

Analysis of the Relationship Between MAOA and CDH-13 Genes and Crime

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Abstract: When scholars investigate criminal behaviour, they observe the existence of several criminal organizations characterized by a continuous involvement in illegal activities over successive generations. There is a potential hereditary transmission of criminal conduct. The topic of heredity invariably encompasses the issue of chromosomes and genes, as these elements are essential to the process of heredity. Currently, there is a lack of empirical evidence supporting the notion of “criminal genes,” and the consensus among scholars in the field of criminal psychology is that criminal behaviour is a multifaceted outcome influenced by physiological, social, and psychological factors. In contemporary times, within the framework of the expeditious advancement of science and technology, there has been a corresponding escalation in the incidence of criminal activities. Researchers have extensively investigated potential connections or shared characteristics among individuals involved in criminal activities across numerous situations. Scientists have directed their attention on genes, seeing them as the fundamental basis of emerging biotechnologies. This research employs a literature review and analysis method to provide a succinct description of the association between the MAOA (Monoamine oxidase A) and CDH-13 (Cadherin-13) genes and criminal behaviour. Furthermore, it examines specific instances to investigate the potential role of genetic factors in contributing to criminal tendencies.

Keywords: gene and crime, MAOA, CDH-13

1. Introduction

The increasing identification of many genes has led to a heightened focus on the genetic component connected with criminal behaviour. From its inception, the scientific community initially posited the notion that an individual’s propensity for criminal behaviour could be discerned via just visual observation. However, with the advent of gene sequencing technology, our comprehension and awareness of crime have attained an unparalleled magnitude. An increasing number of nations and governmental bodies have cited this as a justification for the abolition of capital penalty, the reduction of sentences, and the enhancement of criminals’ human rights. According to the renowned Chinese juvenile criminologist, Professor Li Meijin, the occurrence of juvenile delinquency is mostly shaped by familial and parental factors. However, it is worth noting that Professor Li did not establish a clear correlation between criminal behaviour and the genetic inheritance from parents [1]. Numerous prominent individuals concur that criminal behaviour is influenced by a multitude of circumstances; yet, only a limited number of them are able to establish a connection with the biological component.

This research employs a literature review methodology to provide a succinct overview of the association between the MAOA (Monoamine oxidase A) and CDH-13 (Cadherin-13) genes and criminal behaviour. Additionally, it examines the plausibility of genetic factors contributing to criminal tendencies through the analysis of relevant case studies. This study provides a comprehensive overview of the correlation between the two genes and criminal behaviour, proposes alternative strategies for crime prevention, and underscores the intricate and unmanageable nature of criminal activity simultaneously. This article promotes the stance of opposing genetic discrimination. Currently, there exists a dearth of scholarly research worldwide that substantiates the notion that genes possess sufficient influence to govern an individual's cognition and conduct.

2. Analysis of the Relationship Between MAOA and CDH-13 Genes and Crime

The two genes under consideration are referred to as MAOA and CDH-13, which will be denoted as the M gene and the C gene, respectively. According to the researchers, these two genes can be likened as two minuscule regulators of emotional control. When these genes are absent, individuals may experience heightened emotional arousal, leading to anger, irritability, and a propensity for illogical behaviour.

Extensive research has been conducted in both Finland and the United States. A genetic testing study was done by experts in Finland, comprising a sample size of over 900 jail convicts, in response to the prevailing conjecture surrounding potential genetic similarities among criminals. The researchers discovered that a proportion ranging from 5 to 10 percent of the violent acts perpetrated by these incarcerated individuals were associated with the presence of a certain gene inside their biological makeup.

2.1. Analysis of the Relationship Between MAOA Gene and Crime

It is important to acknowledge that women possess two X chromosomes, whereas males possess one X and one Y chromosome. However, it is worth mentioning that there exist certain individuals who identify as men and possess two Y chromosomes alongside one X chromosome. These individuals are commonly referred to as "super males." The prevalence of the condition known as super man syndrome in the general population is estimated to be approximately 1 in 1500 individuals. This genetic disorder is typically associated with certain physiological traits, notably an above-average height. The observed "height" exhibits a significant deviation from the usual height within the region, potentially indicating the presence of uncoordinated movements. In addition to physical attributes, super males also exhibit several psychological features, including diminished cognitive abilities, central nervous system abnormalities, impaired self-regulation, and inadequate emotional control, among others. There exist studies that indicate a correlation between high levels of testosterone in males and an increased propensity for violent and aggressive behaviour [2]. This behaviour is often characterized by a tendency towards anti-social actions, emotional instability, and a heightened susceptibility to outbursts of aggression. Additionally, teenagers who exhibit such traits may display cruelty, impatience, an inability to cope with setbacks, and a propensity for impulsive acts of aggression. While there may be a higher likelihood of hyper masculine individuals engaging in criminal behaviour compared to individuals with normal chromosomes, it is important to note that there is no absolute correlation between the two. The research conducted on the Y chromosome has demonstrated that criminal behaviour cannot be solely attributed to the presence of the super male syndrome. Rather, it is the combination of reduced intellectual development resulting from the super male syndrome and the abnormal development of the central nervous system within super male groups that contribute to such behaviour. The X chromosome also has a role in this matter. One notable researcher, H.G. Bruner, conducted a study on a representative crime family and observed that the

male members exhibited deficiencies in a particular region of the x chromosome. This region contains the gene responsible for encoding monoamine oxidase, an enzyme commonly referred to as monoamine oxidase. The subject under consideration is a specific genetic element known as the MAOA gene. However, in cases where the gene is impaired, the production of functional monoamine oxidase is hindered, resulting in an excessive accumulation of monoamine and a decrease in serotonin levels within the brain [2].

Consequently, this imbalance can give rise to various emotional states such as anxiety, rage, and similar manifestations. Dr. Kevin Beaver is a distinguished biosocial criminologist affiliated with Florida State University. The individual in question assumes the role of leading a team of researchers who are engaged in the investigation of the hereditary factors that contribute to criminal behaviour in the human population. In a comparative analysis of the genetic profiles of 2,000 adolescents residing in the United States, it was shown that those harbouring the MAOA gene mutation exhibited a twofold increase in the likelihood of engaging in gang-related activities when compared to their non-mutated counterparts. Furthermore, within the subset of gang-affiliated individuals, those possessing the aforementioned gene mutation had a heightened propensity towards weapon utilization. According to Beaver, the prevailing belief among individuals is that there is generally no genetic association with gang crime. However, the findings of our study contradict this perspective [2].

A study conducted in 2006 revealed that approximately 56% of the Maori population in New Zealand exhibited the presence of a particular variant of the M gene [3]. Furthermore, the M gene levels exhibited by this population significantly surpass the typical values observed among individuals of Caucasian descent residing in Europe. There has been a suggestion that this phenomenon could be attributed to the historical practice of cannibalism among the Maori people [3]. This statement possesses a spectacular quality that may contribute to the potential misinterpretation of this particular group by individuals external to it. The Maori community, in response to the aforementioned situation, expressed their strong disapproval and mobilized in protest. In addition to augmenting aggressive tendencies, the M gene also exhibits certain favourable benefits. For instance, it fosters a greater inclination towards adventurous behaviour among individuals. The Maori population exhibits a greater prevalence of the M gene, potentially attributable to the historical migration of their ancestors who demonstrated remarkable courage by across the ocean in canoes to seek new territories. Subsequently, this characteristic is inherited among the Maori population through the process of natural selection. Consequently, their genetic composition exhibits a greater prevalence of the M gene. This observation also implies the potential presence of the M gene among the Maori population. Ward Weaver Sr. and Ward Weaver III have both been convicted of murder, exhibiting notable similarities in their criminal behaviour and shared patterns of misconduct. For instance, both individuals were implicated in allegations of sexual assault against a family member, as well as facing accusations of engaging in acts of animal abuse. These instances involve the deliberate slaughter of animals and perpetration of violence against women. Furthermore, it is noteworthy that both individuals had military service experience and encountered two unsuccessful marriages, resulting in a total of five offspring [4].

2.2. Relationship Between CDH-13 Gene and Crime

According to the researchers, under typical circumstances, CDH-13 is regarded as a beneficial gene since it serves to impede tumour proliferation. Additionally, it plays a crucial role in establishing interconnections among human brain cells, hence facilitating the development of communication pathways. However, upon mutation of the C gene, the cognitive processes of the brain experience a state of disarray in terms of information transmission. During this period, the human body may exhibit a state of disarray akin to an unregulated intersection of traffic lights. Research has indicated that a subset of children exhibit Attention-Deficit/Hyperactivity Disorder (ADHD), while adults frequently

engage in violent behaviour, both of which have been linked to an anomaly in the C gene. The initial connection between criminal behaviour and genetics was explicitly established by Cesar Lombroso, an Italian military doctor. In his seminal work, "The Criminal," the author examined the physical characteristics and skeletal structures of 383 incarcerated individuals from Italy, leading him to postulate the concept of innate criminal tendencies. However, due to the lack of transparency in the data and the limited duration of the study, drawing definitive conclusions about those who are likely to engage in criminal behaviour is challenging. Nevertheless, governmental bodies and scientific communities are actively endeavouring to mitigate criminal activities, a commitment that extends to Chinese medical professionals. Research findings indicate that approximately 30 percent of males possess a genetic predisposition associated with criminal behaviour. However, the activation of this genetic predisposition is contingent upon the experiences and events that an individual encounters within the same year. Professor James Fallon, a distinguished researcher at the University of California, Irvine, is renowned for his expertise in the field of brain and nerve research. He has achieved a high level of recognition and respect within the academic community. Additionally, Professor Fallon enjoys a fulfilling personal life, characterized by a contented family and a successful professional trajectory. However, Fallon's research findings came as a surprise to him. During a particular instance, the individual in question was engaged in the examination of brain scans belonging to his relatives, whereby he made an observation regarding the resemblance of a specific brain structure to that of notorious perpetrators of homicide. The researcher, with a 35-year tenure dedicated to investigating the cerebral composition of individuals with psychopathic tendencies, discovered that his own brain structure closely resembled that of individuals exhibiting psychopathic traits. Is he concealing his identity as a perpetrator of homicide? Upon examining the genealogical records, Fallon's astonishment deepened as it became apparent that over the period spanning from 1673 to 1892, a number of individuals from James Fallon's paternal lineage were implicated or substantiated in the act of perpetrating filicide against their own kin.

The remaining two paternal lineages consist of grandfathers, one characterized by a multitude of individuals who are suspected of criminal activities and acts of violence, while the other is marked by a significant number of individuals who have abandoned their spouses and children. The individuals exhibiting deviant conduct mentioned below represent the earliest progenitors within James Fallon's lineage. James Fallon's immediate family exhibits a notable presence of individuals with volatile dispositions, notably his own grandpa, who was involved in the reprehensible act of perpetrating violence on Jewish individuals. It has been discovered that there exists a significant presence of individuals with psychopathic tendencies within the genealogical records of my family. The presence of bloodstained relatives serves as empirical support for the hereditary manifestation of vicious genetic traits within James Fallon's lineage. In essence, he possesses the genetic predisposition sometimes referred to as the "crime gene." However, it is important to note that he does not possess the characteristics or engage in the actions often associated with a murderer. He is regarded as a highly esteemed lecturer. According to Professor Fallon, the presence of a positive childhood experience may serve as a protective factor against an individual's inclination towards violent behaviour. This implies that individuals who possess both high-risk genetic factors and have been exposed to violence or sexual abuse during their formative years are more susceptible to engaging in criminal activities. Conversely, individuals who possess these genetic factors but have experienced a stable and nurturing upbringing are less likely to exhibit criminal tendencies. While an isolated gene does not exert sole effect over behaviour, its impact can be significantly amplified when interacting with a catalytic environment. Prior to making hasty judgments, it is imperative to discern the distinction between correlation and causality.

3. Discussion

A comprehensive analysis of traffic accidents in the United States was conducted by researchers, wherein they systematically documented the various factors contributing to a large number of incidents nationwide [6]. It was discovered that the one commonality among the perpetrators was possession of a driver's license. Can a driver's license be considered a contributing factor in an automobile accident? It is evident that the aforementioned assertion does not hold true; rather, it merely represents a connection. The possession of a driver's license enables individuals to operate motor vehicles on public roadways, hence increasing the likelihood of being involved in vehicular accidents and subsequently being apprehended by law enforcement authorities. Hence, it is imperative to distinguish between correlation and causality. Similarly, it is important to note that the relationship between these two genes and real criminal behaviour does not imply causation.

Despite the fact that the findings of the study indicated that a majority of the 900 Finnish offenders who engaged in over 10 instances of violence have the two genetic variations, it is crucial to acknowledge two key considerations. Firstly, individuals possessing these two genetic variations are not inherently compelled to engage in harmful behaviours. To date, the identification of causal genes for single gene inherited disorders has been limited to a few number. The majority of additional symptoms or manifestations arise through the collaborative interaction of numerous genes, and their development is intricate and cannot be solely attributed to the variation of individual genes. Furthermore, it should be noted that not all individuals who engage in criminal behaviour possess these two specific genetic variations. A considerable fraction of individuals involved in criminal activities exhibit a genotype that is similar to that of the general population, lacking the presence of any of these genetic variations. It is considered impolite and inequitable to make presumptions about an individual's propensity to engage in criminal behaviour solely based on the presence of a "criminal gene". Furthermore, the phenomenon of "genetic discrimination" not only has the potential to unjustly implicate individuals who are innocent, but also has the propensity to exert a detrimental influence on the development of human psychology.

If a child is identified as possessing certain genetic traits from an early stage, being designated as a "potential criminal" from birth, experiencing discrimination from many entities, and being subject to extensive monitoring, it is conceivable that their psychology and mentality may undergo alterations. Furthermore, one can speculate on the probable future actions that may be taken in response to these circumstances. Genetic testing has the potential to provide insights into a range of human attributes over ten distinct dimensions, namely ancestry, personality traits, cognitive abilities, emotional tendencies, social behaviour, motor skills, physical appearance, dietary preferences, sleep patterns, and susceptibility to addiction. It is imperative to bear in mind that genes merely constitute a fraction of human nature, representing a potentiality rather than an absolute determinant. In light of the intricate and multifaceted nature of our contemporary society, it is imperative to take into account not just genetic determinants but also the impact of environmental factors that are acquired over time. Genes can be likened to a deck of cards, and the manner in which they are utilized is within our control to a significant degree. An alternative approach to crime reduction entails shifting the focus from genetic screening to the screening of parents and home surroundings. The evaluation of a family's aptitude for child-rearing should be conducted rigorously, employing a standardized assessment format akin to that of a college entrance examination. The objective at hand is not centred on the enhancement of progeny, but rather on the provision of an improved milieu for their development.

4. Conclusion

This research provides a comprehensive analysis of the distinctions between two crime-related genes and explores the intricate connection between genetic factors and criminal behaviour. The study of genetic factors contributing to criminal behaviour has a rich historical background, spanning from the early practice of assessing individuals based on their physical appearance to the contemporary utilization of genetic testing techniques. The advancement of science and technology has facilitated significant strides in this field. However, it is imperative to refrain from engaging in genetic discrimination against others, as it is likely to exacerbate criminal tendencies rather than mitigate them. Due to the predominant ownership of genetic and crime-related data by governmental entities, its confidentiality and privacy are highly safeguarded. The author expresses a desire for future investigations to yield more accurate and comprehensive data while respecting the privacy of those involved, as this would greatly facilitate appropriate analysis. Hypothesis tests, including T-tests, are widely recognized and commonly employed statistical tests with demonstrated effectiveness. There is an expectation that the government will allocate increased financial resources and human capital towards the objective of mitigating the crime rate. In this manner alone can our society achieve enhanced stability and offer increased support for the future development of children.

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