



## The Genetics of Anti-Social Behavior with Reference to Forensic Psychology: A Review

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### ABSTRACT

Antisocial behavior is labeled as such when it is deemed contrary to prevailing norms for social conduct. A person who displays antisocial behavior might appear to be charismatic and outgoing at first, but this can hide the fact that such people tend to be extremely selfish and self-centered. People with antisocial personalities are also more likely to abuse alcohol and drugs. It is often found that children who are abused are more likely to develop anti-social behaviors later in life. This abuse often teaches children that violence is acceptable, and leads to the formation of their own violent tendencies and an increased aggressive drive. Anti-Social behavior in late adolescence is a common factor. In psychiatry, particularly in the DSM IV, persistent anti-social behavior is part of a diagnosis of antisocial personality disorder. For the diagnosis to be given, the individual must have had a history of some symptoms of conduct disorder before age 15 years (DSM IV). While diagnosing psychopathy, forensic psychologists should be careful not to overemphasize antisocial behaviour. A person who engages in antisocial behaviour only of specific type against specific person or only at specific time may not suffer from personality disorder at all. Criminal and civil laws in various countries offer remedies for anti-social behavior. In addition to actions that oppose established law, anti-social actions also include activities that members of society find objectionable even if they are legal, such as drunkenness and sexual promiscuity. There is now abundant evidence that both genetic and environmental influences—and probably their interaction—are of major importance in explaining individual differences in antisocial behavior, including differences in criminal behavior. Genes do not cause antisocial behaviors directly, but rather contribute to more general dispositions that increase the likelihood of an individual engaging in antisocial behaviors. Thus, molecular genetic investigations of other related syndromes may eventually indirectly uncover susceptibility genes for antisocial behaviors. Mutations in certain genes have been believed to be the cause of antisocial behavior. The over-expression of a certain neurotransmitter, serotonin, is believed to be the cause of this behavior.

**Keywords:** Genetics, Environment, Antisocial, Behavior, Forensics, Psychology, Serotonin, Dopamine, Neurotransmitters.

### What is Anti-social Personality Disorder or APD?

Antisocial behavior (used with antisocial personality disorder or APD) can generally be characterized as an overall lack of adherence to the social standards that allow members of a society to co-exist peaceably. People who display this type of behavior may seem charming, but often cause harm to others and show little or no remorse for their actions. Such behavior may usually constitute a violation of legal codes, as this behavior is often accompanied by disturbances of thoughts or emotions<sup>1</sup>. This behavior may be distinguished from APD (also known as sociopathy or psychopathy), in which antisocial behavior is longstanding and continues in a variety of areas during adulthood like irresponsible or no parenting, unlawful behaviors, repeated aggressiveness, repeated lying, reckless endangerment of others. Research indicates that family along with environment, personality characteristics, peer environment, and social contexts all play a role in influencing the development and maintenance of antisocial behavior. Engaging in antisocial behavior poses increased risk for illegal drug use, high-risk sexual behavior, depression, and for engaging in violent acts towards others and towards the self<sup>2</sup>. It is also well

known that substance abuse poses serious health hazards through the direct bodily harm that these substances cause, as well as the indirect effects that result from impaired judgment (e.g., automobile accidents, high-risk sexual behavior)<sup>3</sup>.

APD is one of the most extensively studied disorders among the major personality disorders. Individuals having this disorder are impulsive, aggressive, aloof, and are thought to have diminished capabilities in regards to work, love, guilt, and cooperation with others. APD begins in childhood and has substantial behavior problems during adolescence<sup>2</sup>. Impulsive-aggressive behavior is common during childhood and accompanied by fighting, setting fires, running away from home, cruelty to animals, and conflicts with authority figures. This behavior persists in adulthood and the impulsive aggressive behaviors are associated with impairments in work and social situations. These people are found to change jobs regularly by both by getting fired and by quitting and they frequently use and abuse alcohol and drugs<sup>4</sup>. Studies say that antisocial personality disorder is more prevalent in males than females, regardless of age or ethnicity. Also, the frequency of this disorder is higher in people who are related to someone with it when compared to the normal population. Even though the rates of antisocial personality disorder are lower in females, the affected



female normally has more affected relatives than a male. Thus, for becoming an anti-social female require stronger cultural and biological influences than male<sup>5,6</sup>.

### **Forensic Relevance of Anti-Social Personality (ASP) Disorder**

Forensic relevance of any disorder or syndrome is more related to social function, statute, and legal rules than to diagnosis. The law is more interested in behavior than "status"<sup>7</sup>.

### **General Criminality**

Usually the associations between APD and forensics rest on the fact that many behaviors done with the intension seeking of pleasure and stimulation are illegal. People with APD are more likely than the general population to disregard legality when the behavior is in the pursuit of their pleasure or stimulation. The qualities that often lead APD individuals to leave aside the concept of illegality can also safeguard them from properly considering the consequences of their actions, including consequences that hurt others or increase the chances of getting caught. Finally, both mental health professionals and laypersons often use criminal behavior as a definition of APD<sup>8</sup>. There is a general controversy on the query—how many people with APD and psychopathy actually commit crimes?—All APD are not criminal; the NIMH Epidemiologic Catchment Area study found no significant arrest record for 53% of community residents who met DSM-III-R criteria for APD<sup>9</sup>. APD people rarely come to mental health / forensic professionals' attention except in situations that involve criminal activity<sup>10</sup>.

### **Sex Offenses**

It is needed to differentiate APD from the paraphilias, and sexual offenses. Some sex offenders (more violent than nonviolent ones) meet DSM criteria for APD, but there is little evidence that APD is routinely associated with sex offenses.

The variety of sex offenders' disorders, criminal careers, behaviors, and responses to certain treatment modalities makes it important that clinicians/forensics should not mistake their primary problem for APD. When APD and sex offenses are combined, the offenders' response to treatment and rehabilitation is generally low in sex offenders<sup>10</sup>.

### **Violence and Sadism**

APD people intension to harm others arises primarily from self serving behavior and disregard for others and not from specific pleasure in hurting them. Violence, however, is still common, although aggression and danger may be stimulating or an uncaring means to an end and the perpetrators do not consider others' feelings as the consequences of their acts; their reasons for violence, sexual assault, or placing others at risk are different from those of individuals who are primarily physically predatory, paraphilic, sadistic, or explosive. When a forensic clinician predicts the future behavior of a patient,

discuss potential treatment and treatment response, or assess a patient's ability, he should take care that there are a number of conditions other than ASP and psychopathy that may be involved, such as intermittent explosive disorder, sexual sadism, and substance<sup>10</sup>.

Persons who show many signs of psychopathy (such as high Psychopathy Checklist or PCL scores) may be predicted to exhibit higher violence. The violence at times is purposeful and instrumental and not reactive or emotional. Psychopaths exhibit sadistic characteristics with violent or sadistic sexual offences. The rate of sadism in psychopaths is very difficult to estimate<sup>10</sup>.

### **Impulsive Behavior**

APD people are prone to such things as impulsive substance abuse, gambling, or violence. But again, behaviors such as compulsive gambling or so called "sex addiction" should be separated from APD<sup>10</sup>.

Psychopaths and APD are different from normal people; arguments exists that they cannot control their behavior are almost always futile. It is the duty of the forensic professional to help the attorney or court to separate behavior from personality disorder or mental illness (the latter usually as defined by the relevant jurisdiction, not by DSM-IV). In usual cases, antisocial behavior in a person with APD should not be construed as restriction from a mental illness or incapacity or otherwise the evaluation is clinically and forensically inaccurate and serves neither the court nor the individual<sup>10</sup>.

### **Criminal Sentencing, Recidivism, and the Death Penalty**

References indicate higher rates of criminal backslide in those with APD and psychopathy suggests that courts should sentence these individuals accordingly with advice of forensic professionals<sup>7</sup>. The diagnosis should be made carefully and the role of personality disorder in the crime should be considered. It is more sensible to use a negative Psychopathy Checklist, Revised or PCL-R result to moderate against psychopathy (and its potential for violence and recidivism) than to use a positive one by itself to seal a defendant's fate, particularly in capital sentencing. A positive factor is that most antisocial behavior is not due to APD. Persons who are mentally ill (diagnosed) and commit antisocial acts often respond to appropriate treatment<sup>10</sup>.

### **Role of Forensic Professionals in cases of APD**

Forensic psychologists should make clear opinions regarding the causal role played by the anti-socials or psychopaths with respect to the relevant legal issue, whether impairment or risk and should recognize that such opinions are professional rather than scientific in nature, that is, the findings are based on inference and speculation, not by the direct application of scientific principles or findings<sup>11</sup>. Even though a forensic psychologist adopts a categorical or a dimensional model or not, their assessments are complicated by the height prevalence of personality disorders in forensic settings.



Based on the research findings, between 50% and 80% of all incarcerated adult offenders meet the diagnostic criteria for antisocial personality disorder<sup>9</sup>.

The history of antisocial behavior will be of clinical & diagnostic significance in civil psychiatric settings, where only minorities of patients are convicted of criminal offenses (as per DSM IV). Usually antisocial behavior is of less significance in many forensic settings as many convicts are with arrest records<sup>12</sup>. Forensic psychologists should take not to overemphasize antisocial behavior, like in isolated criminal acts, while diagnosing psychopathy. Usually personality disorders should be manifested across various areas of psychosocial functioning, across time, and across important personal relationships<sup>12</sup>.

## CASES

### Ted Bundy case

Ted Bundy was one of the captured serial killers that was given psychological testing. Based on the DSM IV TR, he was classified with ASPD. It was said that many people believed he was incredibly charming and manipulative which allowed him to more easily capture his victims. He also showed no remorse for any of the crimes he committed. While on death row he was put through rigorous psychological testing which lead to diagnoses as tame as bipolar disorder all the way to dissociative identity disorder, yet most experts nowadays would agree that Bundy, like most psychopaths, displayed characteristics of anti-social behaviour.

(source: <http://www.crimrack.com/2012/04/ted-bundy-case-file/>)

### CASE: ANTI-SOCIAL BEHAVIOUR: 'I BRICKED UP MY OWN WINDOW'

**The police watchdog for England and Wales has warned that forces risk making a "very significant mistake" if they cut work on anti-social behaviour.**

In a critical report, the Chief Inspector of Constabulary Sir Denis O'Connor said some forces responded too slowly to calls for help from vulnerable people.

**Three people who have suffered anti-social behaviour told their stories to the BBC.**

#### Kim Langley 'I bricked up my own window'

Kim Langley lives in Fareham in Hampshire. She says she was forced to brick up one of her own windows because of the level of vandalism her home was enduring.

She says that four years of anti-social behaviour has left her with other broken windows, a damaged roof, destroyed fencing, gates stolen - and a garden she is afraid to use.

**"They feel sorry for us - but then they say that there is nothing they can do"**

Kim Langley

At the heart of the problem has been one simple problem: gangs hanging around right next to her home.

Mrs Langley's house is on a busy main road - and the footbridge over the carriageways is also next to the property.

Local gangs congregate on that footbridge - and over four years turned Mrs Langley's home into a target for their vandalism.

"We've had fencing kicked in, windows broken, fires lit outside our house, eggs thrown at us and into the garden. Beer bottles, rubbish. It's just been one thing after another," she says.

"I hate it where I live. There are fights on the bridge. The kids use it for BMX stunts. A motorcycle drove up the steps once. I couldn't believe it."

As the problems worsened, she kept a detailed diary of all the incidents. Her logbook runs to scores of incidents - and it reads like the notes you would expect a police officer to keep.

Recently, the Highways Agency, which is responsible for the bridge, agreed to modify the structure to shield her home from attack.

But Mrs Langley says that work is too little too late - and she has lost all trust in local authorities to help people like her.

"It's the same old story. They come around. They are very sympathetic. They feel sorry for us. But then they say that there is nothing they can do.

"One police officer told me it was the 'night-time economy' that was the problem. Well I don't think the night-time economy starts with kids leaving school at 3.30 in the afternoon.

"Another said it was because of where we live. So does that mean I'm to blame for what we are experiencing?

"I have no faith at all in the police."

**Susan: 'Police decided it was taking up too much time and resources'**

Susan, 53, who lives in London asked that her full name be withheld.

She told the BBC she had been the victim of anti-social behaviour from her neighbour for more than a year. She has been threatened with violence and filmed by her neighbour.

**"One officer said to me 'I'll be glad when this is over so that I can get back to some real police work'"**

Sue, London

She said: "This behaviour has now extended to other residents in the street. It was dealt with successfully by the local Safer Neighbourhood Team and the perpetrator was arrested.

"However this team was then removed from the case and not allowed to deal with any new incidents that occurred because the police sergeant decided that it was taking up too much time and resources. We were instructed to contact the central number for the Met or call 999.

"The anti-social behaviour has continued. This person persistently breaks his bail conditions but the police won't arrest him, even when I was threatened with a hammer.

"On that occasion the Pc dismissed it with 'The man's an imbecile'. That officer then made a false statement in his report saying that I was 'happy' with the action taken even though I had complained about it.

"Most recently we were told that they would not be contacting witnesses to a further breach of bail conditions. They have dropped the incident.

"One officer said to me 'I'll be glad when this is over so that I can get back to some real police work'.

"It might not be 'real' enough for them but it sure as hell is real enough to the people who have their lives made a daily misery as a result of anti-social behaviour."

#### **Arthur Tunley: 'Pester the police and they will respond'**

Mr Tunley is a primary school caretaker in Sudbury, Suffolk, and lives in a bungalow in the grounds.

He spent four years battling against a gang of teenage vandals, some of whom had passed through the classrooms as little boys.

**"We need the police to do their bit - but if the parents don't care, what can you do?"**

Arthur Tunley

He told the BBC that he had suffered 20 broken windows and had to repair his own front door at least five times.

"It got really, really bad about four years ago," said Mr Tunley. "For ages the police didn't do anything but I kept calling and calling."

Mr Tunley says that he was deeply frustrated when he tried to get the police to bring charges against teenagers he could name.

In some cases he caught sight of the culprits as they ran off after breaking a window. But officers said the courts would not convict unless he could prove which boy threw the stone.

However, the caretaker did not give up. He changed tack and began reporting every single act of anti-social behaviour to the police - no matter how small. Non-urgent incidents were also reported to the local council - and eventually he built a critical mass of complaints.

"What I found was that when I kept calling - they eventually took it seriously. You have to keep reporting the incidents until they are so peeved off with you that they have to act."

Three local teenagers were identified as ringleaders and subjected to Acceptable Behaviour Contracts. These orders effectively meant the trio would end up on an Anti-Social Behaviour Order - or in court - if they approached Mr Tunley or his home.

"Since then, I've had nine months without any real trouble," said Mr Tunley. "But the problem is much deeper than something the police can deal with alone.

"I remember hearing one story about some of these lads being out in heavy rain.

"They were hanging around by the bus shelter and a Police Community Support Officer asked them why they weren't inside.

"They said their parents would not have them in the house. So they were stood outside getting wet, with no other place to go.

"We need the police to do their bit - but if the parents don't care, what can you do?"

(source: <http://www.bbc.co.uk/news/uk-11394363>)

#### **Models of APD**

Although we have the current theories and models that have been advanced to explain the causes of anti-social behavior, the following three are in use in their ability to inform prevention and treatment efforts.

*Coercion theory:* this states that antisocial behavior is carried out to force other people to surrender to the aversive demand of the (antisocial) individual<sup>10</sup>.

*Social developmental model:* this model hypothesizes that a lack of belief in the moral order, perceived rewards for antisocial interaction and involvement in related behavior, commitment to antisocial lines of action and people, and belief in antisocial values predicts directly the antisocial behavior.

A more general developmental model of child antisocial behavior theorizes that maternal smoking, substance abuse, and poor nutrition during pregnancy adds to the child's antisocial behavior. Thus, this model states that poor health outcomes are the antecedents, as well as the consequences, of antisocial behavior. This model highlights that parental style, child characteristics, and characteristics of the school, home, and primary caretaker that occur later in development are antecedents of later antisocial behavior<sup>14</sup>.

#### **Causes of APD**

People at any age can show antisocial behaviors. When children exhibit such kind of behavior, it's generally referred to as "conduct disorder". Children with conduct disorders are usually abused or have been exposed to environments where harsh punishments are very much common. Such children get adjusted to violent behavior and their psychology & instinct tells that the violent & harsh behaviors are common behaviors. Such children grew up with situations ranged from excessive leniency to



excessive punishment. In such inconsistency a child cannot react to a challenging situation, causing him to become angry and lash out when he doesn't get his way.

Research says the worst cases, as seen in adult criminals such as murderers, can usually be traced back to earlier conduct disorders as children.

Children exhibiting signs of a conduct disorder can often be treated, however, especially if the behavior is identified early. Cognitive-behavioral therapy can help children and adolescents change their moral reasoning, learn empathy, and deal with frustration in positive ways. The longer antisocial behavior is allowed to continue, the more difficult it is to treat<sup>14,4</sup>.

### The genetics of anti-social disorder

Personality is unique for an individual and it is the combination of thoughts, emotions and behaviors and it is the way people view, understand and relate themselves to the outside world, as well as how they see themselves. It forms during childhood and adolescence, shaped by genetic and environmental influences. Some people can have a genetic vulnerability towards developing antisocial personality disorder — and life situations occasionally may trigger its actual development<sup>15</sup>.

Behavioral geneticists are using molecular genetics' tools to highlight discoveries for twin, family, and adoption studies concerning the heritability of antisocial disorders and psychopathy. Behavioral genetics research links the serotonergic and dopaminergic pathways with antisocial<sup>16</sup>. Research also mentions some of the novel genetic factors<sup>17</sup>. Social scientists presently agree to the current study in human behavior which says both genetic and environmental factors are stated to explain the wide variations observed in human behavior since there is abundant evidence that both genetic and environmental influences—and probably their interaction—are of major importance in explaining individual differences in antisocial behavior, including differences in criminal behavior<sup>18</sup>.

Evidence for a genetic basis of antisocial behavior projects leads to several different lines of research. For instance, identifying specific genes that might be linked with certain disorders and that regulate neurotransmitter activity can enable adjustment of neurotransmitter levels and functions accordingly by pharmacological or environmental methods. "Neurotransmitters are brain chemicals that transmit messages from cell to cell, enabling neural communication. Neurotransmitter metabolism and receptor function are crucial for brain's most functions, including mood, behavior and emotions. In the case of antisocial behavior, several neurotransmitters in association with genes have been identified, including serotonin, and dopamine<sup>18</sup>.

These neurotransmitters are highly sensitive to environmental control. The neurotransmitter serotonin (5-hydroxytryptamine, or 5-HT) is found to have links with anti-social behavior but the psychological mechanism

underlying this relationship remains unclear. Although some research models speculate that low levels of serotonin increase impulsivity which inhibit sensible behavior and thus increase the likelihood of risky and antisocial behavior. Serotonergic activity in brain appears to have a deep influence on the production of impulsive-aggressive<sup>16</sup>.

"Deficits in brain serotonergic activity produce behavioral disinhibition, resulting in an increased likelihood of impulsive aggressiveness or other excessive and inappropriate behavior"<sup>19</sup>.

Serotonergic gene HTR2A shows relationships to antisocial behavior. Another serotonergic gene HTR1DA too is found associated with antisocial behavior, which is plays a role in 5-HT metabolism<sup>20</sup>. TDO2 (tryptophan 2,3-dioxydase), another 5-HT gene is found associated with antisocial behavior. Tryptophan is a precursor of 5-HT. Increased activity of TDO2 is lowers of 5-HT which in turn associated with aggressive<sup>21</sup>.

Dopamine one major neurotransmitter is found to have considerable role in behavioral activation, reward mechanisms, and goal-directed behaviors (in parallel to serotonin)<sup>16</sup>.

In one study of children with attention deficit hyperactivity disorder, children with the valine/methionine variant in the catechol O-methyltransferase (COMT) gene showed greater antisocial behaviors than those without this variant<sup>22</sup>.

Caspi et al., (2002)<sup>23</sup> examined the impact of the MAOA gene located on the X-chromosome with behavior. Results indicated that males having a low-MAOA activity genotype and also exposed to maltreatment were significantly more likely to exhibit child conduct disorder and adult antisocial behavior, including criminal arrests, than were high-MAOA activity genotype males who had been similarly maltreated. The presence of this gene on the X-chromosome also explains why males are more aggressive, on average, than females, particularly if the low MAOA activity genotype is recessive in nature<sup>24</sup>.

Behavioral studies of antisocial behavior have included studies of juvenile delinquency and adult criminal behavior, of *DSM-IV* psychiatric disorders related to antisocial behavior, and of trait aggression in both children and adults<sup>25</sup>. Genetic influences in antisocial behavior are present in childhood and develop and appear during adolescence, the major risk period for criminality (at age fifteen to twenty-five). These effects do not appear to vary by sex, suggesting that some root biological influences may explain individual differences in antisocial behavior for both males and females. So, through so many studies on environment and genetic bases of human behavior, a forensic professional should take a cautious approach either in making inferences about a given individual or in considering changes to the legal system that might now take a defendant's experiences and disposition into account<sup>25, 26, 24</sup>.



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