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Transdisciplinary theory of the nature of crime as an expression of a symbiotic complex approach


Трансдисциплінарна теорія природи злочинності як вираження симбіотичного комплексного підходу

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Abstract


The issue of combating crime has always been a priority for every rule-of-law state. The low level of crime is a symbiosis of effectively implementing a system of balanced measures. However, these measures must necessarily consider the specific features of the theoretical perception and awareness of crime as a phenomenon and features of the formation of the criminal's personality. The topic of the article is characteristics of the essence and components of the transdisciplinary theory of the nature of crime. The object of research is the symbiotic theory of crime. The authors used the following methods: data integration and meta-analysis, behavioral assessments, collaborative research, literature review, conceptual mapping and others. The authors focus on the main research areas into the nature of the crime, neurocriminology and behavioural epigenetics as conceptually new subfields of criminology,

Анотація


Питання боротьби зі злочинністю завжди було пріоритетним для кожної правової держави. Низький рівень злочинності є симбіозом ефективного впровадження системи збалансованих заходів. Проте ці заходи обов'язково повинні враховувати особливості теоретичного сприйняття та усвідомлення злочинності як явища та особливості формування особистості злочинця. Тема статті – характеристика сутності та складових міждисциплінарної теорії природи злочинності. Об'єктом дослідження є симбіотична теорія злочинності. Автори використовували такі методи: інтеграція даних та мета-аналіз, поведінкові оцінки, спільне дослідження, огляд літератури, концептуальне відображення та інші. Автори зосереджені на основних напрямках дослідження природи злочинності, нейрокримінології та поведінкової епігенетики як концептуально

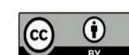
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biological correlates of deviant behaviour and sociological theories of the nature of the crime. A qualitatively new symbiotic theory of crime is proposed, combining a three-element structure: an autonomous connection of biological (anthropogenic) factors and sociological ones; the final connecting element of such a symbiosis is the human psyche.

Keywords: criminality, crime, neurocriminology, biological correlates, sociological correlates.

Introduction

According to the Numbeo service, which forms the Crime Index, as of 2021, Ukraine ranked 54th in the world (out of 135) in crime. According to this indicator, our country was in third place in Europe after France (UMN, 2021).

During 2022, the year of the war in Ukraine, the number of registered crimes from November 10 to 30, 2022, compared to the same period last year, decreased by 4% — from 318,100 to 305,700. It also decreased by 6% the number of reports with signs of criminal offences by - from 89.2 thousand to 83.6 thousand (Ivanova, 2022).

Many economic, social, political, biological, and psychological factors are at the basis of crime. Many determinants determine the problem of combating crime, one of them is the problem of the "old" vision of crime and "old" methods caused by conservative views on the genesis of criminal behavior, which, in turn, directly affects the system of punishments and determination of crime. The relevance of the definition of crime as a transdisciplinary category is the most urgent problem of modern criminology, overcoming which will improve the system of measures to combat crime and thus ensure a reduction in its level. The purpose of the article is characteristics of the essence and components of the transdisciplinary theory of the nature of crime. The object of research is the symbiotic theory of crime.

Theoretical framework

With the birth of criminology, researchers tried to find crime patterns to find the so-called "root of evil". Scientists consider Ch. Bekaria is the "father" of criminology, and his first fundamental work in the field of criminology is his 1764 work "On Crimes and Punishments." In it, the author noted his criminal and legal ideas about punishment for crimes committed, as well as

novих підгалузей кримінології, біологічних корелятивів девіантної поведінки та соціологічних теорій природи злочинності. Запропоновано якісно нову симбіотичну теорію злочинності, що поєднує триелементну структуру: автономний зв'язок біологічних (антропогенних) факторів і соціологічних; завершальним сполучним елементом такого симбіозу є психіка людини.

Ключові слова: злочинність, злочин, нейрокримінологія, біологічні корелятиви, соціологічні корелятиви.

criminological ideas - ideas about the causes of crimes (Nezhurbida, 2011). The authors emphasized their attitude to the mechanism of public authority's interaction with crime, saying: "It is better to prevent crimes than to punish them (Holina et al., 2014).

In the scientific environment, depending on the nature of the causes of crime, the following concepts of the causes of crime are distinguished: mystical or it is also called theological, classical, biological, sociological, and cultural (Beschastny, Nazimenko & Lostch, 2017)

Proponents of the theological approach see the cause of crime in paranormal phenomena affecting a person and his consciousness, turning him into a criminal. Also, one of the features of this approach is its religious basis.

When studying the classical approach, one can pay attention to the fact that the cause of the crime is the self-sufficient "bad will" of the criminal, who depends only on himself and is fully responsible for his actions. Ch. Beccaria's formulated approach, unlike the mystical one, arose under the influence of Enlightenment ideas. According to this direction, the fight against crime is reduced to the application of punishment, and scientists saw its purpose as influencing people's will so they do not commit crimes. Such an approach is legalistic and closed. It acts as a kind of mechanism for regulating relations in the way that the ruling elite wants it or as it was accepted at the customary level (Holina et al., 2014).

As for the biological approach, according to it, the cause of the crime was not the criminal's manifestation of the will but the biological direction of the human body, which in theory can explain any manifestation of a person's will due to anthropological factors. Its founder is

C. Lombroso. According to him, the fight against crime should consist exclusively of the influence of one anthropological factor that causes crimes, aiming to neutralise them. Hence, the court, which finds a person guilty of committing a crime and pronounces a sentence, loses its meaning, and the court's role should be played by anthropological expertise (Lombroso, 1885).

The sociological direction proposes not to consider the biological aspect (anthropological factors) under the category of causes but to define sociological causes and conditions as critical factors (Humin, 2014). This approach was formulated by E. Ferry. The antidote to crime, based on the above, consists in influencing sociological factors that can influence and determine the behavior of people beyond their control, regardless of their condition. Thus, the author of the crime is the social environment and not the person of the criminal himself, but this is a somewhat controversial issue. Therefore, many scientists cannot accurately name the environment as the crime's culprit. This field includes a relatively significant number of sociological theories.

The cultural approach is almost universal since by combining classical, biological, and sociological approaches, the causes of crime are recognized as factors that have the property of causing a person's arbitrary arbitrariness, that is, a state of non-compliance with one's judgment, social laws, etc. It is worth noting that the causes of crime are those factors that, at the time of committing an illegal act, caused a person to return to the laws and traditions of society and the laws of social coexistence in which he lives, fixed in the minds of people. Such an approach makes it possible to define the range of factors of preventive behavior more broadly without alienating all possible moments of a particular case. In our opinion, it is the closest to defining the true nature of the crime phenomenon (Nezhurbida, 2011).

The problem remains that, despite each approach's autonomy and the cultural approach's universality, we still need an exact model that describes the nature of the crime. The nature of the crime has a two-element system that affects the third element: it is determined by the symbiosis of anthropogenic and sociological factors and their impact on the third element - the human psyche. These elements are interconnected, and the detail of their connection is the human psyche - a component bordering between the biological (internal) and sociological

(external) components of human consciousness (will).

We do not start from the result of a criminal act to determine its essence but offer to delve into the inner nature of the act itself, find the regularity of his actions and answer the question of why precisely the criminal is or becomes a criminal.

After analyzing the approaches to determining the causes of crime, we can conclude that no direction can be unequivocally considered correct due to their weak evidence base. Each direction considers only indicators specific to it when considering the causes of crime and, at the same time, does not consider others at all. We propose our symbiotic theory of the causes of crime, which considers crime as the result of the interaction of anthropogenic and sociological factors. It is necessary to emphasise the autonomy of each factor and the fact that the connecting element between them is the human psyche.

Methodology

Guided by the transdisciplinary theory, we delved into a diverse range of disciplines, including criminology, sociology, psychology, biology, and ecology, to unravel the interconnected web of factors that influence criminal behavior. To lay a solid groundwork for our study, we embarked on an extensive literature review, immersing ourselves in the vast realm of crime, symbiotic relationships, and complex systems. This thorough examination of existing scholarship provided us with a comprehensive understanding of the multifaceted dimensions of our research topic.

In our pursuit of knowledge within the emerging subfields of Neuro Criminology and behavioral epigenetics, we embraced an array of methodologies to shed light on these intriguing concepts. Data integration and meta-analysis proved invaluable as we assimilated and analyzed information from a myriad of sources, ranging from neurobiological studies to genetic databases and criminological surveys. Through this approach, we sought to discern connections and patterns across different levels of analysis, synthesizing findings from multiple studies to gain a holistic comprehension of the intricate relationship between neurobiology, genetics, and criminal behavior. Furthermore, standardized assessments and behavioral tests allowed us to objectively measure various aspects closely linked to criminal behavior, such as impulsivity, decision-making, or empathy. By forging

interdisciplinary collaborations between experts from neuroscience, genetics, psychology, and criminology, we aimed to construct a comprehensive mosaic of the complex factors that underlie criminal behavior.

Delving into the realm of biological correlates of deviant behavior, we embraced an integrative approach that wove together biological assessments with psychological, social, and environmental factors. This multi-faceted methodology enabled us to unravel the intricate interactions between biology and other influential elements, providing us with a nuanced understanding of deviant behavior.

As we ventured into the sociological realm, exploring theories of the nature of crime, we turned to content analysis as a guiding light. We meticulously scrutinized diverse forms of media, meticulously dissecting how crime and criminal behavior were portrayed and represented within society's fabric. This method of content analysis helped us discern the cultural and societal influences that shape perceptions, attitudes, and behaviors pertaining to crime.

To unravel the sociological correlates of antisocial behavior, we embarked on a macro-level analysis that cast our gaze upon the broader social, economic, cultural, and political factors. By studying these encompassing elements at the community, regional, or national level, we sought to unravel how they mold the prevalence and distribution of antisocial behavior.

Through our interdisciplinary exploration and the diverse array of methods employed, we ventured to illuminate the enigmatic nature of crime and antisocial behavior. Our scholarly endeavors sought to forge new paths of understanding, providing valuable insights into the intricate tapestry of human behavior and the myriad factors that shape it.

Results and discussion

Neurocriminology and behavioural epigenetics as conceptually new subfields of criminology

The separation of criminological directions in the determination of crime is due to the differentiation of the views of various scientists towards the final determination of the critical factor that makes a person a criminal. The symbiotic theory of crime isolates anthropogenic and sociological factors in a specific autonomous relationship that leads to internal changes in the

human psyche. Our position is argued by the fact that the isolation of all other directions is nothing more than granting autonomy to the subcategories of the biological or sociological direction. Our vision of the problem and symbiotic theory of the nature of crime sees an autonomous connection between anthropogenic and sociological factors.

The animal ancestors of man had a biological essence. The process of their harmonizing evolution manifested biological and social unity. It was under the influence of emerging social needs that the biological evolution of human ancestors began to change its direction gradually. By the time *Homo Sapiens* was isolated, a particular genetic program unique to this species had been formulated. Researchers call such a program "socialized" (Nezhurbida, 2011).

When studying biological factors, specialists pay attention to such features as, for example, the type of nervous system, the level of movement balance and inhibition of the central and peripheral nervous system, body temperature, constitution of organs, general physical condition, stage of physical development, peculiarities of hormonal background organization, personal preferences in the field of intimate relationships, the presence of certain diseases, as well as gender, age, the influence of the genetic component, etc. One of the most contemporary transdisciplinary fields combining genetics and forensics is behavioral epigenetics and neuroimmunology.

Neurological understanding may open new avenues for biological and pathological criminal and antisocial behavior treatment. For example, new genome editing tools such as clustered regularly interspaced short palindromic repeats (CRISPRs) may one day become available for the specific genomic modification of defective MAOA genes. Moreover, deep brain stimulation has been proposed to suppress aggression selectively (Franzini et al., 2013) or sex drive. Such treatment options will raise ethical issues (e.g., regarding informed consent) for treating and punishing criminals (Fuss et al., 2015). They can also lead to the psychopathology of criminal behavior not currently associated with mental disorders. Thus, further research into such procedures and their possible impact on future sentencing seems very important. In Ukraine, a similar experience could significantly improve the already terrible situation with the level of crime. Also, as noted earlier, similar techniques could help treat preventive behaviors unrelated to the individual's mental disorders.

We emphasize that genetic information can be used with the principle of risk. The level of risk is typically assessed using various instruments that consider known risk factors for criminal involvement, such as criminal history and criminogenic personality traits. There can be no doubt that, in this case, such estimates indirectly capture at least some level of genetic risk. At the same time, it would be quite possible to use genetic testing to determine the genetic risk of each criminal based on the existing literature (Beaver et al., 2014). Of course, a limited number of polymorphisms have been consistently associated with antisocial behavior. However, as more polymorphisms are discovered, they, too, can be added to the list of genes being evaluated. It can also be argued that there is insufficient evidence that genetic polymorphisms and criminal behavior can be associated.

Biological correlates of deviant behavior

Over the past two decades, the use of neurobiological evidence in criminal trials has been overgrowing worldwide. Evidence often includes structural brain imaging, electroencephalography, and neuropsychological evaluation. When behavioral genetic evidence was introduced, it most often included expert testimony on the heritability of addictive disorders (including drug and alcohol abuse) and gambling addiction in addition to the genetic basis of mental illnesses such as depression and psychosis. A limited number of experts presented evidence of the defendant's unique genetic risk in connection with his crime, most often due to the presence of a genotype with a low-active form of the MAOA-L gene, which researchers believe is a neuronal correlate of aggressive and antisocial human behavior (McSwiggan et al., 2017).

If we talk about biological factors of deviant behavior, great attention should be paid to the hormonal system of a person. Since hormones, in their essence, are mood regulators, we cannot ignore them in the examination. Scientists J. Arjen, L. Boender and J. Young say that neuroendocrinology has a rich history of using various model organisms to elucidate the general principles and evolution of the relationships between hormones, the brain and behavior. Oxytocin and vasopressin systems have been studied in many species, revealing their role in regulating social behavior. Oxytocin and vasopressin receptors show striking species and individual differences in brain distribution associated with various social behaviors (Boender & Young, 2020). The work results

showed a direct correlation between the level of certain hormones and behavioral characteristics.

Regarding abnormalities in different parts of the brain, it should be noted that this should not cause us any questions because these abnormalities, like schizophrenia itself, belong to anthropogenic factors that affect a person's perception of the world. At the same time, no one can definitively assert the responsibility of such persons for the committed illegal act because they cannot fully perceive the environment. We propose attributing such anomalies to psychiatric diseases, which, after accurate medical confirmation, completely exempt a person from criminal responsibility.

Scientists are already considering the possibility of deep brain stimulation (DBS) to reduce sex drive, which can be applied to sex offenders in the future. Such interventions on the structure of the brain may become available and will undoubtedly lead to controversy in the scientific field (Meynen, 2016).

M. J. Hoptman, D. Antonius found that frontal and temporal abnormality are associated with aggression in schizophrenia. Several other studies have shown that different areas of the brain are involved in violence in schizophrenia (Hoptman & Antonius, 2011). The control of aggression is multifaceted, and dysfunction of the functional connection between the amygdala and the prefrontal cortex tends to predict higher levels of aggression. The most consistent results of structural studies have been a decrease in the volume of the hippocampus and frontal lobe (in particular, the orbitofrontal and anterior cingulate cortex) in patients with schizophrenia with a history of violence or with higher indicators of aggression. These data suggest that front limbic dysfunction in schizophrenia may be associated with aggression or violence (Cho et al., 2019).

Abnormalities are the cause of illegal behavior. At the same time, he is convinced that "bad brains" can be corrected through specific interventions, emphasizing not so much the biological as the socio-biological. Protecting the environment is a critical link in shaping brain function." By 2034, advanced technologies will reach such a level that it will be possible, after studying the biological features of a specific person (genes, brain anatomy, neurochemistry), to predict with 79% accuracy whether he will commit a crime in the next 5 years (Witchalls, 2013).

Gender is also significant. For example, the "male" hormone testosterone increases aggression in men and women. At the same time, the purely "female" hormone estradiol increases the empathy and emotional activity of the individual. In this case, we can directly assert a biologically determined difference in the behavior of women and men. Such factors must be considered when deciding on issues of a judicial nature. Also quite interesting is a study in which female reviewers claimed to have committed one or another crime and period of menstruation. Women are pretty sure that their "condition" led to such actions on their part.

The level of some aspects in the blood can correlate with the criminal past of its owner. So, a group of scientists, which included: A. Beckley, A. Caspi and others, conducted an experiment in which 553 people (255 women and 298 men) took part and conducted a blood test for lead content (Beckley et al., 2018). The study showed a weak but existing relationship between the level of lead in a person's blood and the status of a criminal. Such blood tests are necessary to consider all the features and more accurately approach the complete determination of the crime.

Many recent studies have identified biochemical compounds potentially involved in aggression and its subtypes. After analysing them, we can conclude that, in general, they are focused on certain classes of metabolites. Because both low and high levels of aggression can be detrimental to survival and reproduction, it has been postulated that aggression is under stabilising selection, meaning that variation in aggression will show a significant proportion of heritable material (Asherson & Cormand, 2016).

Thus, we can conclude that denying the possible influence of biological factors on forming a criminal personality is a wrong step. At the same time, research, and search for biological correlates of criminal behavior is a necessary step for the further determination of criminal offences.

Sociological theories of the nature of crime

Many scientists believe that sociological factors and external influences cause a person's crime or illegal criminal behavior. Many theories relate to the correlation between an individual's childhood and the likelihood that he will commit a criminal offence. At the same time, just like the sociological approach to determining the priority cause of crime, including the somewhat

controversial one in recognizing antagonistic contradictions as the fundamental cause of crime, biopsychological factors, which mainly only contribute to or complicate the formation of personality, should not be absolutized in criminological research causal complex of crime. Therefore, it is worth agreeing with scientists who insist on the socio-psychological content of crime. Accordingly, the cause of crime in the social dimension should be considered a system of negative socio-psychological phenomena that cause contradictions existing in society and the state and determine crimes (Shevchenko, 2011).

The sociological dimension includes all those factors and regularities invented by scientists and proved effective and rational. Thus, there is an urgent need for a comprehensive analysis of the main theories of the social connection between crime and the individual.

Among the many theories of the social spectrum, such as "social process" theories of the causes of crime, scientists distinguish three main theories: 1) the theory of differential association; 2) the theory of differential reinforcement; 3) theory of social learning. Among them, the most excellent preference is given by criminologists to the theory of social learning.

The theory of differential communication (communication) was formulated by the American scientist E. Sutherland (1883–1950) in his work "Principles of Criminology". The theory of differential connections states that a person learns criminal behaviour not because he is prone to it but because he sees more examples of criminal behavior (Skinner, 1938).

Another attempt to explain the phenomenon of crime as a type of learned behaviour is the theory of differential reinforcement (Differential Reinforcement Theory – DRT), proposed by L. Ronald Akers and R. L. Burgess in 1966 in the article "Theory of differential association-reinforcement of criminal behavior" (Burgess & Akers, 1966). The proposed version combined Sutherland's theory of differentiated association and behavioral psychology - the theory of reinforcement (Skinner, 1938). Conditioning of operant behavior is the result of two components: 1) reinforcement (reinforcement); 2) punishment (relief). Operant learning is observed when a person voluntarily performs actions to achieve the desired result, and the environment determines his actions.

Subsequently, R. Akers improved and renamed DRT to Social Learning Theory (SLT). In the

study of deviant behavior and crime using the "social learning" approach (Akers, 2010). R. Akers formulated his vision of their reasons: "The possibility that individuals will engage in criminal and deviant behavior increases and the possibility of their normative conformity decreases when they differentially interact with other individuals who commit criminal acts and support concepts that contribute to this, is are relatively more personally or symbolically influenced by pronounced criminal/deviant patterns, define it as desirable or fair in a situation different from the behavior, and have received in the past and expect in the current or future situation a relatively greater incentive than punishment for the behavior" (Akers, 2010).

Behaviorist theory distinguishes between positive reinforcement, negative reinforcement, and punishment for behavior. It states that human actions that are rewarded (positive reinforcement) are repeated more often than those that are not rewarded (negative reinforcement) or punished. Negative reinforcement must follow the action to be effective, as the threat of delayed punishment can only be effective for future-oriented people, which is rarely the case with criminals (Shostko, 2015).

J. Tobey believed that no one forces a person to be a criminal (but you can be tempted to do so). In his writings, he defined his vision of the causes of crime and noted that man chose his path, and when the government does not know what to do with such people, they end up in prison because they do not have the skills to change them. Writing about gang violence and socialization, Tobey argues that the disengaged adolescent was a candidate for such membership because they have less stake in the community, fewer stakes in themselves and fewer matching attributes. This ties in well with his ideas and concepts of social control theory (Shostko, 2015). Tobi believes that policy implications are likely determined by the side of the victim's constituency, meaning that politics may cause a criminal to narrow down his "victims subconsciously."

Durkheim also defined punishment as an act of revenge. In addition, it should be noted that Durkheim perceived deviant behavior as usual. He laid the foundation of the theory of Anomie, according to which it is impossible to avoid deviant behaviour since it exists in various societies. This is normal in the sense that a crime-free society is over-policed. If crime is wholly eradicated, no progress or social changes will occur. Criminality is logically a part of the

primary conditions for the existence of a social organization. If the criminal does not have the opportunity to commit an illegal act, he cannot show himself and his genius. By "anomy" E. Durkheim understood the state without norms, without laws (Akers, 2010).

Tarde developed the theory of professional criminal and criminal imitation. According to him, crime is a craft, a professional actor. A professional criminal has unique skills and techniques. He studied for a long time and mastered his profession. A professional criminal has his jargon; in relation to his "colleagues", he behaves according to a specific code of conduct.

The theory of neutralization "neutralisation" and drift (drift) "DRIFT" assumes that juvenile criminals are aware of their responsibility before the law. This obligation before the law remains in force most of the time. However, when this obligation is stretched, juvenile offenders are prone to crime (Tage & Persson, 2013).

I want to single out theories of the causes of crime related to psychoanalysis. Such a concept was widely understood among scientists of the 20th century. The diversity of homogenous psychological research was determined by the relatively autonomous development of two psychoanalytical schools: instinctive and behaviourist.

Intensivists saw the causes of criminal (in particular, aggressive) behaviour in the action of unconscious, instinctive uncontrollable impulses. Behavior correction was seen as a solution to internal personal contradictions.

Moreover, Freudians indicate a possible direction of determining deviant behaviour in a person using the concept of Freudianism. It consists of the need for emotional relief for a person. According to this teaching, the emotional component of a person constantly increases their internal reserve. At one point, a person and his psyche cannot contain this tension and commits a crime. To unify the act of committing a crime, in our opinion, in this case, it is necessary to create special conditions where it will be accepted in society either not to hold back one's own emotions (within reasonable limits) or to implement and experience them more vigorously and dynamically, which will cause the individual has the so-called "emotional discharge".

Behaviorists consider crime as a human reaction to a specific external stimulus (stimulus). Accordingly, the measures for correcting

undesirable reactions were imagined: a) in the form of elimination (minimization of the impact) of relevant situational stimuli; b) changes in typical reactions-settings. Each of these concepts, with sufficient justification, reveals a certain one-sidedness, which prompted scientists to search for integrative criminological concepts. In this case, we should discuss the pedagogical aspect of crime determination. The behavioral method consists of "programming" a person with specific reactions to environmental stimuli. On the other hand, the criminal does not have a standard reaction system: it is broken due to its incorrect interpretation at the beginning of the psychological formation of the individual as a personality.

In his writings, I want to note that Z. Freud noted the complete independence of the psyche from biological factors. We disagree with this opinion because many studies have shown a direct correlation between biological factors, such as hormone levels, and a person's behaviour and mental state. As O. Shostko successfully notes, modern criminologists, based on the results of research by geneticists, biochemists, neurologists, and psychophysicists, increasingly pay attention to the fact that biopsychological factors play an important and sometimes decisive role in the aggressive behaviour of minors and adults, which leads to committing various crimes against the life and health of a person (Shostko, 2015).

Sociological correlates of antisocial behavior

The symbiotic theory of crime includes two dimensions of scientific knowledge, from which correlates of determining deviant behavior are found. As of today, much research has been conducted on the analysis of sociological factors of crime: from the research of specific scientists to the determination of the list by special law enforcement agencies of various countries of the world.

There is an urgent need to analyze the factors leading to specialized organizations and bodies. Let us start with the 10 causes of crime, as defined by the US FBI: population density and degree of urbanization; changes in the composition of the population, especially the concentration of young people; lack of stability in the number of the indigenous population compared to the population that is in permanent migration: the mobility of life of some categories of people, pendulum migration and other transitional factors; mode of transport and highway; economic conditions, including low

median income, poverty and job availability; cultural and educational factors, recreational and religious features; family: divorce and family cohesion; climate; effectiveness of law enforcement agencies; administrative and investigative accents in the activities of state law enforcement agencies (Nezhurbida, 2011).

This list needs to be completed. We believe these are only the leading "discovered" causes of crime. However, there is no exact list, and many researchers note the absolute uncertainty of the exact cause of crime. However, there have been many theories regarding determining the causes of a particular crime. In such cases, we need to be guided by the method of deduction, which starts from the very fact of the crime and its features.

Additional reasons can be called those that do not directly affect the personality. For example, the influence of a subculture can be attributed to the main one because, in a subculture, an individual interacts directly and is directly influenced. Ethno-cultural factors can be called additional: they affect a person indirectly and can be called the basis for the main ones.

We focus on the influence of the environment, namely the influence of subcultural organizations or groups on the psyche of an individual. Young people are most often subject to such influence. This is due to a biological factor: a certain period of high human activity, for example, puberty. As we know, because of the peculiarities of their body, it is teenagers who are most inclined to single themselves out as an individual belonging to some subculture. Such influence is often negative because the ideological component of basic paradigms and dogmas of such subcultures is almost always directed against "socially recognized" and "customary" norms.

For example, a subculture called "AUE" is widespread in Ukraine and the CIS countries. The main task of such a subculture is the introduction of "prison" laws into the country's social order. At the same time, due to his young and unformed mental state, a healthy individual who falls into such a subculture completely repeats the leader's behaviour in the hierarchy. This somewhat calls into question the truth of the social learning theory: a person does not learn - he repeats everything according to an idealized commander.

Speaking about the ethnocultural causes of crime, it is worth noting that migrants are forced to interact with representatives of the dominant

culture – this is how their adaptation begins. In this case, the process of adaptation is connected with the crisis of ethnic identification, which, according to several scientists, manifests itself, first of all, in the devaluation of values and morals, the emergence of feelings of inferiority and guilt, anxiety, restlessness, fear of the future, hopelessness, in the emergence suicidal tendencies, a general lowering of mood, loss of interest in life, a state of apathy, social self-isolation, in the manifestation of signs of general disorganization of behavior.

Its moral, ethical, mental, and physical health depends on how successful the ethnic group's adaptation to the dominant culture will be. Based on the nature of interethnic crimes, a more severe diagnosis can be made - the degeneration of the ethnic group. Behavior that deviates from the norm can be defined as a form of disorganization of the behavior of an individual or a category of persons in society, non-compliance with formed expectations, and moral, legal, and cultural requirements of society. Then the offence is the essence of the problems of the individual in the relationship with society and its culture. One of the factors of illegal behavior is personality deviations in socio-cultural identification.

Thus, in the modern scientific environment, many sociological correlates of criminal behavior are identified, constituting a massive system of interrelated factors that influence a person and make him a criminal.

Conclusions

The work systematizes and summarizes scientific approaches to determining the nature of the crime, its biological and sociological correlates, and scientific theories of crime determination. Fundamentally new subfields that arose from scientific modelling between disciplinary and transdisciplinary approaches to crime determinism are analyzed.

Relatively new directions of the development of the science of criminology are highlighted: neurolaw, neuroimmunology, behavioral epigenetics, neuroendocrinology. Fundamentally new approaches and technologies for determining the causes of crime have been studied.

Attention is focused on the research of foreign scientists regarding the finding of biological correlates of criminal behavior. Such correlates include gender, hormonal system, brain abnormalities, cognitive deficits, a low-active

MAOA genome, the level of certain neurotransmitters in the brain, specific psycho-emotional states of a person, etc.

Sociological correlates include childhood problems, family fragmentation, the destructive influence of a particular subculture, poor upbringing, various ethnocultural factors, the economic situation in the country, a destructive environment, etc.

A new symbiotic theory of crime is proposed, a transdisciplinary theory of the nature of crime. It combines a three-element structure: an autonomous connection of biological (anthropogenic) factors and sociological ones; the final connecting element of such a symbiosis is the human psyche. Thus, the symbiotic theory of criminality considers the principle of human integrity, where the model of a complete person is I and my environment.

Bibliographic references

- Akers, R. (2010). *Social Learning Theory*. Thousand Oaks: SAGE Publications, Inc.
- Asherson, P., & Cormand, B. (2016). The Genetics of Aggression: Where Are We Now? *Am J Med Genet Part B* 171B, 559-561. Retrieved from: <https://onlinelibrary.wiley.com/doi/full/10.1002/ajmg.b.32450>
- Beaver, K., Jackson, D., & Fleshe, D. (2014) The Potential Use of Genetics to Increase the Effectiveness of Treatment Programs for Criminal Offenders. *Recent Advances in DNA & Gene Sequences (Discontinued)*, 8(2), 113-118. [online] Retrieved from: <https://doi.org/10.2174/2352092209666150205111839>
- Beckley, A. L., Caspi, A., Broadbent, J., Harrington, H., Houts, R.M., Poulton, R., Ramrakha, S., Reuben, A., & Moffitt, T.E. (2018) Association of Childhood Blood Lead Levels With Criminal Offending. *JAMA pediatrics*, 172(2), 166–173. Retrieved from: <https://pubmed.ncbi.nlm.nih.gov/29279896/>
- Beschastny, V. M., Nazimenko, E.U., & Lostch, S.V. (2017) Criminological theories: a general concept and characteristics of individual trends. *Problems of jurisprudence and law enforcement*, 1, 91-104. (In Ukrainian)
- Boender, A.J., & Young, L.J. (2020) Oxytocin, vasopressin and social behavior in the age of genome editing: A comparative perspective, 124(104780) Retrieved from: <https://www.sciencedirect.com/science/article>

- e/abs/pii/S0018506X20301069 (accessed 24 February 2023).
- Burgess, R., & Akers, R. A. (1966) Differential Association-Reinforcement Theory of Criminal Behavior. *Social Problems*, 14(2), 128-147. Retrieved from: DOI: <https://doi.org/10.2307/798612>
- Cho, W., Shin, W. S., An, I., Bang, M., Cho, D. Y., & Lee, S.H. (2019) Biological Aspects of Aggression and Violence in Schizophrenia. *Clinical psychopharmacology and neuroscience: the official scientific journal of the Korean College of Neuropsychopharmacology*, 17(4), 475-486. Retrieved from: <https://doi.org/10.9758/cpn.2019.17.4.475>
- Franzini, A., Broggi, G., Cordella, R., Dones, I., & Messina, G. (2013) Deep-brain stimulation for aggressive and disruptive behavior. *World neurosurgery*, 80(3-4). Retrieved from: <https://doi.org/10.1016/j.wneu.2012.06.038>
- Fuss, J., Auer, M. K., Biedermann, S. V., Briken, P., & Hacke, W. (2015) Deep brain stimulation to reduce sexual drive. *Journal of psychiatry & neuroscience*, 40(6), 429-431. Retrieved from: <https://doi.org/10.1503/jpn.150003>
- Holina, V.V., Golovkin, B.M., Valuyska, M.Yu., & Lysodyed, O.V. (2014) Criminology: General and Special parts. Kharkiv: Pravo. Retrieved from: <https://acortar.link/yZrE2D>
- Hoptman, M.J., & Antonius, D. (2011). Neuroimaging correlates of aggression in schizophrenia: an update. *Current opinion in psychiatry*, 24(2), 100-106. Retrieved from: <https://doi.org/10.1097/YCO.0b013e328342c8e0>
- Humin, O. (2014) Integrative function of criminology in the system of human sciences. *Bulletin of the Lviv Polytechnic National University. Legal Sciences*, 7, 175-181. Retrieved from: <https://acortar.link/LyFkpp>
- Ivanova, K. (2022) Despite the blackouts, the level of crime in Ukraine has significantly decreased: the National Police reported the figures. *Blog News Life*. [online]. Retrieved from: <https://tinyurl.com/3n5rxabd>
- Lombroso, C. (1885). *Genius and kindness. A parallel between great people and poor people*. St. Petersburg: Printing house of the Society "Public Benefit".
- McSwiggan, S., Elger, B., & Appelbaum, P.S. (2017) The forensic use of behavioral genetics in criminal proceedings: Case of the MAOA-L genotype. *International Journal of Law And Psychiatry*, 50, 17-23. Retrieved from: DOI: <https://doi.org/10.1016/j.ijlp.2016.09.005>
- Meynen, G. (2016) Neurolaw: recognizing opportunities and challenges for psychiatry. *Journal of psychiatry & neuroscience*, 41(1), 3-5. Retrieved from: <https://doi.org/10.1503/jpn.150317>
- Nezhurbida, S.I. (2011) The "enlightenment" direction of theories of the causes of crime: idea, essence, consequences. *Scientific Bulletin of Chernivtsi University, Legal Studies*, 6, 91-95. Retrieved from: <https://acortar.link/EP0dik>
- Shostko, O.Yu (2015) Biological and psychological theories of explaining the criminal behavior of minors in the USA. *Theory and practice of jurisprudence*, 1(7), 14-18. Retrieved from: <https://www.ceeol.com/search/article-detail?id=354922>
- Shevchenko, O.V. (2011) Causes and conditions of corruption crime. *Bulletin of the High Council of Justice*, 3(7), 122-132. Retrieved from: <http://surl.li/hrfbb>
- Skinner, F. (1938) *The Behavior of Organisms: An Experimental Analysis*. Appleton-Century. Retrieved from: <https://acortar.link/O12dV9>
- Tage, I.A., & Persson, O. (2013) The Sutherland tradition in criminology: a bibliometric story. *Criminal Justice Studies*, 26, 1-18. Retrieved from: <https://doi.org/10.1080/1478601X.2012.706753>
- UMN (2021). *Crime in Ukraine: how the situation changed in 2013-2020*. [online] Retrieved from: <https://umn.ua/news/7304>
- Witchalls, C. (2013) Are we born to be bad? A new book explores the link between biology and breaking the law. *The Independent*, 29 May [online] Retrieved from: <https://acortar.link/VOD9K2>