit the neural and cognitive mechanisms that underlie human moral behavior have disclosed the importance of the ventromedial prefrontal cortex (PFC) in pathophysiological conditions. Individuals that have localized brain damage at PFC produced by stroke, trauma or neurological disease have been shown to present high levels of aggressiveness, and egocentric and impulsive antisocial behaviour. The results of an interesting study that

was published in the 2014 April issue of *Brain* by Taber-Thomas et al. not only confirm the anatomical area that was damaged, but also when (3).

The study was inspired by the seminal work of Koenigs et al. published in 2007, who showed that patients with adult-onset lesions to the ventromedial PFC made abnormal judgements when faced with a specific type of moral dilemma (2). In order to test if the timing of damage affects the pattern of moral judgement or not, Taber-Thomas et al. repeated this study by adding a group of patients who suffered damage to the ventromedial PFC during childhood. The study was conducted among 8 individuals (≤ 16 years old) with developmental-onset lesions to the ventromedial PFC. The control group included 9 patients with developmental-onset brain lesions localized elsewhere and the previous data of the study published by Koenigs et al (2) (6 patients with adult-onset ventromedial PFC lesions and 12 neurologically healthy individuals). Subjects were asked to make judgements for a series of dilemmas. These dilemmas consisted of scenarios that were classified as low and high conflict and patients were asked to answer Yes or No for the "Would you...in order to?" questions after reading each scenario.

The novel and important finding from the study is that patients with developmental-onset lesions to the ventromedial PFC, unlike patients in whom ventromedial PFC damage occurred during adulthood, endorsed significantly more self-serving judgement that broke moral rules or inflicted harm on others — e.g. lying on one's taxes or killing an annoying boss. Furthermore, the results suggested that earlier ventromedial PFC damage, especially before the age of 5 years, lead to a greater likelihood of self-serving moral judgements.

Psychopathy is a serious mental health disorder that has been suggested to result from the dysfunction of the frontolimbic system during development. Hypothetically, people suffering from psychopathy may exhibit egocentric moral judgements similar to those of developmental-onset ventromedial PFC patients. In their study, Taber-Thomas et al. also tested this hypothesis by reanalysing the data from a recent study (1) that administered a similar stimulus set to participants suffering from psychopathy and came up with another important finding. Like developmental-onset ventromedial PFC injured patients, psychopathic criminals were more likely to endorse low-conflict self-serving actions compared to non-psychopathic criminal comparison participants. The authors conclude that the results offer compelling support for the proposal that early dysfunction in the ventromedial PFC may constitute a neuropathophysiological mechanism for the development of psychopathy and interruption of moral development.

REFERENCES

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