Antecedent mechanisms of crime

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Abstract. Crime has always been a topical issue in society. Because crime can cause significant damage and harm to individuals and groups, researchers have researched the antecedents of crime to reduce the crime at its source. This paper reviews previous research from individual, environmental, and social perspectives and makes suggestions for future research. At the individual level, researchers have found that the MAOA gene is associated with criminal behavior from the perspective of genetic polymorphism and that criminal behavior is hereditary; in addition, antisocial personality is closely related to crime. At the environmental level, parenting styles and traditional education in the family environment can lead to delinquency. Poor parenting styles can cause individuals to develop poor attachment patterns, leading to sexual delinquency. Community organization and order are associated with delinquency among young people at the social level. In addition, social media coverage of violent crime-related information gives stimulus to aggression leading to crime, and the researcher used information processing theory to explain this behavioral arousal process. The results of previous studies are comprehensive, but some of the results are controversial, which requires a combination of multidisciplinary and modern technological tools to strictly control the variables and thus design more rigorous experiments to produce more accurate results, which can effectively reduce the incidence of crime.

Keywords: Antecedent mechanisms; Crime; Crime interventions.

1. Introduction

Crime, a hot social issue discussed around the globe, is heinous and can have irreversible adverse effects on the individual and society. Society is made up of people; human nature is complex. Different reasons and motives make the types of crime diverse and complex. In addition, with the continuous development and changes in society, crime patterns have escalated, making crime types more diverse and causes more complicated. Therefore, from ancient times to the present, how to avoid the occurrence of criminal behavior has become one of the key research focuses of scholars from various disciplines, and people have studied different types of crime from various perspectives, such as genes, personality, education, family and social environment.

Therefore, the focus of this paper is to provide a comprehensive discussion and overview of the antecedent mechanisms that cause crime from the individual, environmental, and social perspectives. This paper intends to explore, discuss and summarize the antecedents and consequences of crime based on previous research, provide prevention mechanisms based on this, and provide possible guidance for subsequent research on the causes of crime and the reduction of criminal behavior.

2. Literature Review

2.1 Criminal Behavior

2.1.1 Definition

There is no universally agreed definition of criminal behavior; It is usually defined as an act prohibited in the criminal code. As the law has improved with time, the definition of criminal conduct is not static [1]. This paper defines crime behavior as an act prohibited by criminal law and harmful to society.

2.1.2 Significance

In recent years, the rate of common crimes has been decreasing in most regions of the world and increasing in a few regions. The trends in organized crime are splitting [2], but the decreasing rate does not mean that criminal behavior disappears, and combined with the rapidly developing science, technology, and the information industry, the form of crime from the traditional violent crime continues to expand and upgrade, more diverse types of crime, more challenging to be detected means. People should not relax their vigilance and should realize that even one criminal incident can have a cost to individuals, families, and society. And the diverse forms of crime can expose people to different types of harm. Therefore, research on the antecedent mechanisms of crime is necessary to strive for the total elimination of criminal incidents and gradually reduce crime rates.

2.2 Antecedent Mechanisms

2.2.1 Individual Factors

Since crimes result from individual behavior, individual causes are usually the primary consideration when exploring the antecedents of crime. Researchers have studied them from various perspectives, including genetics, personality, and brain structure.

The effect of gene polymorphisms is one of the points of studying individual behavior. Among these, much attention has been paid to the MAOA gene, considered a "violence gene," and researchers have suggested an association between the MAOA gene and violent, criminal behavior. The researchers found that MAOA-L subjects had a more robust response to stimulation of the right amygdala relative to MAOA-H participants, with the connections between the dorsal ACC and amygdala unchanged after stimulation. Still, the MAOA-H genotype participants had reduced connectivity between these two parts. MAOA-L participants had weaker self-regulatory control and were more likely to exhibit aggressive behavior when stimulated [3]. This greater aggressiveness is most likely a trigger for criminal behavior. Researchers have found that deletion mutations in the MAOA gene lead to a syndrome in which individuals commit criminal behaviors such as assault, arson, and attempted rape [4]. In the sample of imprisoned male offenders, L-MAOA allele carriers are more likely to be charged with violent crimes [5]. However, some studies have also reached the opposite result, suggesting that the relationship between the MAOA gene and aggression and violent behavior is not significant, indicating that previous studies may have been flawed and ignored the influence of other potential factors, which means that studies on genes need to discover the relationship between genes and behavior further.

Considering genetics further, research in the genetics of crime has shown that genetic factors are associated with various measures of criminal behavior [6], and the children of parents who commit crimes are at higher risk for criminal behavior than those whose parents do not [1].

Antisocial personality is also strongly associated with criminal behavior. People with an antisocial personality disorder often ignore or invade the rights of others and frequently attack others [7]. These characteristics make individuals with antisocial personalities more likely to use violence or engage in criminal behavior. In addition, the overlap between antisocial personality and other forms of psychopathology, such as psychopathy and mood disorders, further complicates research on antisocial behavior [7].

The study examining individual factors shows that the MAOA gene was found to cause individuals to exhibit more aggressive behaviors resulting in crime from genetic polymorphism. However, this result is controversial and needs to be further investigated. Further considering the influence of genetics, whether criminal behavior is inherited is also one of the main focuses of the study, which found that children whose parents are criminals have a higher possibility of committing crimes. From a personality perspective, individuals with antisocial personalities are characterized as being more likely to be aggressive, which also makes antisocial personalities closely related to criminal behavior

2.2.2 Environmental Factors

Since inborn traits do not entirely determine individual personality, Freud's and Erikson's personality development theories reveal the influence of acquired environmental factors on individual personality and behavior. Therefore, research on the antecedents of crime should not simply rely on intrinsic traits but should also consider external environmental and acquired factors, such as parenting style.

Among the environmental factors, the influence of parents and family is the first one people consider. As the individual's most intimate being, the parenting style will largely influence the individual's physical and mental development; one study found that parenting styles of less affection and more control were associated with various types of phobic disorders in children [8]. Hoeve et al. [9] found that authoritarian parenting practices were associated with severe and persistent crime.

Research on the influence of parenting styles on delinquent behavior can be further refined to the influence of parenting styles on children's attachment styles, considering the mediating role of attachment styles. The researchers used video feedback and personal books to enhance the mother's sensitive responsiveness. Infants who grew up in this context were associated with a lower likelihood of becoming disorganized attached and had lower scores on the disorganization rating scale at 12 months relative to the control group [10], suggesting that parents can influence children's attachment type. The level of parental sensitivity represents the parent's ability to react to the child's attachment signals, and increasing maternal sensitivity can improve the attachment security of kids to some extent [11]. When attachment signals are not responded to correctly, individuals are more likely to develop insecure attachment patterns. Overall, when an individual's attachment pattern is faulty, it can lead to problems in attachment relationships in adulthood, which can lead to crime, especially sexual crime; some research showed that sex offenders had a higher prevalence of insecure attachment than non-offenders and experienced more family abuse and rejection by the father figure during childhood [12].

Additionally, in a survey of incarcerated male offenders, approximately sixteen percent reported childhood neglect, and the degree of childhood neglect among offenders differed significantly from the general population [13]. This result agrees with previous research on parenting styles that childhood experiences can impact delinquent behavior, suggesting that childhood experiences need to be taken seriously.

Considering that previous studies have confounded the effects of genes and parenting styles on criminal behavior, Beaver et al. [14] analyzed data from adoptees. They showed that parenting styles did not significantly affect criminal justice outcome measures at this time, a result that challenges previous related findings and requires researchers to clarify further whether parental genes and parenting styles together influence criminal behavior.

Regarding environmental factors, parents directly influence the educational patterns and family environment. Research results show authoritative education correlates with a serious crime, and poor educational practices can largely influence children's attachment patterns. Once poor attachment patterns are formed, such as insecure attachment patterns, they can cause individuals to have problems dealing with attachment relationships in adulthood, leading to sexual crimes. In the influence of the family environment, childhood neglect is also strongly associated with delinquency. However, studies on adopted individuals have found that parenting styles do not influence criminal behavior, and researchers need to consider the influence of factors such as genes in this process.

2.2.3 Social Factors

As herd animals, humans live in social groups and often interact with others, which means that the words and behaviors of others inevitably influence individuals to change their thoughts, behaviors, and even personalities. Therefore, social factors also contribute to the occurrence of criminal behavior and are one of the critical factors in the study of the antecedent mechanisms of crime.

Among the social factors, the community, as the location of the individual's daily life, has the most significant influence on individual behavior and serves an essential role in studying the antecedent mechanisms of crime. The study results show that structural disadvantage of the community was

associated with adolescents' awareness of the social disorder, and neighborhood disorder was linked to youths reporting high crime rates; there is an indirect relationship between the adolescent offending and the level of neighborhood social organization [15].

In the information age, the rapid development of the media helps people to access various kinds of information more quickly and comprehensively, which brings convenience to people. Still, at the same time, it also makes the dissemination of violent information more rapid and extensive; even children can see news about violent crimes on TV or online media; in this regard, researchers have launched studies on the influence of violent media information on criminal behavior. Bandura et al.'s study on aggression found that after observing a model attacking a toy doll, children would later imitate aggressive behavior; in this process, children received stimuli about aggression and evoked aggressive behavior. Then, these researchers explored the acquisition of aggression by setting children to watch human or cartoon movies with aggression. The results showed that the four groups' lowest mean total aggression score was for the control group that watched no aggressive behavior. Among the remaining three groups with aggressive behavior, the highest score was for watching cartoon movies, followed by watching human movies. The lowest score was for the experimental group that watched real life, which strongly suggests that watching television with aggression increases children's aggressive responses [16] and lays the foundation for violent crime. In addition to direct violent forms of attacks, indirect forms such as rumors and slanders can also be acquired through television media. The results of the study showed that viewing indirect attacks gave less money to accomplices compared to viewing direct attacks; in addition, subjects who watched direct attacks tended to make direct attacks on the situation; subjects who watched indirect attacks tended to make indirect attacks on the situation, and this result proved the effect of viewing direct and indirect attacks on subsequent behavior [17].

Huesmann [18] proposed an information processing theory for the mental processes involved in the arousal of attack. According to this theory, scripts in an individual's memory cover various topics, and these scripts are encoded by observing the behavioral patterns of others. The scripts for aggressive behavior are learned by observing media violence, and individuals may grow up with positive reinforcement only when they try aggressive tactics. Thus, they are more likely to use aggressive tactics later, resulting in persistent aggressive behavior over time, which leads to crime.

Among the social factors, at a minor level, factors such as community organization and order are related to juvenile delinquency; at a significant level, information disseminated by the media in society is also related to criminal behavior, and children will imitate aggression and receive stimuli about aggression that trigger the behavior. Whether the aggressive stimuli occur in real life or are presented in television media, they will lead to aggression. Furthermore, the forms of aggression are not limited to violent attacks; indirect forms of aggression, such as defamation, also have this process. Information processing theory can explain the process of aggression arousal. Individuals acquire aggressive behavior by observing others' aggressive behavior and coding it into a script. Later in the process, individuals are likely to use this script and achieve reinforcement after receiving positive feedback, repeatedly using violence, leading to crime.

2.2.4 Interaction Effects

In the previous study, we found some of the findings were controversial and even reached opposite conclusions.

This means that there may be an interaction between many factors. For example, in studying the genetic potential of crime, it might be overlooked that the family environment and parenting style created by the offending parent may also impact the study's outcome. Researchers need to design more sophisticated experiments to achieve more severe results.

2.3 Defense Mechanisms

Crime cannot be eliminated, but there are effective defense mechanisms that can be sought to minimize criminal behavior.

2.3.1 Behavior Modification

Behavior modifications can help individuals change their inherent criminal thinking and are a commonly used psychological treatment to reduce criminal behaviors. Before treatment, an individual's risk of delinquency can be assessed using scales, such as the Violence Risk Scale(VRS) and the Broset Violence Checklist(BVC); after that, behavior modifications can be further carried out.

Cognitive behavior therapy(CBT) focuses on changing the individual's thinking and is a good behavior modification treatment that helps individuals identify irrational thinking, learn to reason, and construct new rational thinking. Therefore, in criminal behavior modification, using CBT to make individuals aware of their misconceptions about criminal or violent behavior, correcting them, and reconstructing their correct perceptions can prevent the occurrence of criminal behavior at the roots. Özabacı [19] concluded that CBT effectively reduced violent behavior in children by analyzing previous data on reducing violent behavior with cognitive behavior therapy.

2.3.2 Environmental and Social Influence

The results of existing studies show that acquired environmental factors can also impact criminal behavior. Therefore, providing an excellent social environment can equally reduce criminal behavior to a certain extent.

This requires establishing an excellent social security system; when the basic needs of individuals are met, it can effectively reduce the crime caused by the lack of individual survival needs, such as robbery and theft. In addition, a sound education system also plays an important role, as systematic and correct education can guide children to form correct cognition and give individuals enough knowledge to make rational judgments. On the one hand, all these social and environmental factors are spontaneously formed by society. On the other hand, In the process of children's growth, seemingly irrelevant childhood neglect may also cause criminal behavior, so society needs to pay more attention to the role of parents; in this regard, society generally lacks training for parental education, if parents can have enough knowledge reserve about education methods, then can effectively avoid some of the negative impacts on children due to momentary negligence, impulsive, to provide a suitable environment for children to grow up from the social environment, parental education and other perspectives, to reduce criminal behavior.

2.3.3 Legal Provisions

In addition to essential psychological treatment, the legal system is also one of the effective means to ensure the reduction of crime. So in setting up the legal system, people should consider the rationality and integrity of the legal system to bring the actual effectiveness of the law into play. If the law is too lenient, it means that the cost of crime is not high, people will take a chance and break the law, and society will naturally fall into chaos; When the law is too strict, although it reduces the crime rate, it makes people worry too much about their behavior and stay in fear for a long time, which is contrary to the original intention of "reducing the crime rate and maintaining social stability so that people can live and work in peace and happiness," a strict law is not desirable. A sound legal system is essential.

Moreover, the judicial system needs to be constantly improved in light of current events and the era; for example, researchers are aware of the impact of violent information dissemination through television media on criminal behavior, and at this point, the judicial system should establish reasonable regulations to restrain and regulate the content and channels of information dissemination through television media. At the same time, taking into account the individual's spiritual and psychological state and social factors when making judicial decisions. So that the legal system can have social credibility, thus more effectively maintaining social harmony with stability and reducing the occurrence of criminal behavior. When the social environment reaches a relatively good state, it will also reduce the criminal behavior of individuals caused by factors in the acquired social environment, forming a virtuous circle over time.

3. Implication

Research on antecedent mechanisms of crime is a long-standing topic, and existing studies have provided comprehensive explanations of antecedent mechanisms, but some of the findings are still controversial.

Firstly, some of the early studies were in the early stage of research, and the interaction between factors was not clarified when considering the influencing factors, and there were problems in controlling the variables, which makes the research results inaccurate; this is also caused by the nature of the antecedents of crime, such as the difficulty of defining and distinguishing between different types of parenting when studying parenting styles, which means that subsequent research needs to be more systematic and to standardize the definition of variables to make the results more accurate and convincing.

Secondly, most existing studies have focused on cross-sectional studies. Still, because the relevant study variables are difficult to control, long-term longitudinal studies are necessary to determine the possible influencing factors and provide more accurate results.

In addition, some of the studies were affected by the age factor; no effective experimental instruments were used to help, which limited the research. For example, in the study of brain activity, there were no effective instruments to accurately detect neural changes in the brain in the early days. Still, along with technological advances, technologies such as functional magnetic resonance imaging(fMRI) are becoming more sophisticated, helping researchers explore the neural mechanisms involved in this process by exploring the changes in the brain when the behavior occurs at a more precise level. Studying the antecedent mechanism of crime involves the influence of multiple factors such as genes, cognition, and environment, which require too many factors to be considered and is challenging to study.

Subsequent research should combine psychology, physiology, and other multidisciplinary as well as modern scientific and technological methods to further explore the cognitive mechanism of individuals before committing crimes. For example, we can combine AI-related research with exploring the mechanisms of AI in criminal imitation and aggression acquisition, build relevant mechanisms and network models, and compare them with human intelligence. Such multidisciplinary research promotes the development of AI and makes it more humane on the one hand; moreover, if the established mechanisms and network models are to a great extent similar to human intelligence, this also provides researchers with good ideas to infer human cognitive mechanisms from them, to reduce criminal behavior more effectively.

Overall, there is still a long way to go in research concerning the mechanisms of criminal antecedents. Among the studies related to criminal genes, if it is determined that a gene inevitably leads to an individual's criminal personality or even criminal behavior, that individual will give rise to a substantial ethical discussion and, as with other psychiatry, will require special consideration in judicial determinations. There is a need to clarify the mechanisms involved and establish a more rational legal system.

4. Conclusion

In conclusion, scholars have conducted extensive research on the antecedent mechanisms of crime, with numerous influencing factors.

First, individual genetic polymorphisms may cause some groups to be more prone to violence and, thus, to crime. However, some studies have also concluded the opposite results. Some studies have found a genetic predisposition to crime; an individual's antisocial personality can also lead to criminal behavior. Second, environmental factors can likewise contribute to criminal behavior. Poor parenting styles can negatively affect an individual's attachment style and lead to sexual offending, in addition to childhood neglect. However, it has been suggested that previous studies on parenting styles may have confounded the role of genes in this, challenging the previous findings. Social factors, the

structural disadvantage of the community, and the media's dissemination of violent messages all provide incentives to attack and evoke criminal behavior.

Previous studies have come up with comprehensive explanations for the antecedent mechanisms of crime, but some of the results are controversial, which indicates that there are problems in the design of some studies; for example, the control of variables may not be accurate enough. Future studies should draw lessons from previous studies, design more clever experimental designs, and combine other disciplines and modern technological means so that studies on the antecedent mechanisms of crime can be explained more rationally from cognitive and environmental perspectives.

In general, with a clearer understanding of the antecedent mechanisms of crime, people can better design corrective treatment programs, clarify the significance of maintaining a good social environment, and establish a better justice system that is interlocked to reduce the incidence of crime from all perspectives.

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