In the mind of a psychopath

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Enjoy your reading 😊
What is Psychopathy?

Special subtype of personality disorder

“mania sans de´lire”
“Madness without delirium”

19th century – Philippe Pinel

Lack of morality and behavioral control

Psychopaths can function normally in society.

A sociopath is a product of adverse environmental conditions interacting with genetic traits. Psychopath numbers are stable, while sociopath numbers change with environmental conditions. Lower social classes; dysfunctional families are associated with sociopaths.

A psychopath is morally bankrupt but do not show signs of mental illness. They are biologically in origin and may or may not engage in criminal behavior. Aristotle describes the "brutish nature" of psychopaths.

**Antisocial Personality Disorder:**
1. Failure to conform to social norms
2. Deceitfulness (lying, aliases, conning)
3. Impulsivity and failing to plan ahead
4. Irritability and aggressiveness
5. Reckless disregard of safety for self and others
6. Consistent irresponsibility
7. Lack of remorse

Psychotic
Loss of contact with reality → delusions, “insane”

Psychopathy
Innate?
Can plan crime
Organized
Successful

Sociopathy
Result of Environmental factor
More impulsive
Financially Unstable

Hervey Cleckley

- The Mask of Sanity (1976)
- Characterization
  - Antisocial lifestyle
  - Selfish
  - Domineering
  - Manipulative
  - Irresponsible
  - Impulsive
  - Fearless
  - Shallow
  - Callous
  - Lacking empathy and remorse
  - Not just criminal or deviant behavior
- Can be socially well adjusted and successful individuals
Anomalies in the prefrontal cortex may handicap some individuals, making it difficult for them to show restraint. Some scientists hypothesize that the orbitofrontal cortex, an area involved in decision making, normally inhibits regions in the limbic system—specifically the hypothalamus and the amygdala, where fear and aggression arise. If a defect blocks this communication, a person might not be able to moderate his or her emotional reactions. Damage to the hippocampus may also impair the brain’s processing of emotional information. In some instances, a malfunction of the amygdala may underlie violent behavior. This theory could explain the lack of fear, empathy and regret that is characteristic of criminals who plan their acts and commit them in cold blood.

—D.S., M.L. and G.R.
Is the X-linked MAO-A gene associated with predisposition to violence?

Monoaminoxidase A – enzyme deaminates serotonin (and other monoamines)

Low expression (MAOA-L) associated with impulsive aggressive behavior.

Structural brain abnormalities – especially in the anterior cingulate cortex

and reduction in amygdala, insula and hypothalamus.

Nature and Nurture?

MAO-L
Low activity
(higher intracellular concentration of 5-HT)

Increased serotonin availability is frequently associated with anxiety – therefore, MAOA-L carriers could have a predisposition toward neural hyper-reactivity to a threat and environmental maltreatment.

“Genetic vulnerability to violence by MAOA-L only in the presence of environmental trigger of maltreatment.”

Viding and Frith (2006) PNAS vol. 103 no. 16 6085–6086
Neural mechanisms of genetic risk for impulsivity and violence in humans

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Edited by Marcus E. Raichle, Washington University School of Medicine, St. Louis, MO, and approved February 8, 2006 (received for review December 30, 2005)

Neurobiological factors contributing to violence in humans remain poorly understood. One approach to this question is examining allelic variation in the X-linked monoamine oxidase A (MAOA) gene, previously associated with impulsive aggression in animals and humans. Here, we have studied the impact of a common functional polymorphism in MAOA on brain structure and function assessed with MRI in a large sample of healthy human volunteers. We show that the low expression variant, associated with increased risk of violent behavior, predicted pronounced limbic volume reductions and hyperresponsive amygdala during emotional arousal, with diminished reactivity of regulatory prefrontal regions, compared with the high expression allele. In men, the low expression allele is also associated with changes in orbitofrontal volume, amygdala and hippocampus hyperreactivity during aversive recall, and impaired cingulate activation during cognitive inhibition. Our data identify differences in limbic circuitry for emotion regulation and cognitive control that may be involved in the association of MAOA with impulsive aggression, suggest neural systems-level effects of X-inactivation in human brain, and point toward potential targets for a biological approach toward violence.

“For males the MAOA-L genotype is associated with amygdala hyper-responsivity during emotional arousal, coupled with diminished reactivity of regulatory prefrontal regions, compared with the high-activity allele (MAOA-H)”
Robert Alton Harris

• Looking for getaway for heist at San Diego Trust; Murdered John Mayeski, Michael Baker

• Was 25 years old. Harris taunted the victims before they died, laughed at them after he pulled the trigger, then calmly ate the hamburgers they had bought for lunch.

• Sociopath or Psychopath?
The Trial and the Controversy

• "As great as is my compassion for Robert Harris the child, I cannot excuse or forgive the choice made by Robert Harris the man.” – Pete Wilson California Governor

• "You can be a king or a street sweeper, but everybody dances with the grim reaper.” – Last Words, reference to Bill and Ted’s Bogus Journey
Who is the Psychopath?

Slide from Victor Guerra
Ted Bundy…

- American serial killer, rapist, kidnapper and necrophiliac
- More than a decade of denials
- Confessed shortly before his execution to 30 homicides
- Regarded as handsome and charismatic (especially by his victims)
- Lived with grandparents, no abuse, harassment etc.
Empirical basis and forensic application of affective and predatory violence

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Received 3 December 2005; accepted 13 December 2005.

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Classification of violent behavior

**affective**
- Preceded by high autonomic arousal
- Characterized by emotions of anger and/or fear
- Response to a perceived imminent threat

**predatory**
- Not preceded by autonomic arousal
- Absence of emotion or threat
- Cognitively planned, premeditated, proactive, cold blooded

Meloy, JR (2006)
<table>
<thead>
<tr>
<th>Affective violence</th>
<th>Predatory violence</th>
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<tbody>
<tr>
<td>1. Intense autonomic arousal</td>
<td>Minimal or absent autonomic arousal</td>
</tr>
<tr>
<td>2. Subjective experience of emotion</td>
<td>No conscious emotion</td>
</tr>
<tr>
<td>3. Reactive and immediate violence</td>
<td>Planned or purposeful violence</td>
</tr>
<tr>
<td>4. Internal or external perceived threat</td>
<td>No imminent perceived threat</td>
</tr>
<tr>
<td>5. Goal is threat reduction</td>
<td>Variable goals</td>
</tr>
<tr>
<td>6. Possible displacement of target</td>
<td>No displacement of target</td>
</tr>
<tr>
<td>7. Time-limited behavioural sequence</td>
<td>No time limited sequence</td>
</tr>
<tr>
<td>8. Preceded by public posturing</td>
<td>Preceded by private ritual</td>
</tr>
<tr>
<td>9. Primarily emotional/defensive</td>
<td>Primarily cognitive/attack</td>
</tr>
<tr>
<td>10. Heightened and diffuse awareness</td>
<td>Heightened and focused awareness</td>
</tr>
</tbody>
</table>
Psychopathic Personality Inventory...

Fearless Dominance
- Fearlessness
- Emotional and interpersonal deficits

Impulsive antisociality
- Rebellious nonconformity
- Crime
- Violence

Cold-heartedness
- Mainly dependent on scores of other two
- Lack of moral facts

Lilienfeld and Widows (2005)
Emotional-Social Deficits

- Reduced response to threatening or fear inducing stimuli, as measured by skin conductance.

- Moreover, individuals with psychopathy show difficulties in emotional learning.

- Moral Transgressions vs Conventional Transgressions E.g. Hair Pulling.
Recall:

“Psychopathy is—among other things—related to impairments in the medial region of the orbitofrontal cortex, which is extensively interconnected with the amygdala and involved in instrumental learning and response reversal.”

Theoretical models of psychopathy:

**Somatic marker**
- Damasio (1994)
- VMPF damage
- Impaired decision making
- Insensitive to reward and punishment
- Poor access to social rules and potential outcomes.
- Iowa gambling task

**Violence inhibition mechanism**
- Blair (1995)
- Stresses the role of empathy for moral socialization.
- Amygdala dysfunction – cannot control aggression.
- Submission of aggression response with distress cues.
- Dysfunction of autonomic arousal could result in lack of empathy.
Recall, adult VMPF damage...

For adult onset, recall last lecture...

Frontal lobe dysfunction can cause one to dissociate social cognition and moral knowledge.

...is it the same for early VMPF damage?
... what happens if there is early damage to PFC?

Impairment of social and moral behavior related to early damage in human prefrontal cortex

Steven W. Anderson, Antoine Bechara, Hanna Damasio, Daniel Tranel and Antonio R. Damasio

The long-term consequences of early prefrontal cortex lesions occurring before 16 months were investigated in two adults. As is the case when such damage occurs in adulthood, the two early-onset patients had severely impaired social behavior despite normal basic cognitive abilities, and showed insensitivity to future consequences of decisions, defective autonomic responses to punishment contingencies and failure to respond to behavioral interventions. Unlike adult-onset patients, however, the two patients had defective social and moral reasoning, suggesting that the acquisition of complex social conventions and moral rules had been impaired. Thus early-onset prefrontal damage resulted in a syndrome resembling psychopathy.
Knowing how to behave - Behaving in a socially desirable way
The first patient (subject A) was 20 years old at the time of these studies and was ambidextrous. She had been run over by a vehicle at age 15 months. At the time of the accident, she appeared to recover fully within days. No behavioral abnormalities were observed until the age of three years, when she was first noted to be largely unresponsive to verbal or physical punishment. Her behavior became progressively disruptive, so much so that, by age 14, she required placement in the first of several treatment facilities. Her teachers considered her to be intelligent and academically capable, but she routinely failed to complete assigned tasks.

Her adolescence was marked by disruptive behavior in school and at home (for example, failure to comply with rules, frequent loud confrontations with peers and adults). She stole from her family and from other children and shoplifted frequently, leading to multiple arrests. She was verbally and physically abusive to others. She lied chronically. Her lack of friends was conspicuous. She ran away from home and from treatment facilities. She exhibited early and risky sexual behavior leading to a pregnancy at age 18. Contingency management in residential treatment facilities and the use of psychotropic medication were of no help. After repeatedly putting herself at physical and financial risk, she became entirely dependent on her parents and on social agencies for financial support and oversight of her personal affairs. She did not formulate any plans for her future and she sought no employment. Whenever employment was arranged, she was unable to hold the job due to lack of dependability and gross infractions of rules.

Affect was labile and often poorly matched to the situation, but superficial social behavior was unremarkable.

She never expressed guilt or remorse for her misbehavior. There was little or no evidence that she experienced empathy, and her maternal behavior was marked by dangerous insensitivity to the infant’s needs.

She blamed her misdeeds and social difficulties on other people, and she denied any difficulties with cognition or behavior.

Impairment in the ability to experience certain moral emotions

Self Representation vs. Self Awareness:

• medial prefrontal area cxn precuneus
• relates personal identity with past personal experiences

• Causal links between one’s own intentions and actions (intentional causality)

• Theory of Mind – Empathy & Forgivability

What does this mean?

- **Amygdala**
  - Underlie aspects of emotion regulation, aggression, and stimulus reinforcement associations.

- **Precuneus**
  - Underlies aspects of reflective processing and empathy, especially when it comes to decision making.

*Slide from Victor Guerra*
The two theories may not be exclusive:

**Ventromedial prefrontal cortex** (Raine et al., 2000; Yang et al., 2005)
- Impaired impulse control and emotional learning, impaired adaptation of behavior to changes in reinforcement contingencies, impaired decision-making and planning

**Amygdala** (Truylen et al., 2000)
- Impaired processing of emotional material

**Hippocampus** (Laakso et al., 2001; Raine et al., 2004)
- Impaired retrieval of emotional memories and contextual fear conditioning, impaired associative learning

**Corpus callosum** (Raine et al., 2003)
- Increased functional inter-hemispheric, connectivity reduced inter-hemispheric, asymmetries of function

**Superior temporal gyrus** (Müller et al., 2007)
- Impaired processing of abstract material, lack of perspective awareness and empathy

PSYCHOPATHY

Figure 6. Affected brain regions in psychopathy (findings of the reviewed structural neuroimaging studies).

The Neural Correlates of Moral Sensitivity: A Functional Magnetic Resonance Imaging Investigation of Basic and Moral Emotions

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Humans are endowed with a natural sense of fairness that permeates social perceptions and interactions. This moral stance is so ubiquitous that we may not notice it as a fundamental component of daily decision making and in the workings of many legal, political, and social systems. Emotion plays a pivotal role in moral experience by assigning human values to events, objects, and actions. Although the brain correlates of basic emotions have been explored, the neural organization of “moral emotions” in the human brain remains poorly understood. Using functional magnetic resonance imaging and a passive visual task, we show that both basic and moral emotions activate the amygdala, thalamus, and upper midbrain. The orbital and medial prefrontal cortex and the superior temporal sulcus are also recruited by viewing scenes evocative of moral emotions. Our results indicate that the orbital and medial sectors of the prefrontal cortex and the superior temporal sulcus region, which are critical regions for social behavior and perception, play a central role in moral appraisals. We suggest that the automatic tagging of ordinary social events with moral values may be an important mechanism for implicit social behaviors in humans.

Key words: moral judgment; fMRI; emotion; orbitofrontal; sociopathy; frontal lobes
Emotions can be divided into “moral” and “basic”

- Emotion assigns a value to events, objects and actions.
- Moral emotions vs. Basic emotions
- Orbital & medial prefrontal cortex + superior temporal sulcus


Linked to the interests or welfare of society or other people.
Evidence for brain networks specialized in moral emotions:

What happens to OFC in normals?

Is OFC more active with morally evocative stimuli?

Compare to stimuli that evokes “basic” emotions

Damage to OFC → Lack of empathy & antisocial behavior → Intact social cognition and basic emotions
Areas activated by both moral unpleasant and basic unpleasant conditions.

“Activations are observed in the amygdala, upper midbrain, right thalamus, superior colliculus, extrastriate visual cortex, temporal neocortex and insula.”

In (horizontal) transversal and coronal slices, the right side of the brain corresponds to the left side of figure.
Areas activated by **moral** vs unpleasant processing:

- Right medial orbital frontal cortex (OFC) and medial frontal gyrus
- Right posterior superior temporal sulcus (STS)

In (horizontal) transversal and coronal slices, the right side of the brain corresponds to the left side of figure.

Areas activated by **moral** processing vs. neutral

(prefrontal + temporal not shown) + Bilateral amygdala, midbrain and extensive temporo-occipital cortex and the precuneus

In (horizontal) transversal and coronal slices, the right side of the brain corresponds to the left side of figure.

Orbital frontal cortex

Mediator of automatic responses that guide motivated behavior

Implicit social and emotional appraisals

Medial Frontal gyrus, Superior Temporal Sulcus and Limbic structures

Rapid and automatic detection of social-emotional events

Automatic and rapid processing of moral events

Enable humans to link emotional experience to moral values.

There is a difference in neural responses between:

• “automatic” moral emotional responses
• “explicit” reasoning tasks

OFC

Involve more prefrontal regions
Moral behavior covaries with moral emotion more than with moral judgment.
The Amygdala

| Kiehl and colleagues found reduced amygdala activity in psychopathic criminals in response to emotionally charged words | Children with callous unemotional traits have less amygdala activity than other children when viewing photos of fearful expressions | “Once they start paying attention to some goal they want, they ignore cues that would otherwise activate the amygdala” |

Miller 2008
Temporal lobe abnormalities in semantic processing by criminal psychopaths as revealed by functional magnetic resonance imaging

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\textsuperscript{f}Department of Psychology, University of British Columbia, Vancouver, BC, Canada
\textsuperscript{g}Division of Psychiatry, School of Community Health Sciences, University of Nottingham, Nottingham, UK
Psychopaths are impaired cognitively.

Right anterior superior temporal gyrus – fMRI and structural abnormalities in psychopaths

Abstract word processing and emotion-related hypo-function

The abnormalities could relate to problems with complex social emotions – love, empathy, guilt and remorse.

Kiehl et al., 2004; Muller et al. (2007)
# Social and Moral Reasoning

**Level 3: Postconventional**

**Stage 6:** Personal commitment to universal moral principles.

- Achieved by a minority of adults.
- One of 6 adult-onset patients at this level.

**Stage 5:** Recognition that moral perspective may conflict with law. Consider rights and welfare of all.

**Level 2: Conventional**

**Stage 4:** Recognition of obligations to society. The individual is viewed within the system.

- Characteristic of most adults and adolescents.
- Five of 6 adult-onset patients at this level.

**Stage 3:** Reliance on the Golden Rule. Be a good person in your own eyes and those of others.

**Level 1: Preconventional**

**Stage 2:** Concrete reasoning that, to serve one’s own needs, you must recognize other’s rights.

- Characteristic of most children under age 9.
- Both early-onset patients at this level.

**Stage 1:** Egocentric perspective with decisions based on avoidance of punishment.
• Performed similarly in decision-making tasks eg Iowa Card Gambling Task
• But “…their performance was in stark contrast to that of patients with adult onset who can access the facts…”
Immoral, Amoral, or just plain wrong?...
Accountability?

• ... patients failed in both emotionally-related and factual modes of retrieval, it is possible that they never acquired socially relevant knowledge either in emotional or factual modes.... They may have never acquired such knowledge...

Slide from Victor Guerra
The Responsibility of the Psychopath Revisited

Neil Levy

Abstract: The question of the psychopath's responsibility for his or her wrongdoing has received considerable attention. Much of this attention has been directed toward whether psychopaths are a counterexample to motivational internalism (MI): Do they possess normal moral beliefs, which fail to motivate them? In this paper, I argue that this is a question that remains conceptually and empirically intractable, and that we ought to settle the psychopath's responsibility in some other way. I argue that recent empirical work on the moral judgments of psychopaths provides us with good reason to think that they are not fully responsible agents, because their actions cannot express the kinds of ill-will toward others that grounds attributions of distinctively moral responsibility. I defend this view against objections, especially those due to an influential account of moral responsibility that holds that moral knowledge is not necessary for responsibility.

Keywords: responsibility, moral knowledge, mental disorder, psychopathy

Psychopaths also present us with an all too practical challenge. They are (causally) responsible for a disproportionately large percentage of crimes: more than fifty percent of violent crimes, and a very large percentage of petty thefts, frauds, and other relatively minor crimes (Reznik 1997, pp. 136–40). Many psychopaths have long records of convictions for offences followed by short prison sentences and, often, stays at psychiatric institutions. Most do not go on to become murderers, but some do, in spectacular fashion. “Psychopath” is far from synonymous with “serial killer,” but most serial killers are probably psychopathic. Ought we to hold the psychopath morally responsible for these crimes? Or should we excuse them, as we (typically) excuse those suffering from psychoses and some impulse-control disorders?
<table>
<thead>
<tr>
<th>Aggressive narcissism</th>
<th>Antisocial behavior</th>
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<tbody>
<tr>
<td>• Continual devaluation (aggressive) of others in order to pump up own self-esteem</td>
<td>• Long-term offensive and sometimes criminal behavior</td>
</tr>
<tr>
<td>• Glibness, grandiose, pathological lying, manipulative, lack of empathy and sadistic.</td>
<td>• Prone to boredom, parasitic lifestyle, poor impulse control, irresponsible, promiscuous sexual behavior.</td>
</tr>
</tbody>
</table>

Psychopaths have abnormal standards!