

# *Etiological Imaging, Diagnosis and Treatment of Antisocial Personality Disorder*

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**Abstract:** This paper first summarizes the definition of antisocial personality disorder (APD), and then explains the influence of antisocial personality on the patients themselves and the society as well as the etiological diagnosis and treatment methods. Finally, some suggestions for future research and intervention are given. The etiology and influence of antisocial personality disorder are first introduced. The present study found that various factors such as childhood experiences and structural brain abnormalities, could contribute to symptoms of antisocial personality disorder (APD). Secondly, the diagnosis of antisocial personality disorder is introduced, which is based on the common scale test and the patient's actual symptoms and life experiences. Then it introduces the common treatment methods of antisocial personality disorder from the perspective of neurology and psychology. Finally, some suggestions are put forward to provide directions for future research. To sum up, through a systematic review of the previous literatures and analyzing, this paper aims to increase the understanding of APD and provide evidence-based recommendations for optimizing the treatment and intervention of APD.

**Keywords:** antisocial personality disorder, neurology, psychotherapy, etiology

## 1. Introduction

Antisocial personality disorder, also known as "heartless personality disorder" or "antisocial personality disorder", is the most serious type affecting society. It refers to the abnormal personality that individuals tend to violate social norms in social behaviors and harm others for the purpose of self-interest without feeling guilty. According to the DSM-5, antisocial personality disorder (APD) is a pervasive pattern of ignoring and violating the rights of others that begins at age 15 and continues until age 18, with evidence of conduct disorder appearing before that age. Symptoms often include deception, impulsivity, irritability, lack of remorse, disobedience to the law, and unstable relationships, and in addition to the typical symptoms [1]. There are some specific features of the brain structure. People with APD had an 11 percent reduction in the volume of a tissue called gray matter in the brain's prefrontal cortex, compared with normal people or those with a history of drug and alcohol abuse but without APD. The prefrontal cortex is the part of the brain associated with emotion, arousal, attention, conscience, morality and self-control [2]. People with APD have been shown to have structural abnormalities in the brain, including the prefrontal, orbitofrontal gyrus, precuneus, temporal lobes, and bilateral cerebellum. In terms of gender manifestation, men are more likely to suffer from antisocial personality disorder than women. The reason, research

confirms, is that men are more vulnerable than women to negative emotions and trauma, both biologically and because of their gender roles in society [3].

People with antisocial personality are highly impulsive and aggressive and have unplanned behaviors and symptoms of social maladjustment. Therefore, the emergence of APD will lead to the deterioration of social order and the rise of crime rate. And most people with APD are among criminals. However, there are still many undiscovered patients with APD in the society, which is a very big hidden danger to the patients themselves and the society. People with APD, who are unable to empathize, have weaker brain structures that control emotion, conscience, and morality. People with APD are more dangerous to society than the general population. Because they are more likely to commit crimes than the average person. This article is mainly about in order to let people understand the general situation of APD, understand the cause of APD, and timely detection, diagnosis and treatment and to stifle social crime in its cradle. One purpose of the present study is trying to nip the crime rate in the bud. This study will provide a comprehensive review of the etiology, impact, diagnosis, treatment. After discussing a series of studies on APD, suggestions for prevention and management of APD are presented.

## **2. The Main Manifestation of Antisocial Personality Disorder**

First, patients with antisocial personality disorder exhibit low levels of empathy. Individuals with antisocial personality disorder have a cold attitude towards everything. This indifference is reflected in a lack of compassion, a lack of self-shame and blaming others for mistakes.

Second, patients with antisocial personality disorder are prone to emotional outbursts. People with an antisocial personality disorder often have emotional outbursts. They are likely to explode over trivial matters and lose self-control.

Third, most of patients tend to disregard ethical rules. People with antisocial personality disorder have no boundaries. Patients are self-righteous and routinely and deliberately behave against social norms.

### **2.1. The Effects of the Childhood Period**

The etiology of antisocial personality disorder is a personality disorder caused by the common influence and interaction of heredity and environment. The early years mainly refer to the influence of genetic factors, and the specific structure of the brain. Genetic factors account for about 20%, and if a person with an antisocial personality disorder has a first-degree relative with the problem, such as a parent, a child, a brother or sister of a parent with the problem, they have a very high chance of being passed on [4]. The main cause of antisocial personality disorder is environmental influence, and the most important one is family environment. Family is the first enlightenment environment that a child comes into contact with after birth. Children who grow up in a healthy family environment have good mental and physical development, but children who grow up in an unhealthy family environment have a high probability of poor mental development. Moreover, childhood maltreatment is also an important factor in the formation of APD. Studies have measured childhood maltreatment and early causes of APD using a review of self-reports of sexual abuse and official records of abuse. The study confirmed a link between childhood maltreatment and the development of APD [5]. Antisocial personality disorder is characterized by behavior that does not conform to social norms, frequent lawbreaking and even criminal behavior, and emotional indifference to people and things. Misbehavior problems typically begin before the age of 15, and rates decrease with age. Therefore, many scholars have conducted investigations and studies on the etiology of APD from childhood. In 2010, researchers conducted a questionnaire survey among school students to detect the early risk factors of antisocial personality disorder, using First

Personality Diagnostic Questionnaire (PDQ+4). Second Adult Attachment Questionnaire (AAQ3.1). Third Parenting Style Scale (PBI). Fourth Childhood Abuse Questionnaire (CTQ). The students who scored less than 5 points and those who scored more than 5 points in the personality diagnosis questionnaire of antisocial personality disorder were divided into the control group and the tendency group for comparative study. The results showed that child maltreatment was significantly associated with antisocial personality symptoms. The antisocial personality disorder predisposition group scored significantly higher on the child abuse questionnaire than the control group. In addition, in the results of adult attachment questionnaire and parenting style inventory, the degree of parental care for children has a significant negative correlation with the degree of antisocial personality tendency. The degree of parental control over the lack of affection was positively correlated with antisocial personality tendency [6]. Others have taken a closer look at the early causes of antisocial personality disorder. The study included 1,480 pairs of twins divided into male and female groups, with parents' occupations. There are differences in education and birthplace. The research method is in the form of scale detection. Antisocial genetic and environmental factors were examined at four time points from childhood to adulthood. The findings suggest that the development of persistent antisocial behavior is primarily influenced by genetics; however, shared genetic influences are important only during adolescence and adulthood, and do not overlap with antisocial behavior before the age of 15. In addition to strong genetic influences, shared environments are also important for antisocial behavior. These include domestic abuse, family atmosphere, and environmental harmony [1]. Suggesting that the educational environment and parental influence during childhood are also key factors in the development of antisocial personality disorder. Childhood trauma, insecure parent-child attachment, poor parenting style, and physical abuse all play an important role in the formation of antisocial personality disorder.

## 2.2. Different Brain Structures

Antisocial personality disorder has also been linked to birth defects. The brain waves of people with antisocial personality disorder are similar to those of people without antisocial personality disorder during childhood. But as they age, in terms of brain structure, people with antisocial personality disorder have less gray matter in their prefrontal lobes and a smaller hippocampus than people without antisocial personality disorder. Differences in brain structure have been studied in the gray matter of people with antisocial personality disorder. Brain CT examination was performed in 17 APD patients and 19 normal subjects matching age, sex, IQ and education level, and the data were analyzed by voxel-based morphological analysis. Results The gray matter density of left superior frontal gyrus, right precuneus, left orbitofrontal gyrus, bilateral middle frontal gyrus, right medial frontal gyrus, right inferior parietal lobule, left fusiform gyrus, bilateral superior temporal gyrus and bilateral cerebellum in APD group was lower than that in normal control group, while the density of left superior frontal gyrus and left parahippocampal gyrus was higher than that in normal control group [7].

Prefrontal cortex function is associated with cognitive, emotional, pain and behavioral management. When people with antisocial personality disorder have prefrontal dysfunction, their ability to manage is also reduced, so people with APD tend to behave in an uncertain manner and often violate social norms. Plus, the orbitofrontal cortex mainly regulates value benefit choice and regret. So, they show no remorse or indifference to hurting others or doing something wrong. The precuneus is a part of the brain involved in higher cognitive processing. Such as episodic memory, self-related information processing, and various aspects of consciousness. People who often feel happy have more gray matter in the precuneus of their brains. But people with APD have less gray matter in the precuneus of the brain, so they are less able to perceive emotional value and therefore cannot empathize.

### 3. Diagnosis

#### 3.1. Scale Test

Antisocial personality disorder is characterized by a widespread pattern of disregard or violation of the rights of others, beginning in early childhood or adolescence and continuing into adulthood. Individuals must be at least 18 years of age and must have a history of some symptoms of conduct disorder before the age of 15. Conduct disorder involves repeated and persistent violations of the fundamental rights of another person or of a major social norm or rule appropriate to the person's age. The characteristic behavior of conduct disorder fits into one of four categories: aggression against other people or animals. Destruction of property. Fraud or theft. Serious violation of the rules. But the DSM-5's diagnostic criteria focus primarily on overt behavior, which leads to a lot of misdiagnoses of people who do not have antisocial personality disorders. Because the causes of antisocial personality disorder are mainly different brain structure, genetic influence, mental health development influence, so it is also referred to in the diagnosis. The most common method of diagnosis is to rely on the scale. The most common is the Personality Diagnostic Questionnaire (PDQ+4). But in the studies that have used the scale to diagnose antisocial personality disorder there have been a lot of studies that have diagnosed antisocial personality disorder based on parental literacy, work environment, family history and so on. It's also because the causes of antisocial personality disorder are linked to genetic factors, environmental factors, and structural factors in the brain. So, the diagnosis should also fit the actual situation. Because the pathogenic factors of antisocial personality disorder are very complex, many factors should be considered in the diagnosis of the patient, such as the patient's behavior pattern, family background, social environment and so on. The following are the main diagnostic methods for APD:

Firstly, objective self-assessment and testing: In this method, the patient is required to fill out a detailed self-assessment form in order to record the patient's behavior pattern, emotion and reaction style. Psychological tests, such as personality tests and lie detector tests, can also be used to understand the patient's social behavior, moral values, and love and relationship problems. Finally, based on the patient's answers, it will be determined whether the patient meets the diagnostic criteria of APD.

Secondly, interview: Interview is one of the most commonly used diagnostic methods to diagnose mental illness. By communicating with patients and observing their emotional and behavioral responses, patients' thinking style and life background can be understood in order to better judge whether patients meet the diagnostic criteria of APD.

Thirdly, family investigation: Since the cause of antisocial personality disorder is influenced by genetic factors, family investigation is also an indispensable part of diagnosis. It is possible to determine whether APD may be related to familial inheritance by understanding the details of the patient's family background, behavioral patterns and living habits of family members. Similarly, social environment and life experiences are also important factors influencing the incidence of APD [8].

In conclusion, the diagnosis of antisocial personality disorder requires a thorough understanding and analysis of the patient's personality, life background and behavior pattern. In addition to professional judgment, patients also need to take their problems seriously and actively cooperate with treatment in order to get through the difficulties.

#### 3.2. Detection of the Neurology Test

People with antisocial personality disorder often do not seek medical help, believing they are no different from others. So, we can also use the instrument to look at the physiological features of the

brain when we detect antisocial personality disorder. Researchers around the world have also shown that the brain structure of antisocial personality disorder is different from that of normal people.

## 4. Treatment

### 4.1. Medication

In terms of treatment, because antisocial personality disorder also presents the characteristics of bipolar disorder some commonly used drugs such as lithium and valproate can be used as medications for antisocial personality disorder. Antisocial personality disorder is characterized by behavioral uncertainty and aggression and has been diagnosed with fluoxetine hydrochloride as a drug treatment. Forty men with aggressive mental illness were randomly assigned 2:1 to study group or blank control group. Fluoxetine hydrochloride (10mg/ tablet) was used in the study group twice a day for four weeks as the drug regimen compared with the blank group. Explicit Aggressive Behavior Scale (MOAS) and aggressive response assay (PSAP) were used to evaluate the efficacy, and the side effects were observed. The results showed that four weeks after fluoxetine hydrochloride treatment, the total score of MOAS, the number of SAP-B reaction times and the number of SAP-B reaction times per minus 1 point decreased significantly, and the decreasing range of the first two was significantly lower than that of the control group. In addition, from the reduction rate of the above three indexes, the effective rate of fluoxetine hydrochloride group was significantly higher than that of the control group. Therefore, fluoxetine hydrochloride can reduce the aggressive behavior of the antisocial personality disorder patients in this group. In terms of safety, fluoxetine is one of the most commonly used antidepressants in clinical practice, with mild adverse reactions. In this study, no serious adverse reactions were found in fluoxetine group from week 1 to week 4 after treatment. From the occurrence rate of adverse reactions, the main adverse reactions of fluoxetine were headache and insomnia, with a low incidence. Adverse reactions were mild according to TESS scores. These results are basically consistent with clinical data. So, fluoxetine is also safer against aggressive behavior [9]. Currently, medication has been shown to be effective in reducing symptoms in patients. Medications include antipsychotic medications, antidepressants, and anti-anxiety medications. Antipsychotics are drugs used to treat schizophrenia and other mental illnesses. Such drugs can reduce apathy and aggression in APD patients and their hostility to society and others. There is a correlation between depression and antisocial personality disorder. Patients with both mental illnesses often feel hopeless, angry and miserable. Antidepressants can alleviate these conditions and improve the patients' emotional stability, reducing their impulsiveness and apathy. Anti-anxiety drugs can reduce and control patients' feelings of restlessness and tension, thereby improving their symptoms. Medication can help control this emotional state and reduce their impulsivity. With different types of medication, patients can reduce their symptoms, improve their behavior and help them gradually return to society.

### 4.2. Mind-cure

In addition, the most common treatment for APD patients is psychotherapy, which is also the first choice of APD treatment, and has a certain effect. The first is the most common and widely used therapy in psychology -- cognitive therapy. For example, of 106 APD patients at Broadmoor Hospital in the UK with an average imprisonment period of eight years, 22% participated in social skills groups, 6% in relaxation therapy, 4% in sexual behaviour modification programmes, and 6% in anger management training. Cognitive behavioral therapy (CBT) is a group of short-term psychological therapies that eliminate negative thoughts and behaviors by changing thoughts or beliefs and behaviors to change perceptions. Cognitive therapy can change problem behaviors by changing the bad thoughts behind them. The main purpose of cognitive therapy is to help patients



understand the nature of their APD, how they have caused bad effects and problems for society and themselves, and to improve their moral and social behavior by enhancing their cognitive function [10]. The second is individual therapy. Individual therapy is a form of therapy as opposed to group therapy. Before individual treatment of APD patients, the treatment should be properly considered and selected by the treatment provider. Typically, cognitive changes are chosen to awaken the patient's emotions. Therapists often use positive reinforcement, token methods, education-oriented anger management or impulse control training programs, and other cognitive-behavioral techniques. Since many APD patients are required to receive treatment from institutions or others, rather than voluntarily, it is difficult to discover patients' motivation at the initial stage of treatment. At this time, treatment focuses on special and specific problems that can make patients commit to treatment, such as patients' animal cruelty and emotional indifference. For APDs with concomitant alcohol and substance abuse, the focus at this time is on alcohol and substance abuse, and it can be useful for patients to understand the consequences of alcohol and substance abuse and how they may exacerbate their symptoms. For APD patients in court or prison, treatment can focus on life issues, such as their goals when released; An improvement in social or family relations; Learn new coping skills, etc. Emotion is a key part of treating APD. It is good to intensify any emotion other than the common anger or frustration. In therapy, the strong emotion that patients experience is often a sign of progress. In life, patients have few or no emotional feedback relationship, so the therapeutic relationship becomes the first emotional feedback relationship. At first it may be alarming or even intolerable to the patient, but once the patient trusts the therapist and has a solid and harmonious relationship with the therapist, a close therapeutic relationship can emerge and individual psychotherapy can be effective. In addition to individual therapy, group therapy is also chosen. The methods of group therapy are similar to those of individual therapy. However, the educational effect between patients in group therapy is complex and varied, so it can also help patients to communicate on emotional aspects. Group therapy is more effective in treating APD than individual therapy. Group therapy can help patients improve their social skills and change their behavior and values. Group therapy can be used as a unit to carry out emotional cognition and exercise for APD patients and help them control their emotions. And because of the group therapy, patients can feel emotions more quickly. This strengthens their willpower and self-control, and stimulates their inner motivation and sense of purpose [11].

## 5. Suggestion

So far, researchers have focused on brain structure, genetic influence, and family environment. This is also based on psychological and physiological theories and research. But it is also possible that childhood is not only influenced by any of these factors, experiences in the school environment or acquired stimuli during adolescence may also affect presence of APD. Those risk factors include school bullies, acquired brain hits, and the feeling of being oppressed and suffocated by people at the bottom of society. The author calls for a feasible antisocial personality inventory for children to adolescents. Teachers and family members should monitor possible antisocial personality disorders in each period. In terms of treatment, since the symptoms of antisocial personality disorder are similar to those of bipolar disorder and other mental disorders, other psychological therapies or medications may be equally effective. Patients with APD should not only be prescribed mood suppressants, but psychotherapy is also an important part of APD intervention. Prior research also suggests that the prevalence of APD is strongly associated with childhood maltreatment, not just physical maltreatment, but emotional maltreatment as well. Therefore, personality questionnaires should be developed for teenagers before the age of 15, and regular brain CT imaging should be advocated to prevent the increase of patients with antisocial personality disorder.

## 6. Conclusion

In summary, the main causes of antisocial personality disorder are differences in brain structure and poor development of mental health. It is characterized by a weakening of the parts of the brain that regulate cognition, emotion, self-control, and regret. APD may stem from childhood emotional abuse and physical abuse. The frequent occurrence of antisocial personality disorder will lead to the decrease of public order and the increase of crime rate for the society. The high suicide rate of antisocial personality disorder is also a threat. Clinically, scales, DSM-5 criteria, genetics, childhood experience and other criteria are mainly used for diagnosis, and the prevalence rate decreases with the increase of age. Male patients are more likely to suffer from the disease than female patients. In terms of treatment, APD patients are highly likely to commit suicide because of their behavior uncertainty.

On future directions for improvement in clinical practice, medication regimens should be timely adjusted according to patients' symptoms to avoid the risk of excessive drug use. Psychotherapy is by far one of the best treatments for people with antisocial personality disorder and is the most commonly used. Therefore, the combination of medication and psychotherapy may maximize the improvement of symptoms of APD. Antisocial personality disorder is a serious psychological disorder, which needs professional psychological treatment and medical intervention. Early detection and intervention are the key to prevent dissimulation and dangerous behavior. People should strengthen the family, social and school education, cultivate children's correct values and moral sentiments, in order to prevent the occurrence of this psychological disorder.

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