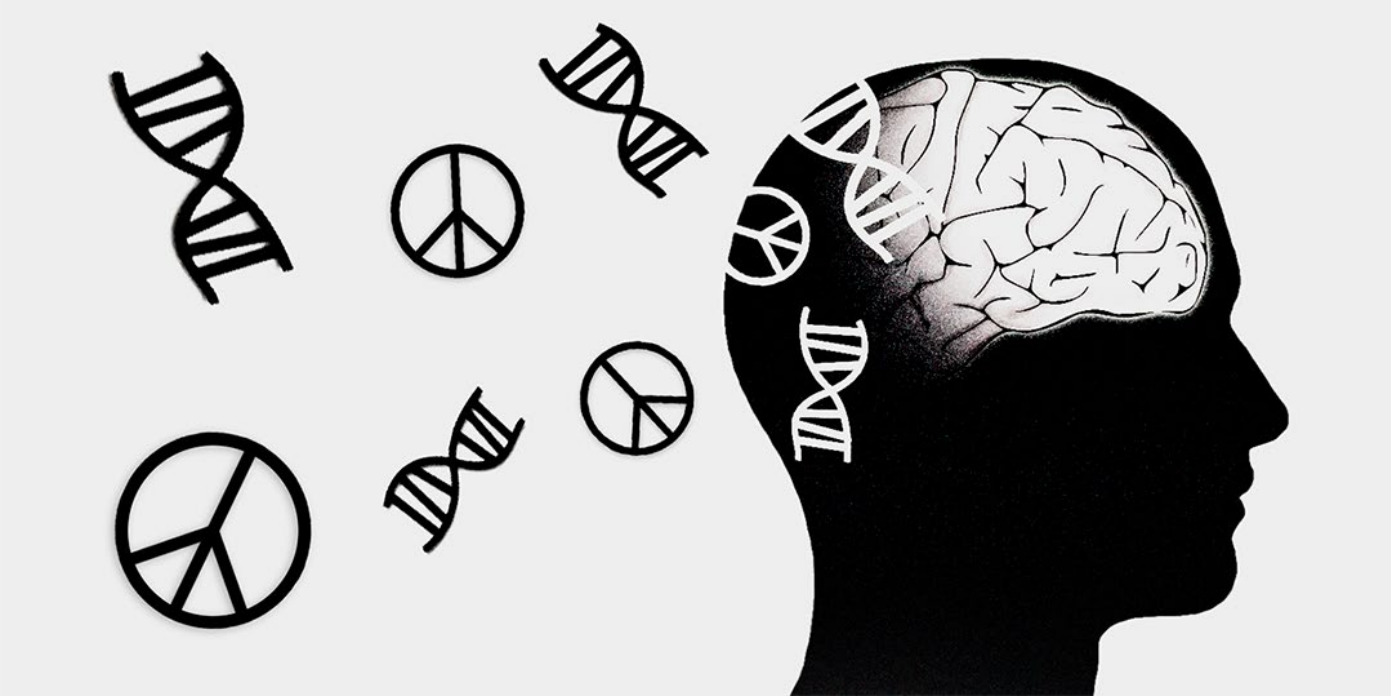
The Theory of Violence

On the violence inhibition mechanism or why many people have a strong inner resistance to harming other people, but there are also those who are able to easily commit a violent attack or even murder, and how to solve this problem



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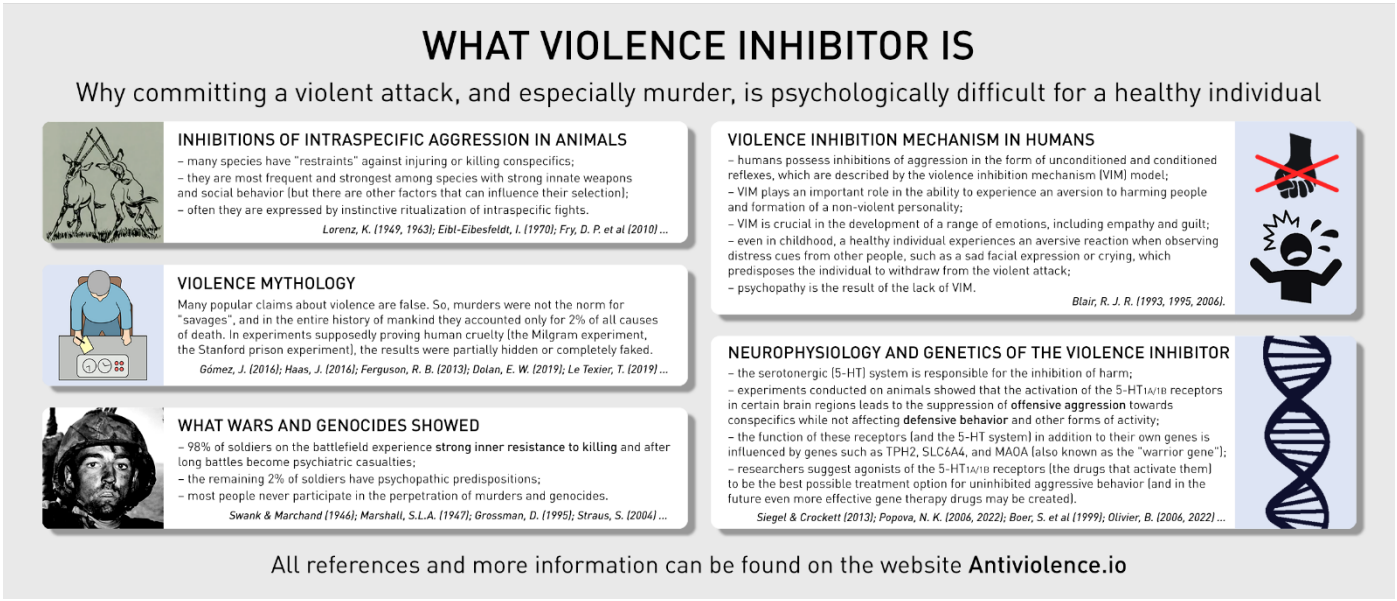
When it comes to violence, although it seems to be a socially unacceptable phenomenon, its naturalness is most often not questioned, especially considering the fact that we can observe violence in the animal world and human society. However, if we go deeper into the study of this phenomenon, we can easily realize that everything is not so unambiguous, especially in the case of intraspecific interactions.

Did you know that in the nervous system of many animals, and even humans, there is a mechanism that, when activated, inhibits offensive aggression towards members of their species while not affecting defensive behavior and other forms of activity? And we are talking about intraspecific, not just intragroup social interactions. In particular, this result was demonstrated by experiments with mice and rats. Activation of such a mechanism led to a sharp decrease in their aggressiveness while leaving them with the ability to self-defense and not disrupting their non-aggressive behaviors. Furthermore, a lot of evidence, including the findings of anthropologists and military experts, suggests that the average and healthy individual has a strong inner resistance to killing other people.

The theory that many species have inhibitions of intraspecific aggression, which developed in the course of biological evolution, has existed for quite a long time and originates from the very

emergence of **ethology**, the science of animal behavior. Based on this theory, a model of the violence inhibition mechanism in humans was also proposed, explaining the development of empathy and the emergence of psychopathy. And the results of research in the fields of neurophysiology and genetics confirm its validity.

In turn, the prevalence of violence we observe can be easily explained by the fact that it draws too much attention to itself. One person who committed murder will obviously be more noticeable than a thousand other, peaceful people. Violence is not so common, and it should be considered a deviation and pathology rather than a natural phenomenon of social communication. We will get acquainted with all the details and evidence behind such a conclusion. Also, based on them, we will develop potential solutions to the problem of still-existing violence in society and human relationships.



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I. Definitions of the concepts of aggression, violence, and self-defense

To make it possible to study the topic of violence as a form of behavior and social communication, we need to give this concept a concrete definition. Not only that, this definition cannot be purely subjective and evaluative; it must be based on concrete, objective data about the nature of the behavior of living beings – animals and humans. And now we will familiarize ourselves with two approaches that will help us with this.

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1. Ethological approach

In defining the concept of violence as well as another important concept of self-defense, we will start with the broader concept of aggression. An **ethological approach** will help us solve this problem. Of course, the definitions thus obtained will differ from many other, more generally accepted definitions. However, exactly these definitions will make it possible for the most objective and accurate distinction between different forms of behavior from a biological point of view, which is extremely important for our study.

To be clear, we should first understand what aggressiveness is. It is a feeling of hostility that arouses thoughts of attack, or simply a natural disposition to be hostile[1]. In turn, aggression is a disposition to behave aggressively, hostilely, unfriendly[2].

However, **aggression** as a form of behavior and social communication in intraspecific relationships is characterized by **constrained** actions, reactions, and social signals between participants in the conflict. It is important to pay attention to this “constraint”. It consists in rules and rituals of certain magnitude, expression, and sequence, which make aggression functional, dynamic, yet structured behavior within inhibitory limits. Regardless of species-specific rules, these components are necessary for functionally driven aggression[3][4][5]. Also, this inhibition of aggression is the main function of the violence inhibition mechanism, which we will discuss later.

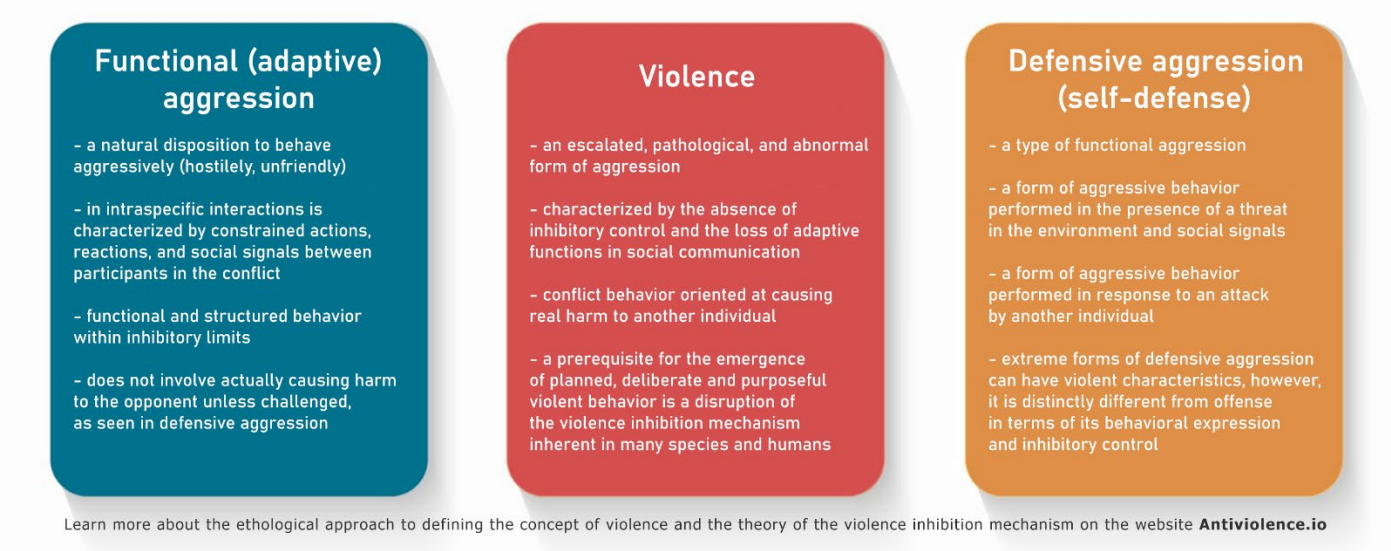
The difference between violence and functional (or adaptive) aggression lies in the behavioral sequence or interaction dynamics between two or more conspecifics in combat. Violence is characterized by the absence of inhibitory control and the loss of adaptive functions in social communication. As a quantitative behavior, **violence is an escalated, pathological, and abnormal form of aggression** characterized primarily by short attack latencies, and prolonged and frequent **harm-oriented conflict behaviors**. As a qualitative behavior, **violence is characterized by attacks that are aimed at vulnerable parts of the opponent's body** and context-independent attacks regardless of the environment or the sex and type of the opponent[3][4][5][6][7][8][9].

It is believed that functional aggression, unlike violence, is not anticipated to target vulnerable body parts even in the midst of an agonistic interaction unless challenged, as seen in defensive aggression[4][10].

According to the **threat superiority effect**, humans (like many species) have the ability to quickly and effectively detect threats in the environment, which allows them to activate defense mechanisms in time and adequately respond to the threat[11]. Such a reaction can be expressed by flight or defensive aggression (it is also called a fight-or-flight response). Threat stimuli can be innate due to the fact that humans have encountered them in the course of biological evolution (for example, snakes), or

acquired through experience due to the adaptation of defense mechanisms (for example, a knife or a gun)[12][13]. In addition, humans are more likely to recognize angry facial expressions from other humans than neutral and happy expressions, as well as expressions of sadness and fear[14][15].

Self-defense can be defined as a form of aggression performed in the presence of a threat in the environment and social signals[Author's note]. Also, in the case of intraspecific relationships, **self-defense (or defensive aggression) is defined as a form of aggressive behavior performed in response to an attack by another individual**. It is worth noting that extreme forms of defensive aggression can have violent characteristics. However, it is distinctly different from offense in terms of its behavioral expression and inhibitory control[16][17].



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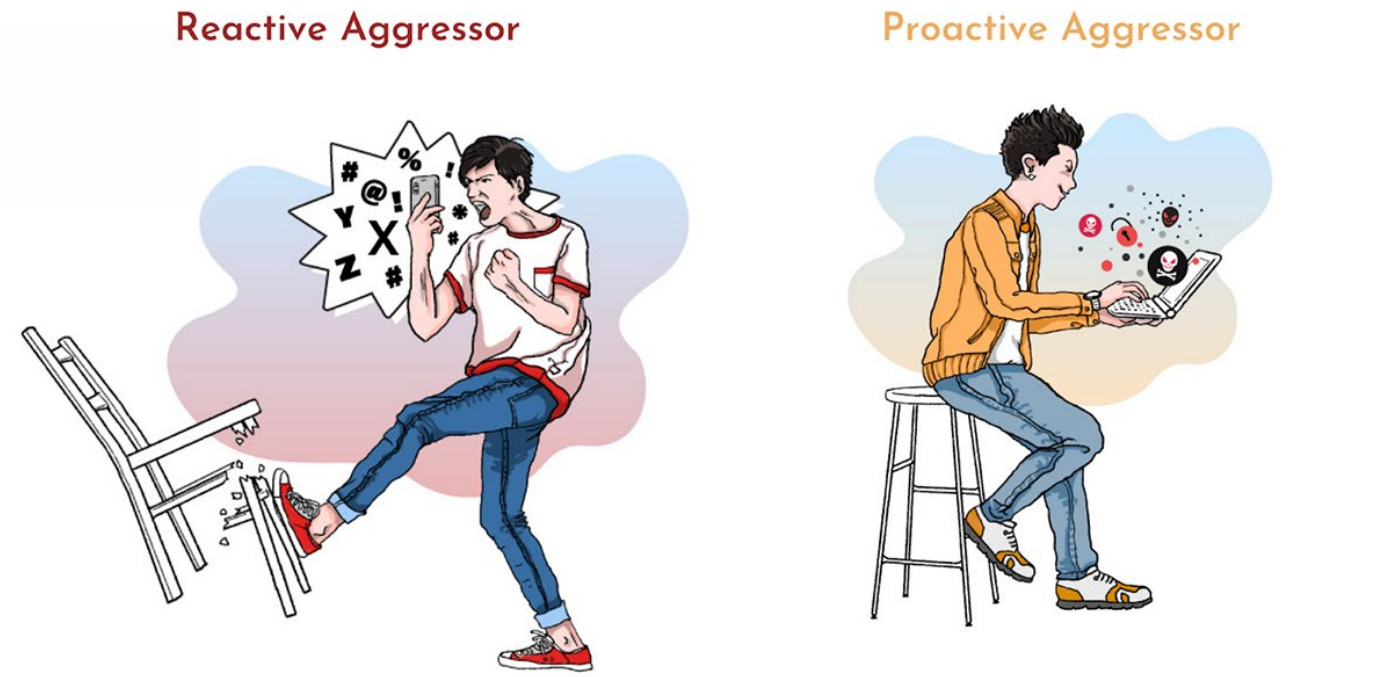
2. Reactive and proactive aggression

In studies of the human psyche and behavior, the division of aggression into reactive (affective) and proactive (instrumental) forms is very common. **Reactive aggression is an impulsive response to a perceived threat or provocation**, associated with high emotional arousal, anxiety, and anger. In turn, **proactive aggression is instrumental, organized, cold-blooded, and motivated by the anticipation of reward**[18][19].

In other words, reactive aggression arises as a reaction of the subject to a certain stimulus (including a threat stimulus that can lead to self-defense) or as a result of frustration. It is limited to a specific conflict, has no intent, and no purpose other than the direct infliction of harm. And proactive aggression consists in achieving a certain positive result by resorting to aggressive actions; it is a planned and motivated act of harming the victim.

Such a division of the forms of aggression is essential due to the difference in their regulation at the neurophysiological level as well as in the influence of genetics and environment on their manifestation. As for the study of the violence inhibition mechanism, first of all, attention will be focused on proactive, instrumental, and offensive aggression, for the emergence of which its dysfunction is a key component. However, the topic of reactive, impulsive, and affective aggression will not be bypassed either.



II. Myths about violence

In this chapter, we will look at various myths about violence that prevent a full understanding of the nature of this phenomenon. As ethological, archaeological, anthropological, military, and other evidence demonstrates, violence, especially lethal one, is largely absent from intraspecific animal and human relationships. The average and healthy individual has a strong inner resistance to killing, but the minority of killers is still enough for violence to have a huge impact on society and lead to numerous victims.

If you have no doubts about these facts and you are interested in studying the theory of the violence inhibition mechanism directly, then you can immediately skip to Chapter Three.

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1. Are intraspecific killings common in mammals and other animals

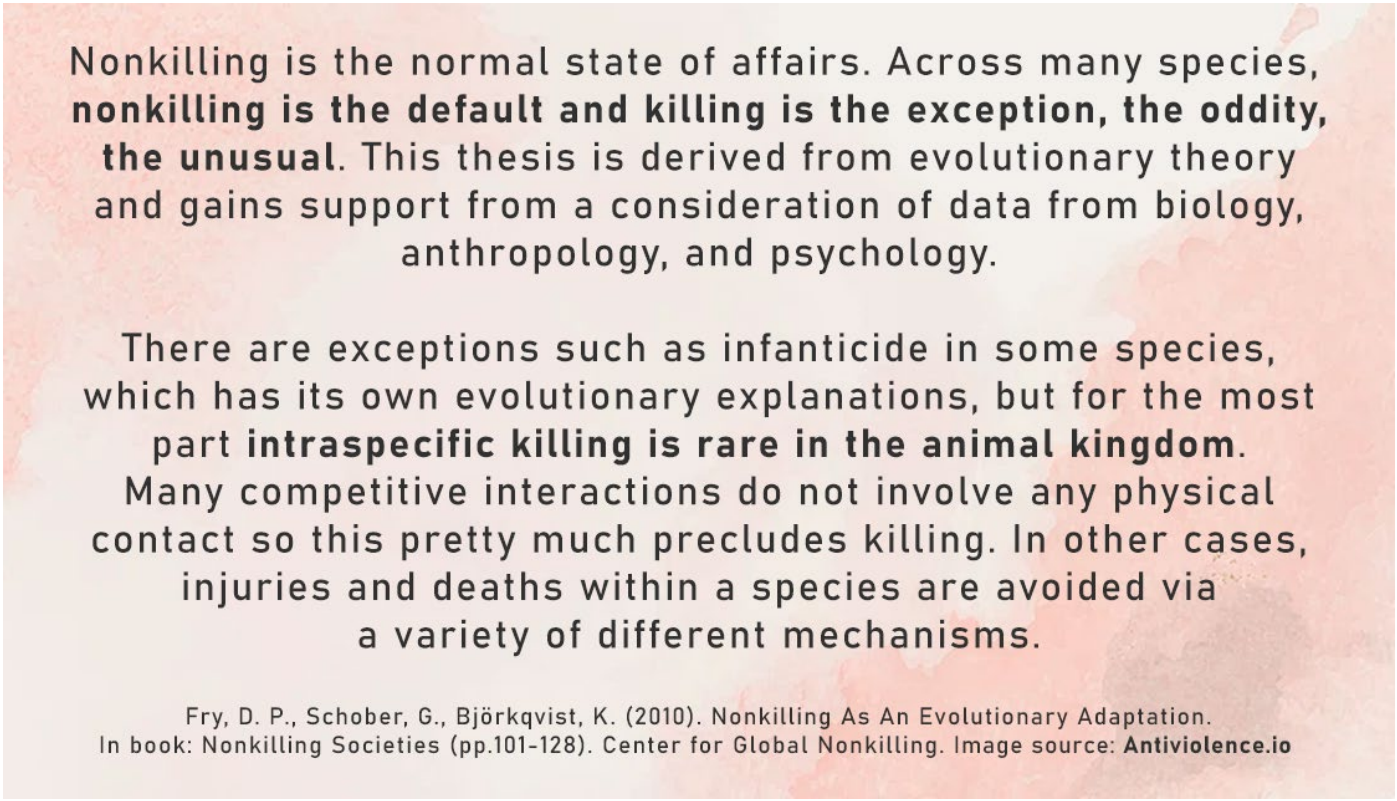
A study of 1024 mammalian species showed that only about **40% of them** were observed to have at least occasional lethal violence – cases of death of individuals from aggressive actions by members of their species (including infanticide, cannibalism, and intergroup aggression). Of course, this figure may be underestimated due to the lack of data, but even after adjusting for this probability, non-violent intraspecific relationships are still common and prevail over violent ones, especially if we take into account that, according to overall statistics, lethal violence is the cause of death in mammals in only **0.3% of cases**[20].

Many researchers have come to the conclusion that **most intraspecific aggression is non-lethal**, and individuals with techniques which enable them to avoid agonistic situations involving serious possibilities of defeat or injury are evolutionarily successful. And restraints against harming and killing

conspecifics are common in species with strong innate weapons and social behavior[21][22][23][24][25][26][27][28][29][30]. A detailed description of examples of such restraints and why they have developed during biological evolution can be found in Chapter Three.

As for the relationship of territoriality and social behavior with lethal violence, in both cases there was an elevated level of it, which is easily explained by the increase in the number of conflicts due to more frequent social contacts and territorial fights. However, even for social territorial species, the overall level of lethal violence is 0.8%. Of course, against the background of other mammals, primates stand out with an increased level of violence. However, even in their case, the overall level of lethal violence is 2.3%. And the closest human relative, the pygmy chimpanzee (bonobo), is widely known for its non-violent nature[31].

The highest levels of lethal violence are observed in lemurs, marmosets, and suricates, in which case they can reach almost 20%. However, such cases are an extreme exception, which means we can safely assume that across many species, **nonkilling is the default and killing is the exception, the oddity, the unusual**[29].



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2. Lethal violence in human history or "The Myth of the Violent Savage"

It is an extremely common claim, taken from the writings of scientist Steven Pinker, that among hunter-gatherer tribes of the past, 15% of people died from lethal violence, and in some cases, its level could be as high as 60%. Thus, societies that existed before the emergence of agricultural civilizations with cities and monopoly governments suffered from chronic violence and endless wars[32][33].

However, arguments of this kind are highly exaggerated and are based on limited examples of societies, not on their overall statistics. A study examining 600 human populations shows that in the

entire history of Homo sapiens, the level of lethal violence was **only 2%**, and this includes cases of war and genocide[20]. Some studies also argue that the theory of the universality of war in human history lacks empirical support, and evidence for high levels of prehistoric violence (such as that demonstrated in the book “War Before Civilization: The Myth of the Peaceful Savage”) may be unreasonably inflated[34][35].

As anthropologist Brian Ferguson writes, considering all the archaeological evidence for Europe and the Near East, and not just selected cases of violence, one can conclude that the idea that 15% of the prehistoric population died from war is not just false, it is absurd. And there is no evidence that war is an expression of innate human tendencies or a selective force driving human psychological evolution[36].

Pinker ignored much of the archaeological evidence that did not correlate with his argument. One survey of 2000–3000 remains found in France showed 1.9% with projectile wounds, including healed ones. One site in Britain of 350 individuals showed about 2% with identifiable trauma. Another site in Serbia and Romania of 418 individuals showed 2.3% with signs of violent injury. A study of 2500 remains of adults found in Japan showed that 2% died potentially violently. Anthropologist Radovanovic, after studying 1107 remains from Europe, including all the cases on Pinker's list, concludes that, on average, you can get a 3.7% level of lethal violence as a low estimate and 5.5% as a high estimate. These results are not even close to Pinker's 15%[36][37][38].

Claims about extremely high levels of violence in prehistoric men are often based on the analogy with the high levels of violence in some modern hunter-gatherer tribes. However, a study of 21 nomadic tribal societies shows that in 10 of them only one person committed killings, and in 3 of them there was no killing at all. Nearly half of the killings (47%) occurred in the Tiwi tribe from Australia, which shows its exceptional propensity for violence. Also, anthropologist Douglas Fry, after studying the anthropological literature, found as many as 70 nonwarring cultures, including cases of completely non-violent tribes, famous examples of which are the Paliyar (or Paliyan) from South India and the Semai from Malaysia[39][40][38]. Although homicide rates vary tremendously from one society to the next and also change over time within the same society, **the vast majority of people never kill or attempt to kill anyone**[30].

What also turned out to be false was the claim made by anthropologist Napoleon Chagnon, who studied the Yanomami tribes and is often cited by Pinker, that in tribal societies, men who commit killings should be more reproductively successful (have 3 times as many children) as they eliminate their neighbors from procreation. And since in the past all people lived in tribes, this allegedly made a human a natural-born killer. But the studies that make such a claim have methodological errors, the difference in average age between the killers and non-killers studied is more than 10 years, which distorts the results. And even if they were the same age (Chagnon insists that they were, but flatly refuses to provide evidence of this), other anthropologists' calculations suggest that such results would still be exaggerated. Also, they do not agree with the findings of many other studies, which show that killers not only have the same number of children as non-killers but also that **the children of killers are less likely to reach reproductive age**[30][41][42].

It is worth briefly mentioning the issue of cannibalism. The problem with it arises from the fact that often researchers mistake cases of ritual consumption of dead relatives (endocannibalism) for cases of consumption of enemies defeated in a war (exocannibalism)[43][36].

In general, it is incorrect to describe human violence based only on individual cases of extremely violent tribes. And in addition, based on cases of violence in modern tribes, one should not lightly draw

conclusions about the level of lethal violence in the tribes of the past – a mistake that some researchers make[34][30].

Richard Brian Ferguson – historical anthropologis, researcher of the origins of war.

Archaeological findings are said to prove that prehistoric people in general were plagued by chronic warfare that regularly claimed about 15 percent of total population, and a quarter or more of the adult men. These numbers have become axiomatic ... this "fact" — as widely invoked as it is — is utterly without empirical foundation.

It is a selective compilation of highly unusual cases, grossly distorting war's antiquity and lethality. The elaborate castle of evolutionary and other theorizing that rises on this sample is built upon sand. The alternative and representative way to assess prehistoric war mortality ... surveys all Europe and the Near East, considering whole archaeological records, not selected violent cases.

When considered against the total record, the idea that 15 percent of prehistoric populations died in war is not just false, it is absurd. There is no support here for war as an expression of innate human tendencies, or a selective force driving human psychological evolution.

R. Brian Ferguson. (2013). Pinker's List Exaggerating Prehistoric War Mortality & The Prehistory of War and Peace in Europe and the Near East. In: DP Fry ed. War peace and human nature: the convergence of evolutionary and cultural views. Oxford Univ. Press.

We recommend visiting **antiviolence.io** website that explores in detail the problem of violence

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3. War and resistance to killing

Military experts have found that most humans possess an intense resistance to killing. The resistance is so strong that, in many circumstances, soldiers on the battlefield will die before they can overcome it. Overall, **a strong inhibitor to killing is inherent in 98% of soldiers**. This means that **there is only 2% of the male population that, if pushed or if given a legitimate reason, will kill without regret or remorse**[44][45][46][30]. And we will now familiarize ourselves with the range of evidence behind such a conclusion. Also, along the way, we will examine the criticisms it faces and demonstrate their untenable points.

A study by psychologists Roy Swank and William Marchand, published after World War II, demonstrated that after 60 days of ongoing battles, 98% of surviving soldiers are psychologically traumatized, and only **less than 2% of them who are predisposed to be "aggressive psychopaths"** are not concerned with this kind of problem since they apparently do not experience any resistance to killing[47][44][45]. And according to the American military commander, brigadier general, and historian Samuel Marshall, among American soldiers, only 15–20% fired at enemy positions during World War II. In many cases, those who did not fire were willing to risk great danger to rescue comrades, get ammunition, or run messages. And studies by army psychiatrists show that the biggest cause of combat defeats in the European theater of World War II was the fear of killing other people and not, as many might think, the fear of being killed (or wounded), which came in second place[44][48].

It is worth noting that Marshall's conclusions are sometimes criticized[49]. However, as American publicist and former Lieutenant Colonel Dave Grossman writes, the US Armed Forces have widely accepted them. Although Marshall's methodology may not meet rigorous modern standards, that does not mean he lied, and every available, parallel, scholarly study validates his basic findings. In support

of his words, Grossman cites such war researchers as Ardant du Picq, John Keegan, Richard Holmes, and Paddy Griffith. The evidence they and many other researchers provide is compiled in his book “On Killing: The Psychological Cost of Learning to Kill in War and Society”, which is on the curriculum of many American institutions and the U.S. Marine Corps Commandant's Reading List. According to Grossman, in the realms of criminal justice, psychology, sociology, and peace studies programs, the possible existence of an innate resistance to killing, in most healthy citizens, is widely accepted[44][50].

There is some criticism towards Grossman as well. For example, his idea that video games make people more violent and train them to be killers has been shown to be unfounded. And his promotion of military training for police officers, including training them to kill, has been criticized for the fact that it could lead to more police violence against ordinary citizens[51][52][53][54]. But none of this is relevant to the current topic. Grossman may be a controversial person who is wrong about some things, but his position on the existence of resistance to killing is well-founded[Author's note].

The only thing worth mentioning, apart from what has already been said, is the criticism from anthropologist Michael Ghiglieri. He is a proponent of the idea that humans have an instinct to commit murder, rape, and genocide, developed over millions of years of evolution. And those who argue otherwise, including Grossman, in his opinion, simply do not understand biology. But in a review of his book “The Dark Side of Man: Tracing the Origins of Male Violence”, anthropologist Brian Ferguson writes that it is full of arguments by analogy, sweeping generalizations, and one-sided presentations. It also puts forward major misinformation that is inconsistent with the literature on the topic of violence, according to which the decision to kill in men is triggered by just one chemical, testosterone. However, Ferguson praises Ghiglieri for the fact that his book was skillfully written to convince people who are already primed to believe men are bad to the bone[55][56]. Now, having dealt with the critique, we can continue to explore the topic of resistance to killing.

Back in the middle of the 19th century, French army officer and military theorist Charles Ardant du Picq conducted his own research – a survey among other officers, who told him that many soldiers simply shoot in the air without aiming[57]. And the book “Soldiers” by John Keegan and Richard Holmes provides one interesting example. At the beginning of the 18th century, at the Battle of Belgrade, there was a case when two imperial battalions fired at Turkish enemies until they approached them at a distance of only 30 paces. However, as a result, they were able to kill only 32 Turkish soldiers. At the same time, an experiment conducted a little earlier in the Prussian army showed that soldiers hit non-living targets from a distance of 225 yards (205 meters) in 25% of cases, and from a distance of 75 yards (68 meters) – in 60% of cases[58]. With a potential hit rate of well over 50% at the average combat ranges of that era, the killing rate should have been hundreds per minute, instead of one or two. The weak link between the killing potential and the killing capability was the soldier who, when faced with a living opponent instead of a target, simply fired over his head[44]. Military theorist and historian Paddy Griffith makes the same conclusion, arguing that only a small percentage of the musketeers were actually attempting to shoot at the enemy while the rest stood bravely in line firing above the enemy's heads or did not fire at all[59].

Grossman notes that researchers such as Marshall, Keegan, Holmes, and Griffith provide many cases where soldiers, when confronted face-to-face on the battlefield, simply refused to shoot each other and split apart. **Looking another person in the face, seeing their eyes and fear, being in a situation where it is necessary to kill not a generalized enemy but a specific individual, it becomes extremely difficult to deny their humanity**[44].

The Battle of Gettysburg, the bloodiest battle of the American Civil War, is quite a demonstrative example. Of the approximately 170,000 soldiers involved, approximately 7,000 died, and after the battle, more than 27,000 abandoned muskets were found, 90% of which were loaded, and 12,000

muskets were loaded multiple times. As Canadian historian, journalist, and retired naval officer Gwyn Dyer writes, this could mean that most of the soldiers on both sides were loading their muskets, perhaps even pretending to shoot if someone nearby actually fired, but couldn't fire themselves. And many of those who did shoot most likely did not aim at the enemy[60][45]. Of course, some might say that the soldiers simply made mistakes in the use of weapons. But even if, despite all the endless hours of training, you do accidentally double-load a musket, you shoot it anyway, and the first load simply pushes out the second load. And in the rare event of a weapon breaking, you can pick up another one. But that's not what actually happened, and it is doubtful that 12,000 men from both sides made the exact same mistake[44].

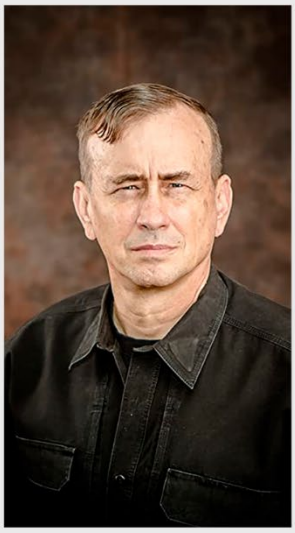
Dyer also cites one interesting fact from the statistics of the US Air Force. Less than 1% of pilots accounted for about 40% of downed enemy aircraft. Most of the pilots did not shoot down anyone and did not even try to shoot down. In addition, when the US Air Force tried to identify commonalities among their World War II aces, it was found that they had been involved in a lot of fights as children. And they were not just bullies who, as a rule, avoided real fights, they were exactly “fighters”[60][44].

Looking back at how many victims some wars, and especially World War II, had, it is difficult to agree that only 2% of soldiers actually killed their enemies. However, this can be explained by distancing, which allows soldiers not to perceive their potential victims as real and concrete people. Dyer notes that strong resistance to killing was not observed in artillerymen, bomber crew members, naval personnel, and machine gunners, who, without seeing their target, were able to convince themselves that they did not kill anyone at all[60][44].

It should also be noted that soldier training after World War II began to take into account the existence of resistance to killing. They were made more effective, and the number of soldiers shooting in combat increased a lot (although this still doesn't tell us anything about how many of them actually aim at the enemy). However, soldiers who do find themselves capable of killing after such training are later unable to cope with what they have done and begin to suffer serious psychological trauma. The cost in the form of post-traumatic stress disorder (PTSD) after killing is, in most cases, unavoidable. It is pertinent to recall the words of military historian Richard Gabriel, who has studied the issue of psychological trauma in soldiers, that the cost of war is usually measured in dollars, lost production, or the number of soldiers killed or wounded, but rarely in terms of individual suffering[44][46][61].

The traumatic impact of war on the human psyche is also confirmed by the prevalence of suicide among veterans[46][61]. An illustrative example is that since 2001, about 7,000 soldiers have died in US military operations in Iraq and Afghanistan. At the same time, by 2021, about 30,000 veterans committed suicide. Participation in military operations increases the risk of suicide by 50%[62].

At the end, it is worth noting that there is a statement that roughly 80% of males choose to avoid violent conflict. If forced into violent conflict, they just do not fight, although present. The 20% left does not reject violence as a behavioral option. Nevertheless, the main part is probably defensive only, that is, they use violence only if compelled to. Finally, about 1% adopts an offensive elementary strategy. Historical and statistical facts confirm the existence of a ratio noncombatants : defensive combatants : offensive combatants. Roughly, this ratio looks like 80:19:1[45]. This statement is mentioned by researcher Johan M. G. van der Dennen, who has also done a good job collecting evidence on resistance to killing. However, its primary source is an “unpublished manuscript” that cannot be found, so we will leave it to your judgment[Author's note].



Dave Grossman
American publicist
and former Lieutenant Colonel.

There is within most men an intense resistance to killing their fellow man. A resistance so strong that, in many circumstances, soldiers on the battlefield will die before they can overcome it.

The average and healthy individual has such an inner and usually unrealized resistance towards killing a fellow man that he will not of his own volition take life if it is possible to turn away from that responsibility.

We cannot help but come away with an image of war as one of the most horrifying and traumatic acts a human being can participate in. War is an environment that will psychologically debilitate 98 percent of all who participate in it for any length of time. And the 2 percent who are not driven insane by war appear to have already been insane – aggressive psychopaths – before coming to the battlefield.

Image source: **Antiviolence.io**

S.L.A. Marshall
American military commander,
brigadier general, historian.

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4. How many people participate in committing genocides

We can look at the horror of the Pol Pot regime, which led to the deaths of almost a quarter of Cambodian population. Or we can look at the genocide of the Tutsi people in Rwanda, which is usually blamed on the entire Hutu people, using terms such as “criminal population”. However, in assessing such phenomena as war or genocide, one should definitely not rely on subjective feelings, where it would be better to carry out detailed calculations.

It is known that the Khmer Rouge exterminated about 1.8 million Cambodians between 1975 and 1979. Khmer Rouge forces in 1975 consisted of 55 to 70 thousand people, in 1976 – 72 thousand people, and in 1979 – 80 thousand people. And the population of Cambodia was about 7.3 to 7.9 million at the beginning of the genocide[63][64][65][66][67][68]. If we take the ratio of Khmer Rouge to Cambodian population aged 15 to 64 (it was 55% of the total population), we get an estimate of less than 2% of the genocide perpetrators[Author's note].

Based on the most widely accepted studies, between 500,000 and 662,000 Tutsis died as a result of the genocide in Rwanda, some estimates reach up to 800,000 dead[69][70]. So how many Hutus took part in the genocide? One study suggests that the number of murderers should be 50,000. It also states that the genocide was not a spontaneous eruption of tribal hatreds, as it was portrayed by the Western media, this was a coordinated attack by a small core with no more than two dozen leaders and no more than 100,000 of their henchmen in the state machinery (including the military)[71]. Another study estimates the number of participants in the genocide (those who committed murder attempts, murder, rape, torture, and other forms of serious violence) from 175,000 to 210,000 people[72]. The maximum estimates of the number of those who committed at least one act of genocidal violence reach 234,000 people[73].

What does this mean? The vast majority of the Hutu people, and even the majority of their active adult (aged 18 to 54) male population, which was about 1.26 million people, did not take any violent part in the genocide. The worst possible measure of such participation we can get is if we take the ratio of the maximum estimate of genocidal violence perpetrators to the active adult male Hutu population – it is

almost 19%. While this is an extremely high and extraordinary figure, there is still no question of a “criminal population” and collective guilt. And we should not forget that this is still the worst possible figure, and in fact, some of the violent offenders were not part of the active adult male Hutu population (but estimating their exact number is problematic). If we take the ratio of the maximum estimate of violent offenders to the entire active adult Hutu population, which was about 2.6 million people, we get 9%. And if we take the low estimate (175,000), we get less than 7%[72][Author's note].

It is worth noting some important considerations. The study estimating the number of murderers in the Rwandan genocide at 50,000 people states that it is not impossible that even 25,000 people could kill hundreds of thousands, if not a million civilians in 100 days. Think about it – in order for such a scenario to become a reality, one murderer needs to commit only one murder every two and a half days[71]. There is also evidence that in one of the Rwandan military camps there were 2,000 well-trained soldiers, and of these, just 40 people could kill up to 1,000 Tutsis in 20 minutes[74][75].

It is also worth noting cases where one individual personally killed thousands of people at once. For example, the Croatian war criminal Petar Brzica killed up to 1360 Serbs in one night[76]. And the NKVD officer Vasily Mikhailovich Blokhin shot up to 20,000 people in his entire service[77]. Such cases only confirm the fact that the murderers, in the presence of an unlimited opportunity to murder, will personally commit dozens, hundreds, and possibly thousands of murders. Accordingly, we should always expect that the number of murderers relative to the number of murdered will be quite small[Author's note].

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5. What kind of people commit violent crimes and harm others

According to one Swedish study, **the 1% of the population is responsible for 63% of all violent crimes**. The sample of this study consisted of 2,393,765 individuals over a time period of 32 years. Murder, assault, robbery, threats, a gross violation of an individual's integrity, kidnapping, arson, intimidation, unlawful coercion, and illegal confinement were categorized as violent crimes (including attempts to commit them when applicable). Only 93,462 (i.e., 3.9%) out of all individuals considered committed at least one such crime, among which 21,530 individuals (i.e., 0.9%) committed from 3 to 10 crimes and 2,812 (i.e., 0.1%) more than 10 crimes. In total, they committed 234,383 violent crimes, or 2.5 crimes per one criminal[78].

Crime, including violent crime, does not have a universal and biologically determined relationship with age. Although in practice the main share of crimes is committed at the age of 15–25, after which criminal activity decreases, this is more explained not by biological but by social factors (creating a family, finding a legal income, etc.)[79]. However, the vast majority of people never commit premeditated violent attacks anyway, especially those that cause serious harm. But who is the violent minority? These are people with psychopathic predispositions!

In one study, 98 forensic men charged with violent crimes showed an average PCL-R score of 21.4 out of 40. And only 9 individuals (9.2%) had a psychopathy score below 10[80]. A similar Swedish study of 43 men, 74.4% of whom were charged with violent crimes, showed an average psychopathy score of 23.08[81]. For murderers on death row in California, the average psychopathy score was 23.31. Only 15% of the individuals had a score of 10 or less. Some of these offenders had no official criminal history prior to their capital crimes, were contrite, apologetic, and remorseful during their court proceedings, and generally engaged in normative conduct for the majority of their adult lives. These are people who most would view as “salvageable.” Individuals with higher psychopathy scores fared

more poorly. And among the five people who scored a maximum of 40 points were the most violent criminals – serial sexual murderers[82].

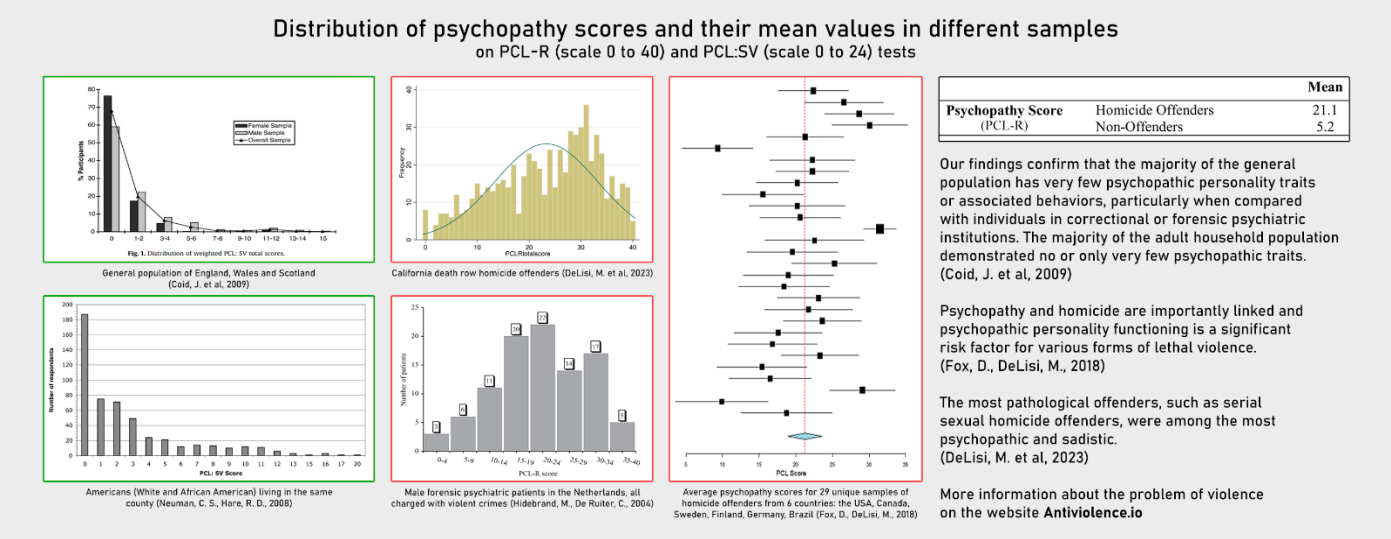
Also, one study provides a meta-analysis of 22 studies with 29 unique samples of homicide offenders from 6 countries: the USA, Canada, Sweden, Finland, Germany, and Brazil. It found that **the average murderer's PCL-R score is 21.1 out of 40**. At the same time, **for people who do not commit crimes, it is only 5.2**[83]. In general, the majority of the population is characterized by low levels or complete absence of psychopathic traits and corresponding behaviors. According to non-criminal and non-psychiatric samples, more than 80–90% of people have low levels of psychopathy. And only 1–2% of people have high levels of psychopathy (above 12 out of 24 on the PCL:SV test)[84][85].

Clinical psychopaths, scoring from 25–30 on the PCL-R test and from 18 on the PCL:SV test, make up no more than 1% of people in society. However, among incarcerated criminals, they can be as high as 25%. It has also been found that if people are divided into two equal groups on the basis of their PCL:SV scores, individuals in the higher-scoring group are 10 times more likely to commit violent crimes. Estimates of the economic burden of crime resulting from clinical psychopathy as of 2020 range from $245.5 billion to $1.59 trillion per year (1.1–7.4% of GDP) in the case of the United States and from CAD12.14 to CAD53 billion per year (0.5–2.3% of GDP) in the case of Canada[86][87].

An increased number of psychopathic individuals may show up in some professions, for example, managers and CEOs. According to various studies and claims, between 3% and 21% of people among their representatives are psychopaths[88][89]. It was also discovered that if a company employs non-psychopathic managers (whose psychopathy scores are less than 9 out of 16 on the PM-MRV test), the overwhelming majority of employees (89.3%) will assess its activities as **socially and environmentally responsible**. However, this figure drops to 66% in the presence of dysfunctional managers (scored at 9–12 points) and to 52.5% in the presence of psychopathic managers (scored at more than 12 points). In addition, the majority of employees (79.6%) think that companies with non-psychopathic managers show commitment to them, but this figure drops to as low as 23.7% if psychopathic managers are present. In general, it is a widely known fact that psychopathic individuals working in companies are prone to white-collar crime, such as embezzlement and fraud. These results demonstrate the importance of **the problem of corporate psychopaths, who may make ethically questionable decisions in pursuit of their own benefit and have a negative impact on their company and society as a whole**[90][91].

The average PCL-R score among army and police officers convicted of crimes against humanity – mass arrests, tortures, and murders – is 21.06. **State violators of human rights have an extreme disposition for self-serving, callous, and ruthless treatment of others, without guilt or remorse**[92].

It is worth noting that the more psychopathic an individual is, the more proactive (instrumental) aggressive behavior can be expected in the crimes they commit. At the same time, non-psychopathic individuals are characterized only by reactive (affective) aggression. As research demonstrates, committing just one act of proactive violence is already associated with increased psychopathic predispositions of the offender compared to offenders whose actions were purely reactive[93][94][95]. It is crucial to understand that even among murderers there are non-psychopathic individuals, but this happens due to affective reasons. Whereas **in the case of premeditated and cold-blooded violent crimes, we can always expect increased psychopathic predispositions in their perpetrators**[Author's note].



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6. What famous experiments say about violence

“Universe 25”

“Universe 25” was a famous experiment in which ethologist John Calhoun created a habitat for mice with an abundance of resources. Initially, the population of mice grew rapidly up to 2200 individuals, but after that, mice began to refuse to reproduce, their number began to decline, and in less than 5 years, the population completely died out. Drawing an analogy to human society, Calhoun concluded that exceeding a certain population density leads to degradation of the behavior of individuals, breakdown of social bonds, and later to complete extinction[96].

This experiment was criticized for making many mistakes, for example, the living conditions of the mice were actually far from ideal. But few people are aware of the fact that the main mistake was the structure of the habitat, which allowed the 65 largest males to forcefully block all others from accessing females and food. This caused a chain of events that led to the extinction of the population. In more well-organized habitats, where it is impossible to establish such a violent dominance hierarchy, a population of mice can live for decades[97]. This experiment demonstrates well why, under certain conditions, violence is a threat to the survival of the population and is not an evolutionarily stable strategy[Author's note].

The Milgram experiment

In 1963, psychologist Stanley Milgram decided to conduct a series of experiments to clarify the question of how much suffering ordinary people are willing to inflict on other, completely innocent people, if it is part of their duties. The subjects, being in the role of “teacher,” had to punish the “learner” with an electric shock in cases of incorrect performance of tasks. Starting at 15 volts, with each new error, they had to increase the shock by 15 volts up to a maximum of 450 volts, after which they had to continue to use the maximum shock. Of course, the learner, being an actor, did not receive a shock and only pretended to be in pain. In different versions of the experiment, the learner and the teacher were separated either by a soundproof wall (i.e., the teacher could only hear the learner knocking on the wall) or by an ordinary one (i.e., the teacher could hear screams, requests to stop, or complaints about alleged problems with the heart).

According to published data, one of the series of experiments showed that 26 subjects out of 40 (65%) increased the voltage up to 450 volts and did not stop delivering electric shocks until the researcher gave the order to end the experiment. And only 5 subjects (12.5%) stopped at 300 volts when their victims showed the first signs of discontent[98]. Reproduction of the experiment in different conditions and with different people, as stated, showed approximately the same results[99].

However, we will see a very different result if we take into account the data from the Milgram experiment that has not been published. After analyzing 656 post-experimental questionnaires, the researchers found that 56% of the participants actually stopped the experiment at one point or another because they believed the person behind the wall was actually in pain. Another study, looking at 91 interviews conducted immediately after the experiments, found that among 46 participants who continued the experiment after the victim was dissatisfied, 33 participants (72%) did so because they simply did not believe that the victim was really in pain (which was actually the case – the actor only imitated it)[100][101][102].

This experiment also has serious methodological problems. As we know, the researchers put strong pressure on the “teachers,” often going beyond the protocol of the experiment. There is also no evidence that all people perceive authority in the same way. And finally, the person who played the “learner” was not a professional actor, the experiment was based on the deception of the subject, and there is reason to believe that unconsciously most people would recognize real pain or its absence[103]. These problems also make any attempt to repeat the Milgram experiment questionable[Author's note].

The Stanford Prison Experiment

Another well-known experiment about violence is the Stanford Prison Experiment. The participants of this experiment were divided into two groups: the guards and the prisoners, who lived in a simulated prison. Soon after the start of the experiment, the guards began to brutally abuse the prisoners, with a third of them showing sadistic tendencies. Two prisoners were even removed from the experiment due to the psychological trauma they received, and the experiment itself was stopped ahead of time for ethical reasons.

For almost 50 years, many believed in the truthfulness of these results. However, the experiment turned out to be completely untenable. The guards were aware of the results that were expected from them and received clear instructions. Potential participants knew in advance what awaited them in the experiment and what roles they would play. And after a while, some of them said that they had just “played” their role. One of the expelled participants later admitted that he was only faking psychosis because he did not like the experiment and wanted to leave as soon as possible. Finally, the data researchers published were far from complete; out of the 150 hours of the experiment, only 10% have been recorded (6 hours of video and 15 hours of audio). Also, very little personal data about the participants was collected, which could affect the course of the experiment[104][105].

Conclusions about the experiments on violence

Such experiments very often create myths around themselves that do not correspond to reality. In the case of “Universe 25,” the method of conducting the experiment and the interpretation of the results were incorrect. Much of the data from the Milgram experiment was simply hidden in the archive. And the Stanford prison experiment turned out to be a staged production with a predetermined result. Therefore, it is always worth questioning each such experiment. It is likely that the most popular interpretation will be fundamentally wrong.

It is worth remembering another experiment – the performance of the artist Marina Abramovic called “Rhythm 0,” in which she completely surrendered to the will of the audience, allowing them to freely use 72 objects and her body. As a result, for 6 hours of the performance, she was brutally tortured and even almost shot. It was concluded that all people are cruel, and under suitable conditions, this cruelty will surely break out.

So far, there are no refutations of this experiment. But it can be assumed that it was either staged, like the Stanford prison experiment, with which it is sometimes compared, or the audience was unrepresentative, or cruel people were specially selected as the audience (in many of her performances, Abramovich deliberately put herself in danger and almost died several times)[Author's note]. At least Abramovich's past performances could determine the audience and its expectations, and the environment she created and the objects she selected set the context of what was happening, quite probably also reflecting the hidden desires of Abramovich, about whom this performance speaks as a manipulative person[103]. Note that such assumptions can be put forward for any experiment that allegedly proves the violent nature and cruelty of a human[Author's note].

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7. Violence draws too much attention to itself

Sometimes it is stated that not a single day in human history has passed without violence and military conflicts. So, it should be a natural phenomenon for humans and human society. However, this opinion is based more on the subjective evaluation of events taking place in the world than on real data, as well as on the excessive visibility of violence against the background of all other events.

There is one illustrative example of how violence can attract significant attention: 69% of Americans believe that domestic violence is a common problem among American football players. This belief is based on media scandals unfolding around players who have actually committed violence. But if we rely on statistics and not on subjective feelings, it turns out that in the families of American football players, domestic violence occurs almost 2 times less often than on average in American families. At the same time, there is a serious problem of domestic violence in the families of police officers; in them, it occurs up to 4 times more often than on average. However, this is information that is often not publicized and investigated[106][107][108][109][110][111].

Observing violence makes people believe that it is common. But to give a real assessment, one should rely only on real data and not on arbitrary statements[Author's note].

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8. Misconceptions of dystopian literature on the nature of violence

Many dystopian stories create the false impression that a peaceful person, totally incapable of committing violent attacks, must necessarily be a passive and unmotivated individual. Of course, aggressive stimulus can be important for an individual in many activities. But one should not equate functional aggression with violence.

In Stanislaw Lem's “Return from the Stars,” in order to maintain a peaceful society, people are treated with a procedure called “betrization,” designed to neutralize aggressive impulses in the brain and strengthen the self-preservation instinct. But in reality, people do not necessarily need to have no aggressive impulses or strong fear for their lives to be absolutely peaceful and non-psychopathic. They only need to have strong reflexes and emotions that will impose inhibitory limits on aggression,

causing them to have an inner resistance to harming other people. Lem appears to have been mistaken in his understanding of the real nature of violence.

Another book called “A Clockwork Orange” by Anthony Burgess is based on the author's view that all human beings have an inner drive to commit violence, provoked by “original sin,” and to take away an individual's freedom to choose whether or not to commit violence is a sinful act. Obviously, a work based on a view that normalizes violence is not something we can take seriously. Many people have a strong inner resistance to committing violence, and they certainly do not look like the protagonist of this work after brainwashing that made him unable to defend himself and listen to his favorite music.

As we can see, representations of fictional works about the nature of violence can be extremely misleading. This is always worth mentioning when someone cites them as an argument[Author's note].

III. The Theory of the Violence Inhibition Mechanism

With plenty of evidence that in many circumstances aggressive behavior is restrained and that normally people have a strong inner resistance to killing, we can proceed to an explanation of this phenomenon. To understand the evolutionary reasons for its emergence, we will first look at the theory of intraspecific aggression inhibitions in animals, after which we will move on to the theory of the violence inhibition mechanism in humans.

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1. Evolution of intraspecific aggression inhibitions in animals

In interspecific interactions, the role of aggression is quite obvious, for example, in predation and defense. And it is also important in intraspecific relationships, for example, in the division of territory, in the competition for the possibility to reproduce, as well as in the establishment and maintenance of social hierarchy.

Nevertheless, do not make the mistake of looking at aggression in isolation from external factors. The two most important of these factors are the presence of strong innate weapons in conspecifics and their lack of opportunity to escape from each other (due to a limited area of habitat, social behavior, or other reasons), which leads to frequent conflict situations. The more pronounced these two factors are, the greater the risks aggressive behavior creates. As a result, its unrestrained forms cease to be an evolutionarily stable strategy of behavior as they begin to interfere with survival, and natural selection directs towards the development of strong restraints, preventing the infliction of serious harm and killing between conspecifics.

Observations of animal behavior support this conclusion. The concept of aggression inhibitions was first formulated by the ethologist Konrad Lorenz. According to his theory, they are most developed in those species which members are able to easily (with a single peck or bite) kill an individual of approximately their own size. Describing his own observations of wolves, Lorenz showed how aggression inhibitions are activated when one wolf demonstrates to another a gesture of submission or vulnerable parts of its body, such as the neck or belly. As a result, a petrified aggressor cannot continue the attack. Also, observations of ravens showed that they do not peck out each other's eyes, even during fights[21][22].

The ethologist Irenaus Eibl-Eibesfeldt listed many such observations from various researchers[23]. Fiddler crabs, due to their anatomical features, do not open their claws in fights wide enough to injure an opponent[112][113]. Many species of fish, lizards, and mammals are characterized by the ritualization of fights. A noteworthy example is oryx antelopes, which carefully handle their sharp horns in fights with other oryx but at the same time use them to the full extent in defense against lions[114]. It is also worth mentioning venomous snakes, many of which squirm, bloat, and push each other during fights but do not bite or even display their weapons[23][115]. Even very primitive creatures have a similar mechanism. So, jellyfish have a chemical blocker that prevents stinging a conspecific. At the same time, all other living beings are stung automatically[116].

Aggression is less inhibited in weakly armed species. Compared to ravens, turtledoves with a less sharp beak can even kill a conspecific if it is deprived of the opportunity to escape (for example, when placed in a cage). Under natural conditions, conflicts do not threaten the survival of turtledoves in any way, they are unable to kill a conspecific quickly, and it can easily escape. Animals with a solitary lifestyle are also quite aggressive. For example, conflicts cannot threaten the survival of polar bears or jaguars, which, out of the breeding season, rarely cross each other's paths for the resulting fights to have any effect on the population as a whole[21][22].

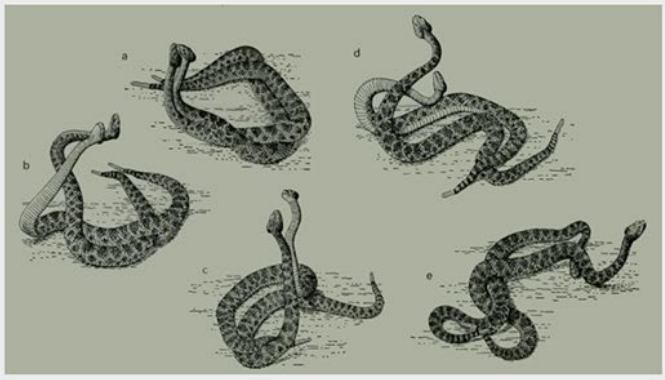
Other selection factors may also lead to a decrease in aggressive behavior in a population. For example, there is a quite famous story from biologist Robert Sapolsky, who has been observing baboons for decades. Alpha males in the observed flock behaved quite aggressively towards their kin. But at one point, the flock discovered a garbage pit, which only these alpha males could approach since they had to fight with the alpha males of another flock for it. At one point, they caught an infection in the garbage pit, after which they died, leaving the flock without overly aggressive individuals. And the most interesting begins further – even though the flock continued to have a hierarchy, fights and violence between its members stopped, and this result was preserved for decades when the original males had already died of old age[117]. Also note that in the case of pygmy chimpanzees (bonobos), it is common for females to gather in groups to defend themselves against aggressive males (obviously, this would not favor aggression in natural selection)[31].

We should also not forget such a factor of selection against aggressive behavior as inclusive fitness. The basis of evolution is the preservation and spread of genes. And one and the same gene, carriers of which kill each other, has fewer chances for this. Accordingly, it is evolutionarily beneficial to develop mechanisms that restrain aggression between individuals sharing enough of the same genes. Among other things, **inclusive fitness may be one of the evolutionary factors that led to the development of aggression inhibitions in humans**, despite the fact that, according to Lorenz, due to weak innate weapons, humans have rather weak aggression inhibitions that do not cover the use of the artificial weapons they have created[21][29][118]. Lorenz was concerned about the consequences of humans becoming the most armed species on the planet. However, due to evolutionary reasons, the vast majority of humans fundamentally cannot be psychopathic individuals; human society is only able to exist if their number is limited[119][120]. The average and healthy individual still has a strong inner resistance to killing, and “it gives us cause to believe that there may just be hope for mankind after all”[44].

It is necessary to take into account that some unknown and still unstudied factors can weaken aggression inhibitions, as it happens, for example, in lions, which are strongly armed and social species, but sometimes kill even members of their own pride. Also, Lorenz's theoretical developments are sometimes criticized, for example, there is criticism of his hydraulic model of aggression, which states that organisms have a tendency to accumulate aggressive “energy” that is later released in the form of aggressive behavior even in the absence of external stimuli to provoke it; among other things, this explains spontaneous acts of aggression. However, Lorenz himself recognized the limitations of

this model and that it has a number of shortcomings. In addition, there are studies confirming the existence of such a mechanism. Moreover, the criticism of Lorenz does not concern his theory of aggression inhibitions[22][121][122][Author's note].

Finally, it is necessary to mention the parochial altruism hypothesis. Based on it, aggression is restrained only between members of one group, and intragroup altruism even contributes to the growth of aggression towards members of other, “alien” groups[123][124]. This hypothesis, at first glance, contradicts the theory of aggression inhibitions. However, this is not necessarily the case, as we will see in the sixth topic of Chapter Four.



Examples of ritualization of intraspecific fights in animals that prevents them from harming each other

Image source: antiviolence.io

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2. Self-defense as an evolutionarily stable strategy of behavior

As we discovered earlier, committing violent attacks is not an evolutionarily stable strategy of behavior for species, members of which have strong innate weapons and lack the opportunity to avoid each other. The most aggressive individuals that often initiate attacks will also die more often due to the weapons and resistance of their victims. As a result, there will be evolutionary pressure to develop inhibitions of intraspecific aggression, or so-called violence inhibitor, since individuals lacking such a mechanism will be less likely to pass on their genes further. But it is worth understanding one important point: this will not work if the victim of the attack cannot use its weapons in self-defense. This leads us to the assumption that in the presence of an immediate threat to life, the function of the violence inhibitor should be suppressed for a short period of time, sufficient to fight back against the aggressor[Author's note].

This assumption is consistent with the concept of the **threat superiority effect**, which we considered at the beginning of our study. According to it, the presence of a threat in the environment and social signals leads to the activation of defense mechanisms and the suppression of other ongoing cognitive processes. In behavior, this effect is often manifested by a fight-or-flight response[11][12][13].

Also, computer simulations of evolutionary processes have shown that in most cases, neither the belligerent strategy (hawk), which consists in making attacks, nor the timid strategy (dove), which consists in retreating when attacked, are not as evolutionarily stable strategies as the retaliator strategy, which means to behave non-aggressively but in the event of an attack to fight back. **Timid individuals cannot compete with aggressive individuals, but aggressive individuals risk getting hurt in fights. Therefore, the mixed retaliator strategy is the most stable**[125][126][127][30].

3. The Violence Inhibition Mechanism in humans

Neuroscientist James Blair suggested that humans possess aggression inhibitions similar to those observed in many animals in intraspecific relationships, and proposed the **Violence Inhibition Mechanism** (VIM) model. In developing the VIM model, he also aimed to explain the development of empathy as a result of the functioning of this mechanism and the emergence of psychopathy as a result of its dysfunction[128][129].

VIM is a cognitive mechanism that is directly activated in individuals by the observation of non-verbal distress cues from other individuals, such as a sad facial expression or crying. This causes an aversive reaction, and the stronger the distress cues, the stronger the corresponding reaction: a slight sadness on the face will cause only partial aversion, but screams and sobbing can completely stop the aggressor. Also, VIM is not just a mechanism consisting of an unconditioned reflex (aversive reaction) triggered by an unconditioned stimulus (distress cues). Blair argues that through the process of conditioning (the formation of conditioned reflexes), it becomes a cognitive prerequisite for the development of three aspects of morality: the moral emotions (i.e., sympathy, guilt, remorse, and empathy), the inhibition of violence, and the ability to distinguish between moral and conventional transgressions.

During normal development, individuals will witness other individuals displaying distress cues, resulting in the activation of VIM. On many occasions, the observers may role take with the distressed victims in order to understand their state. In this way, an association of the distress cues that activate VIM with the state of the victim is formed. This association becomes the conditioned stimulus for the conditioned reflex. As a result, the individual becomes able to show an empathic response only by thinking about someone else's distress. In line with this, film sequences where the victims of violence talked about their experience while not showing any distress cues evoked a corresponding physiological reaction in the audience[130][131][132][129].

The inhibition of violence works similarly. As early as childhood (at the age of 4–7 years), normally developing individuals will experience the activation of VIM and an aversive reaction due to the victim's distress cues as soon as they attempt to commit an act of violence (or even take possessions from another child without their permission)[133]. Over time, even the very thought of committing violence will begin to lead to this reaction, and the probability that the individual will behave violently will gradually decrease.

The activation of VIM also acts as a mediator in distinguishing between moral and conventional transgressions. The observation of moral transgressions – actions that consist in harming people – and the subsequent victims' distress cues will eventually lead to the development of the conditioned reflex that activates VIM. In turn, social transgressions that do not lead to harm but only consist in violating established social norms will not be associated with distress cues, which means that the corresponding experience will not lead to the development of the conditioned reflex. This is how the individual becomes capable of identifying moral transgressions in various actions. Of course, individuals without VIM can evaluate a moral transgression as a bad act if someone teaches them that it is bad. However, in their assessment, they will refer to the words of other people without experiencing an aversive reaction to causing harm.

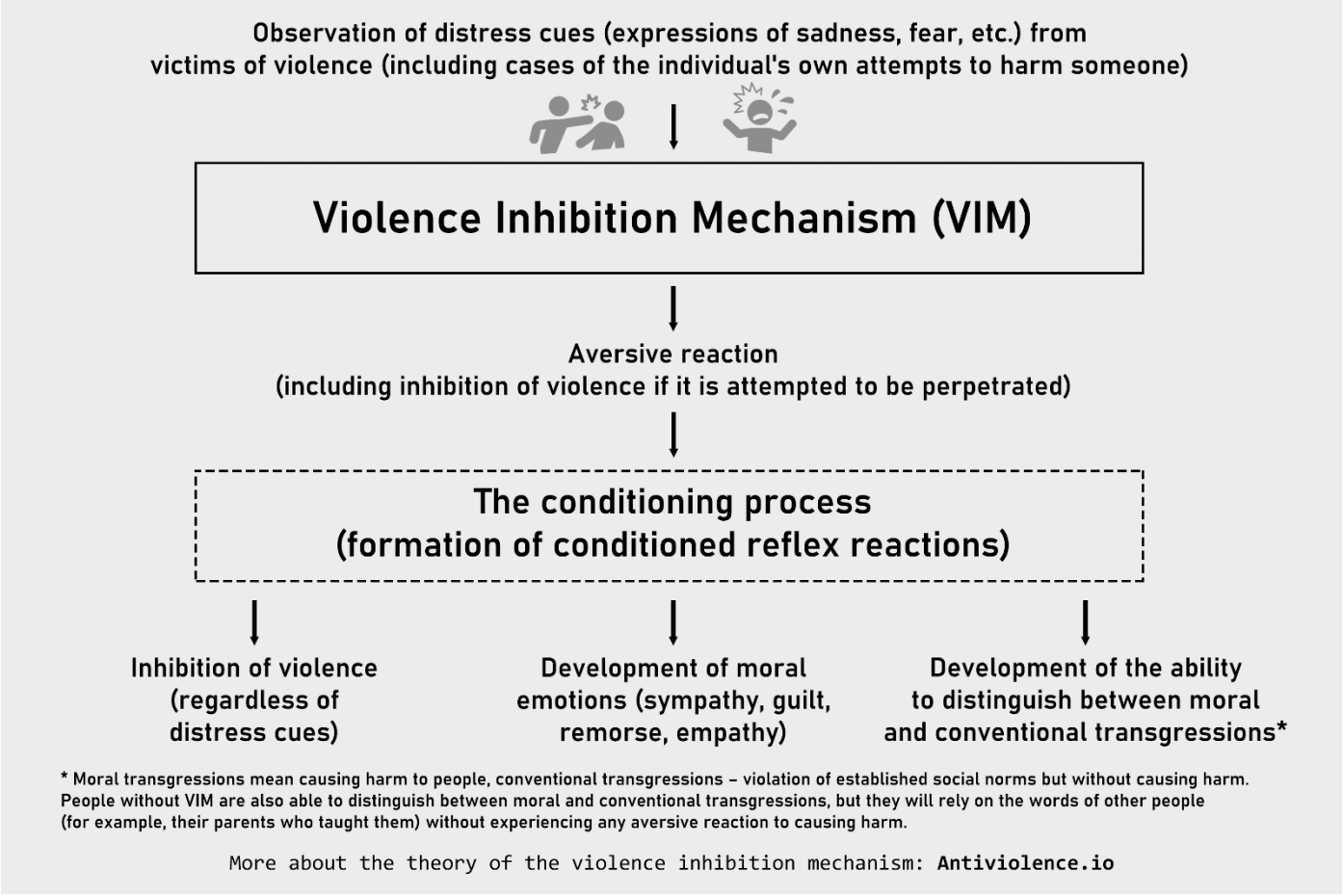
To support the validity of his model, Blair cites the results of many studies. Children with a predisposition to psychopathy and adult psychopaths do show a poor ability to distinguish between moral and social transgressions. The same applies to children with conduct disorder. In addition, and

in line with the VIM position, adult psychopaths show reduced comprehension of situations likely to induce guilt, although they show appropriate comprehension of happiness, sadness, and even complex social emotions such as embarrassment. Moreover, children and adults with psychopathy show pronounced impairment in processing sad and fearful facial and vocal expressions. What is important to note is that the ability to distinguish between moral and social transgressions is not associated with a bad upbringing and abuse in childhood[129][134][135][136][137][138][139][140][141][142][143][144][145][146].

Many other studies also support this model. For example, aggressive behavior from callous and unemotional traits (CU traits), the presence of which in children is a prerequisite for psychopathy in adulthood, is associated with a poor ability to recognize fearful facial expressions and fearful body postures[147]. Children with high scores of CU traits also experience problems in recognizing expressions of sadness, and children with high scores of conduct disorder – in recognizing expressions of fear[148]. Schizophrenics with a history of violent crime differ from non-violent schizophrenics in their lower ability to recognize facial expressions, especially expressions of fear[149]. People with high affective psychopathy scores were found to be less able to distinguish genuine distress cues from staged ones. At the same time, this effect did not extend to other emotions, such as happiness, anger, or disgust; it was specific to distress cues[150]. Even the most up-to-date research shows that difficulties in recognizing fear and sadness in childhood are associated with greater propensity for proactive aggression[151].

Finally, it is worth noting that psychopathy as a result of VIM dysfunction is a mental disorder by Wakefield's criteria: a condition is a disorder if it leads to harm to oneself or others and is associated with the failure of some internal mechanism to perform a function for which it was biologically designed (i.e., naturally selected)[152][153].

The VIM model does not provide a complete explanation of the nature of aggression regulation, so Blair later expanded it and developed the Integrated Emotion System (IES) model, which considers the neurophysiological aspects of this process[134]. However, it still confirms the presence of intraspecific aggression inhibitions in humans and gives a general idea of how they work[Author's note].



IV. Neurophysiology and genetics of aggression regulation

Although the theory of the violence inhibition mechanism can explain a lot on its own, a more in-depth understanding of it requires an explanation of how this mechanism works from a neurophysiological and genetic perspective. Among other things, this is particularly important because it will allow us to identify a direction for the development of therapeutic approaches aimed at treating violence inhibitor dysfunction in individuals who suffer from it.

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1. The role of serotonin in the inhibition of aggression and how this process can be activated

A study on moral judgments and behavior suggests that a mechanism similar to Blair's VIM operates for imagined harms. The neurotransmitter serotonin (5-HT) is responsible for the functioning of this mechanism, and the model developed in the study explains its parallel role in the inhibition of actual harm (in the case of aggression) and imagined harm (in the case of moral judgments)[154]. Many other studies also confirm the key role of serotonin in the modulation of aggression in animals and humans[5][155][156][157][158].

Various experiments conducted on mice and rats showed that some agonists of 5-HT_{1A} and 5-HT_{1B} receptors (these chemical compounds cause a biological response in receptors or, put simply, activate them) are able to suppress offensive aggression while not affecting defensive behavior or other forms of activity.

Drugs such as TFMPP and eltoprazine, when administered into the lateral ventricles of the brain, had a significant effect on reducing the aggressiveness of mice and rats in the resident-intruder paradigm while not affecting defensive behavior. This effect was associated with the activation of postsynaptic 5-HT_{1B} receptors[159]. In limited human trials, eltoprazine resulted in some reduction of aggression in patients with dementia, psychotic disorders, and mental retardation, with minimal or no side effects[160]. Administration of a selective 5-HT_{1A} agonist called F15599 into the ventro-orbital prefrontal cortex of male mice reduced the manifestation of intense elements of aggression, biting during attacks, as well as lateral threat postures (demonstrating aggressive intentions), without affecting non-intense manifestations of aggression and other forms of behavior[161].

Administration of the 5-HT_{1B} agonist CP-94253 into the ventro-orbital prefrontal cortex of mice also reduced the frequency of attack bites and the manifestation of lateral threat postures[162]. The importance of 5-HT_{1B} receptors in the inhibition of aggression was also demonstrated in an experiment where administration of the agonist anpirtoline reduced the manifestation of various forms of aggression in mice, including aggression from social interaction with an opponent and aggression from frustration[163]. A highly selective effect compared to other agonists was shown by the administration of the 5-HT_{1A} agonist alnespirone to rats. Again, this did not affect the defensive behavior in the case when the individual encountered an aggressive conspecific, as well as other forms of behavior[164].

Importantly, experiments on the treatment of hostility and aggression in violent offenders with naratriptan, which is a full agonist of 5-$HT_{1B/1D}$ receptors and a partial agonist of 5-HT_{1A} receptors, were once suggested[165]. And the similar drug zolmitriptan was successful in selectively reducing aggression in mice and attenuating alcohol-heightened aggression in humans[166][167]. It has also been suggested that vortioxetine, which is a full agonist of 5-HT_{1A} receptors and a partial agonist of 5-HT_{1B} receptors (like many antidepressants, it is also a selective serotonin reuptake inhibitor), may be an effective anti-aggressive agent. This is supported, among other things, by preliminary results obtained on a small number of patients[158][168].

Administration of bioactive compounds of natural origin can lead to a decrease in aggressive behavior. For example, injection and oral administration of the herbal extract mixture Kamishoyosan reduce aggressiveness in mice. This effect is associated with the activation of 5-HT_{1A} receptors and improvements in the regulation of the serotonergic system[169]. And oral administration of the Yokukansan mixture, also a 5-HT_{1A} agonist, was tested in aggressive confrontations between mice and had a selective anti-aggressive effect on them. It was also found that the active ingredient in this mixture is geissoschizine methyl ether from the extract of Uncaria rhynchophylla[170]. Inhalation of linalool, a component of a large number of essential oils, which is a 5-HT_{1A} agonist, also leads to a selective anti-aggressive effect in animals[171][172].

The serotonergic (5-HT) system, including 5-HT_{1A} and 5-HT_{1B} receptors, plays a key role in the modulation of aggression in various species, including humans. It should be noted that in the case of 5-HT_{1A} receptors, the activation of postsynaptic receptors in the amygdala, frontal cortex, and hypothalamus leads to the inhibition of aggression, while the activation of presynaptic receptors inhibits the functioning of the 5-HT system itself, which, on the contrary, can lead to aggressive behavior[155].

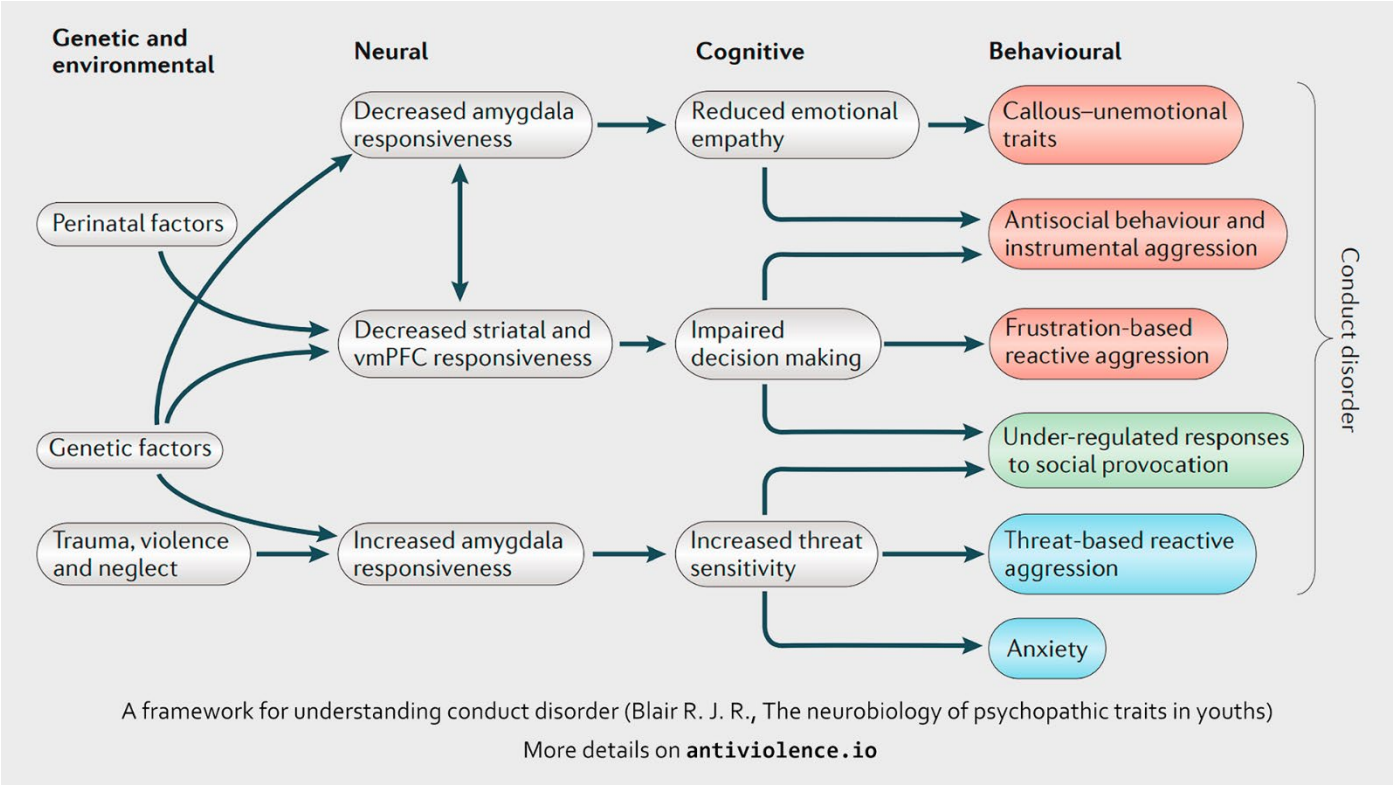
2. Association of impairments in some brain regions with a lack of aggression regulation

In the regulation of aggression, the main role is played by the amygdala, which is involved in the formation of emotions and conditioned reflex reactions, and the ventromedial prefrontal cortex (or orbitofrontal cortex), which is involved in the decision-making process[134][156][157][173]. Together, they regulate the neural circuit that mediates reactive aggression (this circuit includes the medial hypothalamus and periaqueductal gray) and the subcortical systems that respond to threats (among them, the basal ganglia, including the striatum). Both impairments of the amygdala and the orbitofrontal cortex can lead to increased levels of reactive aggression. At the same time, the orbitofrontal cortex does not inhibit reactive aggression but only increases or decreases the chance of triggering this process, depending on the surrounding social signals. The neural circuit that mediates proactive aggression is regulated by the amygdala (it includes the temporal lobe, which processes information, as well as the striatum and premotor cortex, which are necessary for the implementation of actual behavior)[134][173].

Psychopaths are characterized by an increased level of proactive aggression. They also show impairments in empathic response and regulation of fear-related behavior, which are the result of amygdala dysfunction. But psychopaths are not like other patients with amygdala dysfunction. Other functions of the amygdala, such as the formation of stimulus-reward associations and certain aspects of social cognition, are only mildly or not impaired at all in individuals with psychopathy. The reason for this may be the presence of genetic anomalies, which, instead of leading to global disruption of the functioning of the amygdala, have a more selective effect, disrupting the function of specific neurotransmitters[134].

Based on the framework for understanding conduct disorder, we get the following: genetic factors lead to decreased amygdala responsiveness, which in turn reduces the empathic response, and this is the cause of aggression from CU traits, antisocial behavior, and instrumental aggression. Another cause of antisocial behavior and instrumental aggression, as well as under-regulated responses to social provocations and reactive aggression based on frustration, is an impairment in the ability to make decisions, which in turn comes from decreased responsiveness of the striatum and ventromedial prefrontal cortex. Genetic influence also plays a significant role here. In addition, the emergence of dysfunction in one of the brain regions is associated with dysfunction in others. Thus, with decreased responsiveness of the amygdala, one would expect decreased responsiveness of the striatum and ventromedial prefrontal cortex. Environmental factors such as trauma, exposure to violence, and neglect in upbringing only play a role in increased amygdala responsiveness, resulting in greater sensitivity to threats. However, even here, genetic influence is involved, as it is present in all the components considered by this framework[174].

From the neurophysiological evidence, it is also worth noting that measurement of the binding potential of 5-HT_{1B} receptors using positron emission tomography demonstrated its lower levels in the anterior cingulate cortex, orbitofrontal cortex, and striatum in people with a high level of aggressive traits. In the case of the striatum, a connection with psychopathic traits was also found[175].



A framework for understanding conduct disorder (Blair R. J. R., The neurobiology of psychopathic traits in youths)

More details on **antiviolence.io**

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3. Genetics of aggression regulation

Various studies show dozens of genes that affect certain aspects of offensive aggression. However, it is evident that for its effective regulation, the number of genes and neurotransmitters involved in this process must be limited. And evidence ranging from evolutionary ancientry to pharmacological and clinical data points to the key role of the serotonergic (5-HT) system[155].

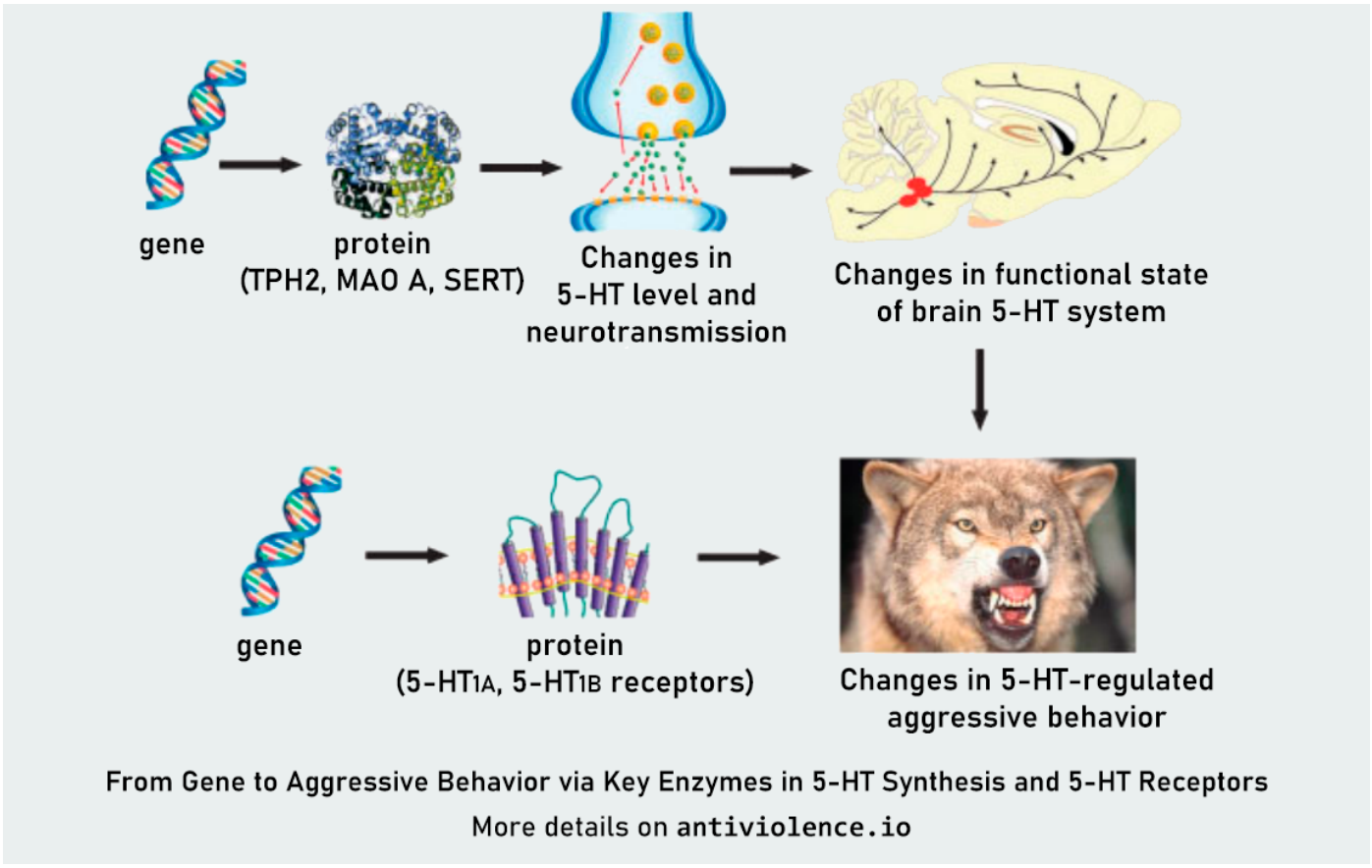
We will begin with the genes for 5-HT_{1A} and 5-HT_{1B} receptors (in humans, these are the HTR1A gene, localized on chromosome 5, and the HTR1B gene, localized on chromosome 6). Knockout of the 5-HT_{1B} gene in mice resulted in increased aggressiveness in their behavior. Knockout of the 5-HT_{1A} gene did not give such a result; however, this can be explained by the functional difference between the corresponding presynaptic and postsynaptic receptors, which we discussed earlier, as the gene knockout affects both types of receptors at once[155][176]. The fact that antisocial alcoholism (leading to impulsive and aggressive behavior) is associated with some alleles of the 5-HT_{1B} gene is an example of clear evidence of the role of serotonin receptors in the modulation of aggression in humans. Compared with a control group of healthy individuals and non-aggressive alcoholics, antisocial alcoholism in Finns was significantly associated with the HTR1B H861C polymorphism and, to some extent, with the HTR1B D6S284 polymorphism. Both polymorphisms were also significantly associated with antisocial alcoholism in the studied American Indian tribe[177]. Also, the HTR1B rs11568817 genotypes were found to be different between groups of children with high and low scores of CU traits[178].

In addition to the 5-HT_{1A} and 5-HT_{1B} genes, it is also important to consider three more genes: TPH2, MAOA (also known as the “warrior gene”), and SLC6A4 (SERT). Their respective enzymes are involved in 5-HT synthesis in the brain. In the case of the TPH2 gene, the C1473G allele may play an important role. Mice of the 129×1/SvJ strain, homozygous for the 1473C (C/C) allele, were more

aggressive than mice of the BALB/cJ strain, homozygous for the 1473G (G/G) allele. In the case of rats and silver foxes, in which low aggressiveness was achieved by selection, increased activity of the TPH enzyme as well as higher concentrations of serotonin and its metabolite 5-HIAA were observed[155][179][180]. It should also be noted that the knockout of the TPH2 gene in rats led to aggressive behavior from a decrease in the sensitivity of 5-HT_{1A} receptors[181].

Mice with MAOA gene knockout showed increased aggressiveness and decreased 5-HIAA levels, which also indicated a decrease in the function of the 5-HT system. The same can be seen in humans as well. Males from one Dutch family with a point mutation in exon 8 of the MAOA gene showed an increased level of impulsive aggression. Moreover, polymorphisms in the promoter region of the MAOA gene were associated with antisocial alcoholism in German subjects. Many other studies also demonstrate that mutations in the MAOA gene are associated with abnormal male aggression[155][182][183][184][185][186][187].

The short variant (S) of the promoter region (5-HTTLPR) of the serotonin transporter gene SLC6A4 (SERT) leads to a decrease in the expression of the 5-HTT protein. For the homozygous allele (S/S), a significant association with aggressive behavior and a tendency for violence in humans has been shown in various samples: children, adults, adopted children, cocaine addicts, and patients with personality disorders[188][189][190][191][192][193].



4. How genetics mediates environmental influences on aggressive behavior

One of the studies showed that the stability in reactive aggression from childhood to adolescence could be explained by genetics (48%) as well as shared (11%) and nonshared (41%) environmental influences, whereas the stability in proactive aggression was primarily genetically (85%) mediated[194]. According to a study of 7-year-old children, the presence of both callous-unemotional traits and antisocial behavior has an extremely high level of heredity (81%). At the same time, if children have only antisocial behavior, a moderate level of heredity is observed (30%)[195].

The difference between these two groups of children lies in the fact that the members of the first group, who have callous-unemotional traits, are capable of premeditated antisocial behavior and violence. They have a high risk of developing psychopathy and violent criminality in adulthood, and they are also difficult to educate. Their condition is more aggravated than the condition of children from the second group, whose behavior problems are not so serious and long-term. It is also worth mentioning that at older ages, a strong genetically mediated stability of callous-unemotional traits is still preserved. Thus, between 17 and 24 years, it is 58%[196].

Interesting things were found in a study of the role of genotype in violence due to childhood abuse. Carriers of the high-activity allele of the MAOA gene did not become more violent than average. But carriers of the low-activity allele were 4 times more likely to commit rapes, robberies, and assaults in adulthood. Of course, by itself, the low-activity allele of this gene does not make a person more violent but creates such a risk depending on environmental influences[197][198].

An assessment of the psychopathy scores (using the PCL:YV and PCL-R tests) in male prisoners has shown that two to three times higher scores in adolescents and one and a half times higher scores in adults can be observed if they are carriers of the T/T genotype of the HTR1B-rs13212041 polymorphism, in comparison with carriers of the C/C and C/T genotypes. Also, childhood abuse additionally increases the risk of high levels of psychopathy in carriers of the T/T genotype by two to three times. As we can see, genetics in this case is a dynamic factor of development that mediates the influence of the environment[199].

A study of different variants of the serotonin transporter gene (SLC6A4, encoding the 5-HTT protein) in young people with different socioeconomic status (based on the income and professional status of their parents) showed that homozygosity for the long allele of this gene significantly increased the risk of narcissistic and callous-unemotional traits in the case of low status. At the same time, the short allele was associated with impulsive behavior (regardless of socioeconomic status). It seems that different alleles of this gene carry risks for different forms of aggression[200].

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5. What approaches to the treatment of aggressive behavior are ineffective

Dopamine receptor antagonists (the drugs that block them) such as chlorpromazine and haloperidol are widely used in the treatment of aggressive patients, especially those with psychotic disorders. However, their effect is sedative, and in animals, they impair defensive behavior. This and other side effects limit their usefulness in the treatment of aggression. The use of barbiturates and benzodiazepines that affect GABA inhibitory neurotransmission faces the same problems. Beta-blockers such as propranolol and nadolol are effective in patients with organic brain syndromes and chronic psychosis, but they can also lead to side effects. Selective serotonin reuptake inhibitors (SSRIs) have shown efficacy in reducing aggressiveness in patients with borderline personality disorder, but they affect other behaviors and lead to unwanted side effects. Finally, agonists and

antagonists of 5-HT_2 receptors are also able to reduce aggressiveness; however, the former lead to side effects, while the influence of the latter is still poorly understood[201][202][203][204][205][206][207][208].

It should be noted that 5-HT_{2A} agonists include many psychedelics known for their anti-aggressive and empathic effects. In one experiment, the administration of psilocybin even resulted in a sustained reduction in patients' predisposition to authoritarian political views. However, the administration of psychedelics leads to a number of side effects, and their empathic effect may be related to 5-HT_{1A} receptors, for which they are often partial agonists[209][210][211][212].

Psychotherapeutic approaches have demonstrated the possibility of significantly reducing psychopathic predispositions and increasing affective (emotional) empathy. However, in some of their forms, particularly those aimed at restraining aggression by improving self-control, there is a risk that the problem will only worsen as the patient learns to commit acts of violence more effectively and thoughtfully. In addition, psychotherapy for such a severe disorder as psychopathy is too time-consuming; the number of therapeutic sessions required can reach dozens, and the entire process can last up to several years. It is worth highlighting the assumption that psychotherapy can be effective in dealing with violent youth and school bullies with high levels of psychopathy, but only at the most intensive level of intervention (at least 4 sessions per week for a year)[213][214][215][216]. Obviously, psychotherapy requires too much time and effort to rely solely on it[Author's note].

Based on this, 5-HT_{1A} and 5-HT_{1B} agonists seem to be the most promising drugs in the treatment of aggressive behavior since they have a highly selective effect without affecting defensive behavior or other forms of activity. This opinion is also shared by some researchers who support the resumption of research on the development of such anti-aggressive agents (or so-called “serenics”)[217]. They claim that “modern research suggests that aggressive behavior should be studied as a separate functional disorder” and “it is hoped that new insights into the neurobiology of aggression will reveal novel avenues for treatment of this destructive and costly behavior”[218][219]. There are also suggestions of therapy for aggressive and antisocial behavior through gene therapy, for example, targeting the MAOA gene[220].

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6. The issue of parochial altruism: does oxytocin affect aggression

Oxytocin is a hormone that plays a crucial role in prosocial behaviors such as trust building, pair bonding, and mothering[221][222][223]. In intragroup relationships, oxytocin contributes to the establishment of altruism, uniting and coordinating the actions of individual members of the group. But as it is believed, in the case of intergroup interactions, this only increases aggressiveness since a cohesive group is ready to fight more fiercely with other, “alien” groups, to which members oxytocin does not stimulate altruism. The emergence of wars between different groups of people is often explained by this phenomenon called parochial altruism[123][124].

At first glance, this explanation does not fit well, if not completely contradicts the theory of the violence inhibition mechanism. But we can see that there is no contradiction at all if we look at how the two mechanisms interact at the neurophysiological level. The serotonergic system, including 5-HT_{1A} and 5-HT_{1B} receptors, is involved in the regulation of oxytocin secretion[224]. In one of the experiments, administration of the 5-HT_{1A} agonist to mice not only had an anti-aggressive effect on them but also promoted prosocial behavior due to oxytocin secretion. Pretreatment with an oxytocin receptor antagonist (a drug that blocks it) suppressed prosocial behavior but did not reduce the anti-aggressive effect in any way[225].

It can be concluded that the regulation of aggression and stimulation of prosocial behavior, although significantly overlapping, are still different functions, explained by the work of different neurophysiological mechanisms. Therefore, there should not necessarily be a contradiction between the theory of the violence inhibition mechanism and the parochial altruism hypothesis[Author's note].

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7. How the pro-aggressive effect of testosterone is being constrained

One study investigated the hypothesis that the pro-aggressive effect of the male sex hormone testosterone arises from the suppression of serotonergic system function and disproved it. Testosterone activation of aggression and serotonin inhibition of aggression work independently of each other. And the influence of serotonin on testosterone-induced aggression appears to be mediated by a parallel inhibitory pathway. It is assumed that this influence occurs in brain regions such as the medial amygdala, the hypothalamus, the prefrontal cortex, and the lateral septum, which are known to be involved in the regulation of aggression and where a high density of both sex steroid receptors and serotonergic nerve terminals is observed[226].

This influence from the serotonergic system is obviously necessary to restrain aggression so that it does not cease to be an adaptive and functional behavior. And since testosterone does not disrupt its function, it cannot be the cause of uninhibited aggression just by itself. Of course, it increases aggressiveness, but only within the natural inhibitory control[Author's note].

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8. The link between dopamine and aggression

As studies show, the tendency to impulsive aggression can be explained by a dysfunctional interaction between the serotonergic and dopamine systems in the prefrontal cortex. At the same time, it is the lack of serotonin that predisposes a person to impulsive aggression, while dopamine hyperfunction aggravates this condition[227][228]. Serotonin is known to inhibit the production of dopamine, meaning low serotonin levels can lead to an overabundance of dopamine. Serotonin inhibits impulsive behavior, while dopamine promotes it by decreasing emotional regulation[229][230][231]. Increased dopamine activity due to serotonin dysfunction can also stimulate a person to search for new sensations, including by resorting to violent actions[232].

Also, one study directly links violent behavior in children and psychopathic predispositions in adults with altered dopamine system activity. And the cause of an excess of dopamine, which leads to increased aggressiveness, is a dysfunction of the serotonergic system, which should regulate the production of dopamine and inhibit aggressive impulses[233].

It is worth considering the case when a person has a low level of dopamine, for example, due to genetic predispositions. This should reduce the impulsiveness of behavior, and experiments on animals have demonstrated that blocking the production of dopamine decreases their aggressiveness upon contact with conspecifics[234]. But decreased dopamine level can lead a person to need more stimulation in order to experience the same level of pleasure. This encourages individuals to look for additional sources of pleasure, such as substance use, risky behavior, or even violence[235].

Research shows that impulse disorders such as pyromania and kleptomania are associated with the release of extra dopamine, and this can cause a person to become addicted to certain criminal activities over time. Similarly, this can work with serial killers, who seek the “ultimate thrill”[236][237]. It is

also suggested that serial killers may need more stimulation in order to get the same pleasure that ordinary people or non-violent criminals experience[238][239].

V. The solution to the problem of violence and the social consequences of its eradication

With a direction for developing therapies aimed at correcting the dysfunction of the violence inhibition mechanism, we can make concrete proposals and consider how they can be implemented. It will also be important to look at what social changes the widespread practice of such therapies might lead to.

This Chapter largely demonstrates the author's ideas.

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1. The solution to the problem of violence and potential areas of its application

We now know that many animals, and even humans, have an innate mechanism that can suppress offensive aggression without affecting defensive behavior or other forms of activity. Understanding the neurophysiological and genetic aspects of this mechanism can contribute to the development of several solutions aimed at both the temporary and permanent eradication of violence from the behavior of individuals by correcting and strengthening the function of the violence inhibition mechanism.

The most obvious solution is to create a **pharmacological drug** based on an agonist of 5-HT_{1A} and/or 5-HT_{1B} receptors that will have the most selective effect, activating the violence inhibitor without affecting other neurophysiological functions. This drug can be used in the treatment of patients suffering from increased aggressiveness. Research on 5-$HT_{1A/1B}$ agonists for this purpose has already been undertaken in the past, and some researchers are currently supporting its resumption. It can also be administered to violent criminals as an alternative to imprisonment or other forms of punishment and correction.

Perhaps a less selective but stronger and fast-acting version of such a drug can be used in some situations as a safe alternative to tranquilizers. It may be used when there is a need to quickly calm down an overly aggressive patient or remotely stop a person with obvious violent intentions using, for example, a dart gun or aerial spraying.

Another option is to create a **gene therapy drug**. This is a new approach to the treatment of congenital and genetically determined pathologies. The best-known example of gene therapy is the treatment of spinal muscular atrophy in children with the drug Zolgensma, which provides a new copy of the SMN1 gene[240]. There is also the suggestion of gene therapy for aggressive and antisocial behavior through targeting the MAOA gene[220].

To fix a dysfunctional violence inhibitor, we need to perform brain gene therapy, which is also a realistic task. For example, scientists have recently been able to develop gene therapy to treat a serious genetic disorder that leads to a lack of key neurotransmitters (dopamine and serotonin) and causes mental retardation, an inability to fully control body movements, decreased muscle tone,

seizures, and other severe symptoms. During experimental treatment, seven patients aged four to nine years got rid of seizures, began to try to speak and smile, and two of them were even able to walk with assistance, which was previously considered fundamentally impossible for such a diagnosis[241]. Also, the possibility of gene therapy for neurological and neuropsychiatric disorders with a genetic origin is being actively studied[242].

At the moment, the most promising solution in brain gene therapy is the use of adeno-associated viral vectors as a deliverer of the correct gene variant to the necessary cells of the nervous system. One of the recent studies demonstrated the possibility of effective administration of such gene therapy to large mammals[243]. Another study showed how its use in the nucleus accumbens to restore the expression of the p11 protein gene that binds 5-HT_{1B} and 5-HT_4 receptors can help treat depression[244]. Also, in a mouse model of autism-like behavior, the administration of a vector with the 5-HT_{1A} receptor gene into the hippocampus was tested to achieve its overexpression. Although this did not lead to an overall improvement in the condition, there was a significant reduction in anxiety in the tested individuals[245]. An alternative proposal could be to use a combination of the technologies CRISPR/Cas9, which allows the replacement of some DNA sequences with others, and iPSC, which consists in the creation and application of artificial stem cells, or any other similar combination[220].

We now need to consider methods for detecting dysfunction in the violence inhibition mechanism. An electrophysiological study of this mechanism in relation to aggressive traits showed their inverse association with the Stop-P300 amplitude responses to the observation of facial distress cues. And in relation to CU traits, it showed their inverse association with the N170 amplitude responses to the observation of all facial expressions. These amplitudes may provide useful electrophysiological markers for detecting impairments in the violence inhibitor function[15][246]. Through measuring the level of the serotonin metabolite 5-HIAA in the cerebrospinal fluid, it is possible to determine impairments in the serotonergic system leading to aggressive behavior[247]. Also, studies show the possibility of creating portable genetic tests, and low-cost portable genetic labs, such as Bento Lab, are already available for purchase[248][249]. Such tools can be very useful in diagnosing genetic predispositions to violence inhibitor dysfunction. And don't forget about questionnaires such as Robert Hare's “Psychopathy Checklist Revised” (PCL-R, screening version PCL:SV, and youth version PCL:YV), the Levenson Self-Report Psychopathy Scale, “The Inventory of Callous-Unemotional Traits,” and others, which also show good results in determining the presence of psychopathic traits.

In addition, some data allow us to create automated tools for tentative and preliminary detection of psychopathic predispositions. For example, when participating in an interview, individuals with them exhibit more stationary head positions, focused directly towards the camera or interviewer[250]. It may also be possible to create an AI solution that assesses an individual's potential psychopathy by a variety of physiological indicators that are associated with it, such as less tendency to “contagious” yawning, lower levels of respiratory sinus arrhythmia (heart rate changes in response to respiration), reduced heart rate in a calm state, and others[251][252][253].

Violence inhibitor function testing could be carried out even in children from a very early age. That small percentage of them with dysfunction after just one injection will undergo healthy socialization and be free of the risk of becoming violent individuals for life. The problem of violence will eventually be solved long before it occurs. Society will come closer to achieving **free and non-violent order**, where there is no place for either private manifestations of violence or violence as a method of governing society.

Of course, gene therapy technology is still at the beginning of development and too expensive, but in the future, it may become very affordable, as it was with many other technologies in the past. Now, the main part of the cost of any gene therapy drug is the cost of its development. However, the cost of

creating each subsequent dose in mass production should decrease. It is unlikely that, in this case, the cost of the drug will be higher than the cost of modern vector vaccines.

Another potential solution concerns the **defense sector**. It is technically possible to create a drug based on a self-replicating viral vector that can be transmitted from individual to individual. At the moment, a similar concept is already being used in attempts to create so-called “contagious” vaccines. Once such vaccines were successfully applied to the rabbit population in the fight against two viral diseases[254][255].

Perhaps, based on the current knowledge of the violence inhibition mechanism, it is quite realistic to develop a biological solution that will be the most humane version of a strategic defensive weapon. It can be applied to a hostile army in the event of an attack to enhance the function of the violence inhibitor in its soldiers, resulting in a drastic reduction in its combat effectiveness. In view of the rapid decrease in the cost of biotechnologies, this solution may become available even to small countries that previously could not afford any serious weapons. For societies that have eradicated violence, it could become the primary weapon of deterrence against external threats.

We should understand that the actual application of such a biological solution is extremely risky and **should be avoided**, limited only to its use to deter potential aggressors from attacking. Though, in general, this is still a much more humane type of weapon than the already existing chemical, biological, or nuclear weapons.

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2. Stages and social consequences of eradicating violence in society

The process of eradicating violence through therapeutic correction and strengthening the function of the violence inhibition mechanism in a minority of people with its deficiency will lead to a number of changes in society. It is very important to list these changes so that no one doubts the need to

eradicate violence. It is also important to consider some of the contentious issues associated with this process so that this idea does not acquire any misconceptions.

Obviously, a positive and indisputable consequence of this is the **solution of the problem of violent crime**, which will radically reduce the level of stress in society and help to avoid human victims of violence, as well as the financial and material costs associated with it. This, together with the treatment of aggressive patients in medical institutions, are the very first areas in which this therapy should be applied. Even within the current social system, without the need to change it drastically, such an idea can be accepted as potentially the fastest, easiest, cheapest, and most effective way to solve relevant problems. This is the **first stage** that will demonstrate to the general public and popularize anti-violence therapy. After that, it will not be such a problem to move on to the **second stage**, which involves the widespread practice of testing the violence inhibitor in people.

A controversial point is the potential abuse of such therapy by governments. At first glance, by reducing the level of violence in society, they can selectively increase their violent potential by not applying such therapy to some of their agents. Some may even directly pursue the goal of suppressing the violence inhibitor in police officers and military personnel. However, in reality, the result will be the opposite. Governments recruit enforcers from society, and the lower the overall level of violence, the lower their ability to do this.

Ultimately, the following results can be expected:

– Governments will stop using violence to maintain social order and being “stationary bandits” that use their positions for their own benefit. They will have to replace violence with other methods, such as reputational and financial sanctions applied to citizens who violate social norms. Thus, a **free non-violent society** will be achieved, and the institution of statehood will either undergo radical changes, especially in terms of methods of conducting its activities, or be replaced by something more suitable to a free society;

– For the same reason, the **unleashing of military conflicts will become simply impossible**, a non-violent society will not tolerate this, and no one in it will be ready to participate in military attacks.

Another point of contention concerns the ability of non-violent individuals and societies to defend themselves against violent threats. But there is nothing to worry about:

– It must be remembered that **defensive aggression or self-defense** in the presence of an immediate threat to life is a natural form of behavior, the violence inhibition mechanism suppresses only offensive aggression and the desire to initiate harm to other people;

– The therapeutic eradication of violence will not be an instant process, creating a completely pacifist society surrounded by potential aggressors. It will take time, during which it can begin to spread around the world, leading to a gradual, multi-generational eradication of violence worldwide. International practice with the prospect of a global reduction in violence will be the **third stage** in the process of its eradication;

– A free non-violent society is able to protect itself from external threats with the help of modern weapons of deterrence, simply making itself an **unprofitable victim**. One of the proposed and available options for such a weapon could be a drug for enhancing the function of the violence inhibitor, working on the principle of a “contagious” vaccine. Of course, the actual application of such a biological solution to attacking armies is extremely risky and should be avoided by using it solely as a

deterrent. However, this is still a much more humane type of weapon than the already existing chemical, biological, or nuclear weapons.

Finally, it is worth noting that in the modern high-tech world, there is a risk of using the achievements of scientific and technological progress for violent aspirations, including the use of weapons of mass destruction. An obvious example of this is nuclear weapons; however, the matter is not limited to them. The threat of bioterrorism using pathogens created in “basement labs” is already quite real, and it is not known what other threats await us in the future. The eradication of violence, in turn, will drastically reduce this risk. Perhaps this will even help to **avoid the potential self-destruction of humanity**. We should always remember what Konrad Lorenz pointed out: being the most armed species on the planet, we are also obliged to possess the strongest inhibitions of aggression.

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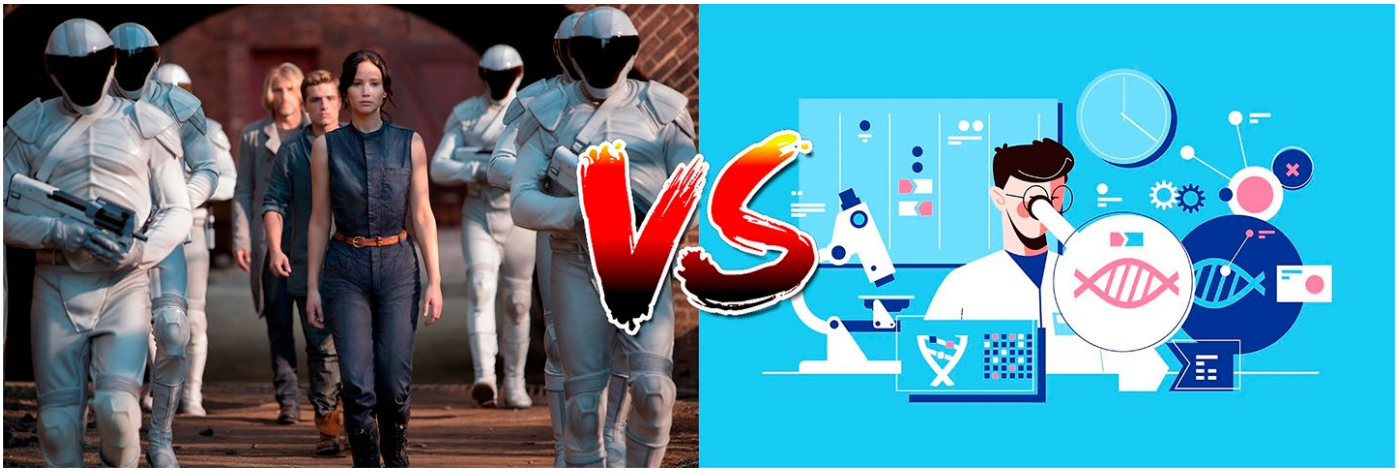
Moral bioenhancement: the only alternative to global totalitarianism and the destruction of humanity



Many existential threats can stand in the way of humanity's long-term existence and prosperity. Natural disasters, such as the eruption of a supervolcano or the fall of a huge asteroid, complex processes over which humans have a partial influence, such as climate change, or purely anthropogenic risks, such as the misuse of biotechnology to create and use pathogens against which human immunity is helpless – these are existential threats that can annihilate all the values that humans have already created and that they and their descendants may create in the future. Therefore, they cannot be overlooked in moral philosophy in general and in bioethics in particular. As researchers

have pointed out, an existential catastrophe would result in a loss of values that has never before occurred in human history, so preventing and mitigating it is the most important imperative our species has ever faced.

It is easy to imagine the solution to preventing natural threats in the form of applying certain technologies that have already been created (we can recall NASA's asteroid orbit deflection test) or may be created in the future. But how are we going to deal with anthropogenic risks, i.e., the potential results of human actions? Let's look at this question in more detail, relying on several studies on the topic of moral bioenhancement and supplementing them with some other ideas and our own considerations[1][2].

The problem of "ultimate harm" and global totalitarianism

There are many scenarios where existential threats can be created by a single individual or a small group of people (terrorist organizations, apocalyptic cults). Causing “ultimate harm” is becoming more and more realistic with the advancement of technology. Particular attention should be paid to the problem of producing new pathogens in “basement labs” that can be easily created and moved (but we should not forget that the potential threats do not end with this).

An illustrative example of the accessibility of biological weapon creation is the scientific work published in 2018 by a group of Canadian researchers on recreating the causative agent of the horsepox virus, the closest relative of smallpox, one of the most deadly diseases in the history of humanity. The cost of this project is estimated at about $100,000. The researchers sought to create a new, even safer, vaccine against smallpox. However, a significant part of the scientific community was critical of this study and accused the journal PLOS One of allowing the publication of work that could help terrorists in the creation of bioweapons[3]. And back in 2011, virologist Yoshihiro Kawaoka was conducting experiments to create a flu vaccine. He was trying to recreate the strain of the virus that preceded the 2009–2010 epidemic to see how the virus had changed over the course of 4 years. As a result, he modified it so that it became resistant to human immunity. Of course, his work began to be criticized because humanity would be helpless if the virus leaked out of the lab[4]. Also, in 2023, in California, an illegal medical lab that contained about 1,000 mice, hundreds of unknown chemicals, refrigerators and freezers, vials of biohazardous materials, including blood, incubators, and at least 20 infectious agents, including SARS-CoV-2, HIV, and the herpes virus, was shut down[5]. This shows that covert experiments on dangerous pathogens by private subjects are implementable.

Such a problem seems unsolvable without drastically expanding surveillance and reducing individual freedoms, which would inevitably turn even fairly liberal states into totalitarian dictatorships. In addition, there is a claim that the risk of global catastrophes that are very distant in time, such as climate change, may require a high level of cooperation and unity of purpose among people that democratic and liberal societies cannot achieve because of the relaxed system of international deliberation and decision-making (think of the UN, an organization that is very concerned in words but in many situations does not take significant action in practice). This means that the totalitarian world has a better chance to cope with such threats if they and the methods of their solution are identified.

It should also be mentioned that the totalitarianism of the future will be extremely resilient compared to any historical example. The development of the understanding of social and psychological mechanisms, as well as means of surveillance, to the point of creating molecular nanotechnology, will completely eliminate private space from the gaze of the state. Increasing longevity will help alleviate leadership succession crises; one will not be able to count on a dictator simply dying sooner or later.

Also, the biotechnology of the future could be used in unethical ways to brainwash people. At least considerations in such a direction already exist. For example, a study from the Naval Postgraduate School in Monterey, California, suggests using oxytocin (by spraying it into the air) for police and military purposes, including scenarios in which people who are protesting or rebelling against the authorities must be stimulated to build trust and make agreements[6]. Of course, the efficacy of such an idea is debatable, but we will not rule out the scenario that totalitarian regimes of the future will resort to similar practices that will work.

The idea of moral bioenhancement and researchers' views on it

There can only be one alternative: moral bioenhancement. But although this is the most correct solution, many of the authors who promote it, most likely due to unawareness or a lack of understanding of the violence inhibition mechanism theory, have proposed extremely unreasonable practical implementations. Persson and Savulescu focus too much on criticizing liberal states. Based on their inability to justify in front of society and implement a program of moral bioenhancement, these authors lean towards rather authoritarian positions, as noted by researchers Rakic and Cirkovic. However, their proposal to create on a voluntary basis “morally enhanced post-persons” is also rather unreasonable. They strongly emphasize that the decisions and actions of post-persons should be considered superior to those of ordinary people because of their higher moral status. This also seems like an authoritarian stance, especially considering that although they describe post-persons as not inclined to harm ordinary people, it is allowed in certain situations where post-persons would consider it the right thing to do. And to allow such a thing would literally contradict the presence of a biologically enhanced morality, if such a morality is to be equated with a strongly expressed and fully functioning violence inhibition mechanism.

These authors also did not identify a concrete direction for moral bioenhancement. Although the first two authors note that enhancing the function of the serotonergic and oxytocin systems increases the human propensity for altruism and empathy (and this statement is consistent with the violence inhibitor theory), it has not been noted that even now, many people demonstrate this propensity strongly. These authors fall back on the parochial altruism hypothesis, according to which, biologically, humans are only adapted to live in very small societies and, in more global terms, have rather weak morality. However, this view will only be partially true if we take into account the violence inhibitor theory, according to which there are still mechanisms of aggression inhibition at the level of intraspecies interactions, not only intragroup ones. The other two authors make a clear distinction between ordinary people and bioenhanced post-persons, as if there is no single person whose morality we could take as a standard.

A standard of better morality

As a standard of better morality, one can easily take people without primary psychopathy traits, the prerequisite for the emergence of which is violence inhibitor dysfunction. These people are able to have strong empathy and guilt. Even if they harm another person in some way, they will accept responsibility for it without shifting it to the circumstances or the victim. These people will not lie and manipulate others for personal benefit through the deterioration of their well-being. And there are plenty of people with these characteristics. According to non-criminal and non-psychiatric samples, more than 80–90% of people have low levels of psychopathy[7][8][9][10].

The real problem with the weak morality of current human society is the presence of psychopathically predisposed individuals who, because of the violence inhibitor dysfunction, have no inner resistance to harming others and have underdeveloped social emotions, including empathy and guilt. It is these individuals who, when striving for high social positions, such as CEO of a company or politician, have

no moral problems with “going over the heads” of competitors and others they can profitably exploit. For example, while in society there are no more than 1% of individuals who meet the criteria of clinical psychopathy, among CEOs there are already from 3% to 21% of them[11]. One cannot expect good results from politicians either; civil servant is one of the most psychopathic professions[12].

These individuals, who, having a high social position, pursue purely personal benefits and tolerate causing harm to others, are most likely to be the main obstacle to the establishment of good coordination between different societies in solving global problems. And it is they who, when faced with the need to solve such problems, will prefer to create totalitarian dictatorships rather than promote a moral bioenhancement program.

A proposal for moral bioenhancement in psychopaths and the categorical imperative

According to Baccarini and Malatesti, psychopathic individuals require moral bioenhancement, and moreover, mandatory bioenhancement is permissible[13]. Psychopathic individuals do have a rational preference for living in functional cooperative societies. Although they are prone to manipulations, lies, and even violence, they do not wish to be victims of such behavior from others. As research shows, they react to a dishonest deal with an even greater desire to punish the person who offered it than other people. Despite their problems with moral emotions, they still have the ability to feel outrage.

It can be stated that they expect other people to follow social norms and morals. And referring to Kant's categorical imperative, when prescribing something to other people, you must also prescribe it to yourself if you share with them the same characteristics essential for this prescription. Psychopaths, wanting to cooperate only with people who will not behave antisocially toward them or harm them, should prefer moral bioenhancement for other psychopaths. But since they expect others to be normal, it follows that they are obliged to prescribe the same for themselves.

The solution of these authors may well be called the most correct approach to the implementation of the idea of moral bioenhancement. It only consists in the treatment of a specific pathological state of the human psyche, and it can be easily correlated with objective biological data, specifically with the theory of the violence inhibition mechanism, which makes this solution the most reasonable and acceptable. Moreover, it is sufficient to deal with the problem of existential threats and global totalitarianism.

The covert moral bioenhancement and the question of human freedom

It is important to briefly mention the idea that if a moral bioenhancement program is to be mandatory, it must also be covert. According to Crutchfield, the overt application of such a program will result in some individuals avoiding it, creating the need for some forms of punishment that restrict their freedom and reduce their well-being. At the same time, the covert application of appropriate therapy will not lead to such consequences and is therefore the most humane option. Furthermore, if safe therapy is available, it is not a violation of the individual's freedom. People who have undergone moral bioenhancement are not made less free than others, nor are they forced to carry a greater moral burden than that which everyone else is already obliged to carry[14].

Of course, as Baccarini and Malatesti point out, psychopathy can provide various benefits to the individual, and its treatment can take them away. However, the use of punishments for violent crimes may completely prevent individuals from implementing many of their plans and exclude them from social life. In turn, moral bioenhancement leaves individuals with a wide freedom of action to

implement their plans, imposing only some restrictions. So, moral bioenhancement is preferable to punishments.

At the end, it is worth noting that psychopathic individuals have no reason to fear or resist moral bioenhancement. If they do not currently have the desire to harm other people in practice, then nothing will change in their lives; there will only be a guarantee that such a desire will never arise in the future. If they have such a desire, they should be afraid of punishments for its implementation, which can completely destroy their lives and plans, rather than moral bioenhancement, which will simply bring a small number of mandatory rules into their psyche. And if they cannot see their lives without committing violence, if it is an important value for them, then they must realize that they are a great threat to everyone else, and it is reasonable not to ask them if they are willing or unwilling to undergo the procedure of moral bioenhancement.

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The philosophy of biological voluntarism

Voluntarism is the philosophy according to which **all forms of human activity, agreement, and association should be as free as possible**. It categorically rejects violence as a method of achieving goals. However, being oriented toward nonviolent struggle, it permits the use of defensive actions and self-defense against individuals who have violent intentions and initiate attacks, since it is first of all a philosophy of specifically “non-initiation” of violent attacks.

Voluntarism rejects political methods of struggle as counterproductive and immoral, since achieving a free non-violent society through political instruments would require the initiation of violence. It favors non-political methods of struggle, such as disobedience, education, counter-economics, etc. Ideologically, voluntarism does not designate any particular arrangement of society as obligatory; it only puts forward the necessity of achieving freedom of activity, agreement, and association. Therefore, anyone with any non-authoritarian and non-violent views, including both right-wing and left-wing libertarians, can be a voluntarist.

What would an ideal voluntarist society look like? Trying to imagine it, we will realize that there should be no prerequisites for initiating violence by anyone, and the morality of non-violence should be generally accepted. The aggressive impulses of all its inhabitants must have inhibitory limits; they may be directed toward nonviolent activity or defensive behavior, but in no case toward deliberate harm and assault. All of them should feel inner resistance (psychological discomfort) to the suffering of others, be empathic, and any harm they do, if for some reason this does happen, should cause them to feel a strong sense of guilt. In such a society, no one would violate freedom of activity, agreement, and association.

As we can see, the problem of why we do not yet live in a voluntarist society has a biological basis. Not all humans have a functional and strongly expressed violence inhibition mechanism that gives us the ability to automatically, spontaneously, and reflectively experience the reactions listed above.

However, based on a lot of research, including anthropological and military research, normally it is still functional enough for an individual to experience strong inner resistance to committing violence. And only a few, quite dysfunctional individuals do not experience the slightest resistance even to committing murder; they are also called psychopaths. Such people are only 1–2% of society, although in some samples, such as violent offenders, CEOs, and civil servants, their proportion is much higher, which in itself explains a lot.

Understanding all of this gives us the opportunity to propose a biological approach to the development of the ideas of voluntarism, showing us the ideal to aim for and suggesting concrete approaches in this undertaking. We need to consider violence and psychopathy not as something natural and normal, just socially unacceptable and harmful, but as a pathology and disorder. Moreover, such a condition in an individual meets the Wakefield disorder criteria: it leads to harm to oneself or others and is associated with the failure of some internal mechanism to perform a function for which it was biologically designed (in our case, the violence inhibition mechanism). This means that we need to find and develop cheap, accessible, easily produced and distributed, effective, fast-acting, and safe therapies and practices that restore and enhance the function of the violence inhibitor. We should then administer them to violent and psychopathic individuals as a voluntary practice aimed at improving the individual's capacity for healthy socialization, as an alternative to punishment for prior violent acts, or even as a mandatory measure in defensive actions against individuals who directly express violent intentions and attempt to commit attacks.

The history of the development of anti-aggressive agents for clinical use

The idea that it is possible to selectively eradicate violent behavior exhibited by some individuals is not new. Of course, we know about a large number of animal experiments in different models of aggressive behavior that have shown that some drugs are able to suppress offensive aggression

towards conspecifics without suppressing defensive behavior or other forms of activity. But what about humans? Can the results obtained in animals be transferred to humans, and have there ever been clinical trials on the use of such drugs for the treatment of violent behavior?

There has been at least one major project in the past that aimed to develop a selective anti-aggressive agent[1]. The project was organized by Berend Olivier, a Dutch researcher working at the time for the pharmaceutical company “Duphar,” together with a number of other researchers. The launch of the project in the mid-70s of the past century was prompted by the lack of effective means for “inhibition of destructive behavior without other significant behavioral, psychiatric, or somatic side effects.” The agents already used for this purpose in clinical practice were associated with severe side effects, for example, neuroleptics with tardive dyskinesia (involuntary movements), beta-blockers with hypotension (decreased blood pressure), lithium with renal problems, and most importantly, they did not have a selective effect on behavior.

The necessary effect on animals was produced by agents affecting the serotonergic system. They were also called “serenics.” In 1980, the drug fluprazine was synthesized, which was probably an agonist (leading to activation) of serotonin 1A and 1B receptors. It had potential for development but was later rejected due to toxic effects when administered to rats. In 1984, the closely related drug eltoprazine was selected for further development. In various experiments in mice and rats, including social isolation and resident-intruder paradigms, this drug had a selective anti-aggressive effect that did not impair the social or non-social activity of individuals. It was also safe. It is worth noting that later, in more recent studies, the function of the violence inhibition mechanism in humans would be associated with the serotonergic system[2]. Apparently, a similar mechanism is activated in animals when such agents are used.

In the 90s, a number of pilot clinical trials were conducted using eltoprazine on various groups of patients exhibiting aggressive behavior. The results were as follows:

– on 20 patients with dementia, it was shown that eltoprazine did not lead to improvements in their overall condition but significantly reduced aggression, especially in individuals exhibiting high levels of it, with no side effects;

– eltoprazine showed a similar result in 17 mentally retarded patients, especially in the case of those who exhibited medium to high levels of aggression;

– the same was observed in 23 patients suffering from psychotic and personality disorders; however, a slight decrease in aggression was also observed in the control group taking placebo, and among the side effects, sleep disturbances and anxiety at the end of the treatment were occasionally observed;

– in the case of eltoprazine administration to patients with depression, there was a general improvement in their condition (decrease in depression and increase in mood), and in patients with chronic psychotic and personality disorders, it was shown that combined administration of eltoprazine with neuroleptics has no additional side effects (and causes an anti-aggressive effect in patients with medium to high levels of aggression);

– when eltoprazine was administered to 119 mentally retarded patients, a significant reduction in aggression was also observed in the control group (which consisted of 41 patients), although the results were slightly better in the group taking eltoprazine.

As a result, eltoprazine was shown to be somewhat effective, especially in patients who exhibited high levels of aggression. However, the clinical trials were abandoned at this point. Some problems arose,

such as the observation of improvements in control groups, the limited availability of useful tools to assess patients, and the unwillingness of regulatory agencies to approve medicines for a “non-disease”[1][3]. Of course, we can now easily link violent behavior to a pathology such as violence inhibition mechanism dysfunction and impairments in the serotonergic system in general. But back then, this made the field of aggression risky for clinical research and investment in drug development.

Practically all further experiments in this direction were and still are conducted on animals, and in the case of some agents, they, as before, demonstrate excellent results. Except that we can mention an attempt to start in 2006 clinical trials on the administration of naratriptan, which is a full agonist of serotonin 1B/1D receptors and a partial agonist of serotonin 1A receptors, to violent offenders undergoing psychiatric treatment. It should be noted that Berend Olivier can also be seen among the co-authors of this study. But it was terminated due to the lack of the required number of test subjects[4]. Although triptans definitely have potential in the therapy of violent behavior, given that a drug called zolmitriptan has been successful in selectively reducing aggression in mice and attenuating alcohol-heightened aggression in humans[5][6].

Some researchers have characterized this state of affairs as “calamitous.” At least, that is what Miczek, Faccimodo, Almeida, Bannai, Fish, and Debold said in a study of new pharmacotherapeutic approaches and opportunities for the problem of escalated aggressive behavior[3]. As Tuinier and Verhoeven write in their review of the history of serenic development, “modern research suggests that aggressive behavior should be studied as a separate functional disorder”[7]. And Coccaro, Fanning, Phan, and Lee, in a study of serotonin and impulsive aggression, express hope “that new insights into the neurobiology of aggression will reveal novel avenues for treatment of this destructive and costly behavior”[8].

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The ability to experience empathy and take the perspective of other people in psychopathic individuals

It is generally accepted that psychopathic individuals have little or no empathy. This, of course, makes them cold-blooded and callous, even capable of easily committing murder when there is an appropriate reason and no significant risks. In addition, this lack of empathy has long cast doubt on the possibility of easy and effective treatment for their condition.

However, a study of psychopathic criminals found that they can experience empathy. Not only that, but they had the same level of activation of mirror neurons as healthy individuals. These neurons are responsible for the ability to learn by imitating other people and are thought to be involved in empathy[1].

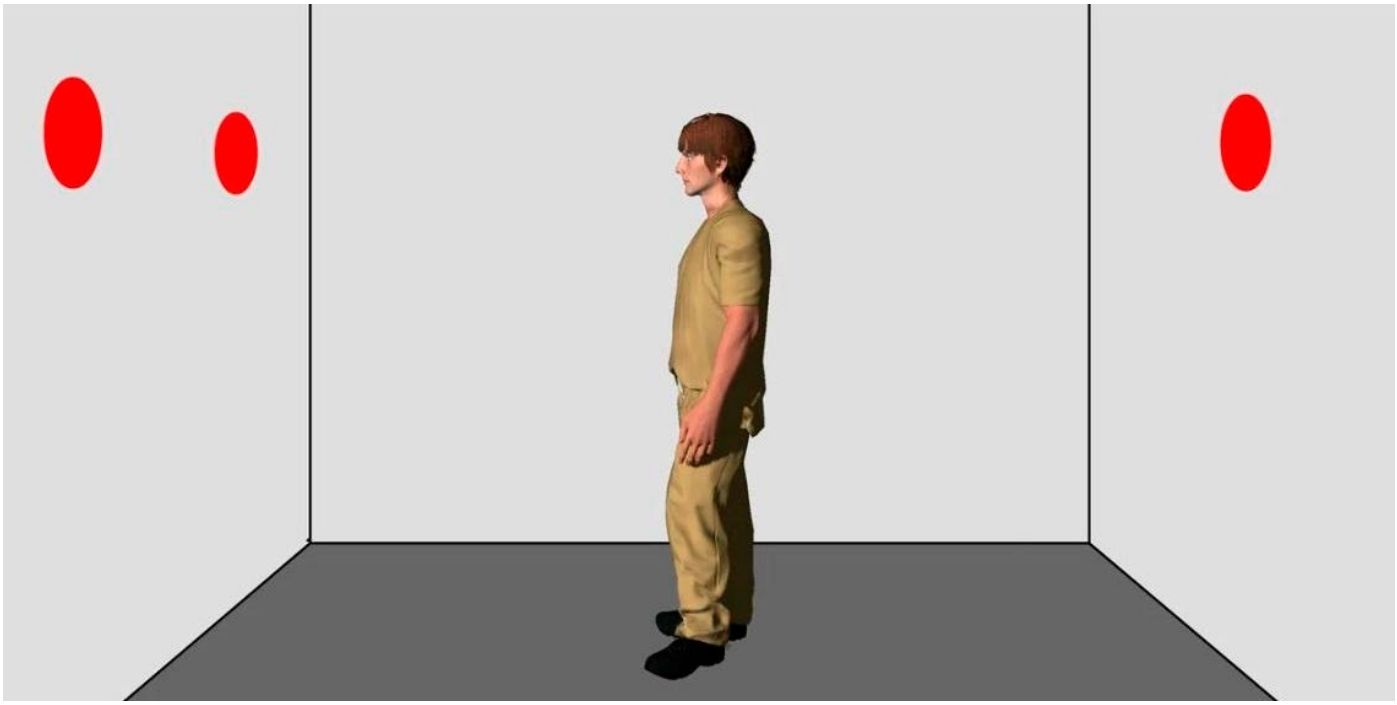
However, psychopaths have one very important difference. While in normal people, empathy is spontaneous, regardless of whether the person wants to experience it or not, psychopaths can deliberately control this process. Their normal state is deactivated empathy; they only show it when they want to. And within the experiment, normal activation of mirror neurons in psychopaths was observed only when the researchers directly asked them to show empathy.

The results of this study agree with the statements that psychopaths often make about themselves, for example, on question-and-answer websites such as Quora. If you search there for questions for psychopaths about whether they are capable of experiencing empathy, you will find many positive answers. But they claim that they can literally turn empathy on and off whenever they want, as if they have some sort of inner switch. However, there are also psychopaths who claim a complete inability to experience empathy. But given the data we already know, we can assume that they simply do not know how to turn it on.

Researchers do not yet know how to turn the empathy that psychopaths can show intentionally into the spontaneous empathy that is common to most people. However, the fact that psychopaths can show empathy, at least under certain conditions, gives therapists something to work with.

There is also the explanation that violent behavior arises from an individual's inability to take the perspective of others, i.e., to see the situation from their point of view and to understand their condition and thoughts. Individuals with psychopathic predispositions have been hypothesized to have exactly this deficiency. However, empirical experiments have disproved this. They are still able to take the perspective of others. Although they do demonstrate one very important difference.

In one of the experiments, criminals were given a theory of mind task. They were shown images on the screen of a human avatar standing in a room and looking to the left or right. Up to three dots were drawn on the walls of the room, which could be either in front of or behind the avatar. The participants' task was to say how many dots they themselves could see and how many the avatar should see. The measures assessed were egocentric interference, which was the amount of time it took for a person to answer how many dots the avatar should see if any of the dots were out of the avatar's view, and altercentric interference, which was the amount of time it took for a person to answer how many dots they themselves could see if the number of dots was different from the number of dots in the avatar's view. Participants' level of psychopathy was also assessed using the PCL-R test.



As it turned out, highly psychopathic individuals show the same level of egocentric interference as normal people. But at the same time, they have a strongly reduced level of altercentric interference. This result suggests the following: they are able to take another person's perspective if it is an intentionally pursued task. However, they have trouble taking it automatically, i.e., unintentionally and spontaneously, as normal people do. Also, higher levels of psychopathy were associated with a worse ability to automatically take the perspective, and this impairment in turn correlated with the number of violent assault charges against the offender[2].

In addition to all of the above, these results answer one important question. One may point to the example of individuals who in their normal social life were good family members, friends, and colleagues, law-abiding citizens, i.e., full members of society, despite the fact that under certain

conditions, such as serving in the police forces, being a soldier on the battlefield, or following state propaganda, they easily committed violence and even murders without the slightest inner resistance. Perhaps such cases can be explained by the fact that some psychopathic individuals are able to be empathic when they intentionally want to be, for example, when they want to have a full social life.

[1)] Meffert, H., Gazzola, V., den Boer, J. A., Bartels, A. A. J., & Keysers, C. (2013). Reduced spontaneous but relatively normal deliberate vicarious representations in psychopathy. Brain, 136(8), 2550–2562. doi:10.1093/brain/awt190

[2)] Drayton, L. A., Santos, L. R., & Baskin-Sommers, A. (2018). Psychopaths fail to automatically take the perspective of others. Proceedings of the National Academy of Sciences, 115(13), 3302–3307. doi:10.1073/pnas.1721903115

The hypothesis of selective psychopathy and critical remarks on it

How can we explain the participation of many psychologically normal people in premeditated violence, genocides, and massacres? Why did situations arise during World War II when battalions of seemingly ordinary people committed brutal massacres against civilians? Why was the “architect of the Holocaust,” Adolf Eichmann, evaluated by many psychologists as a “terrifyingly normal” person without any mental abnormalities and extremely positively evaluated by his family and friends? And speaking of the Holocaust, it would not have been possible without the participation of tens of thousands of psychologically normal individuals who abandoned their moral principles toward a certain group of people.

There is a hypothesis that explains this as a phenomenon called selective psychopathy[1]. It argues that a psychopathic leader, together with his close associates, who are also psychopaths, is able to exert a strong influence on the population through manipulation, propaganda, and compulsion. He may label a group of people as enemies and “subhumans” who must be eliminated for the greater good, thereby stimulating selective psychopathy in the population. It is hypothesized that this influence may affect the functioning of people's brains, making them more similar to the brain of a psychopath. It suppresses the activity of inhibitory neurotransmitters in brain regions such as the amygdala and ventromedial prefrontal cortex involved in empathy, guilt, impulse control, pain, fear, and moral behavior, thereby removing the inhibition of violence itself. To confirm or refute this hypothesis, experiments have been proposed on people of far-right and far-left political views, assessing their reactions and brain activity to viewing records with supporters of different positions – their own and the opposing (enemy) position. So far, no such experiments have been conducted.

To a certain extent, we can agree with this hypothesis. But we will also put forward a few criticisms about it, which cannot be ignored.

The first of these is that it is wrong to assume that all people are equally affected by external influences. This is particularly true for the issue of violence, for which numerous animal and human studies have demonstrated the importance of mediating factors – genetics, neurophysiology, and psychological state. External influences do not directly shape human perception and behavior but are always mediated by individual predispositions. Certain variants of genes associated with violence inhibition lead to “immunity” to different forms of influence such as social isolation (in animals), childhood abuse, and low socioeconomic status; individuals who carry them do not become more prone to violence and psychopathy in such circumstances[2][3][4]. And higher scores of psychopathy traits in people explain their aggressiveness due to alcoholism, a tendency to indirect aggression, religious radicalization, and extremism[5][6][7][8].

The second note concerns individuals who have committed violent acts but appear to us to be completely non-psychopathic and healthy. In this matter, it is crucial not to forget that the farther people are from the direct perpetration of violence, the weaker their inhibition of violence will be. Citing the example of some concentration camp office workers, it is unlikely to make a valid argument about a human's sensitivity to external influences. But even the case of individuals who were fully aware of what they were doing, observed their victims directly, and even killed them, yet appeared to be completely normal, can be explained by one interesting ability of psychopaths. There are claims that they are not necessarily incapable of empathy. Not only that, but they may be just as capable of it as healthy people. The only difference is that in the norm, empathy is spontaneous and reflective. Psychopaths, on the other hand, can control when and under what circumstances to show it[9]. It is not hard to imagine that some psychopathic individuals would be able to pretend to be normal in front of others in a fairly believable way while remaining capable of violent acts when they wanted to commit them.

Taking all this information into account, we will draw the following conclusion: the hypothesis of selective psychopathy may be valid to some degree, but at the same time, it is worth assuming that not all people are prone to it to the same extent. We must also take into account the extent to which a particular person has been involved in committing violence and the possibility that a psychopath may successfully pretend to be a perfectly normal and mentally healthy person. **Any future experiments aimed at confirming or refuting the hypothesis of selective psychopathy must take all of these issues into account in order not to lead to false conclusions.**

Finally, let us not forget that the participation of tens of thousands of people in the perpetration of mass violence does not in itself say anything about everyone else. Such a number of violent people

may seem large, but relative to the entire population, it will be only a tiny percentage of people who may have been the most predisposed to be affected by external influences and inclined to engage in violent activities among all possible alternatives. And as the Cambodian genocide, for example, shows us, the actions of just 80,000 people can lead to the deaths of 1.8 million civilians[10][11][12][13][14]. If you look at the numbers in comparison to each other, a lot of things can fall into place.

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1) Didomenica, P. J. (2020). Selective Psychopathy: How Psychologically Normal People Commit Instrumental Planned Violence and Participate in Genocides and Mass Murder. Quantum Innovation Corporation. doi:10.13140/RG.2.2.18613.01763

2) Beck, A., & Heinz, A. (2013). Alcohol-Related Aggression. Deutsches Aerzteblatt Online. doi:10.3238/arztebl.2013.0711

3) Caspi, A. (2002). Role of Genotype in the Cycle of Violence in Maltreated Children. Science, 297(5582), 851–854. doi:10.1126/science.1072290

4) Sadeh, N., Javdani, S., Jackson, J. J., Reynolds, E. K., Potenza, M. N., Gelernter, J., … Verona, E. (2010). Serotonin transporter gene associations with psychopathic traits in youth vary as a function of socioeconomic resources. Journal of Abnormal Psychology, 119(3), 604–609. doi:10.1037/a0019709

5) Okano, M., Langille, J., & Walsh, Z. (2016). Psychopathy, alcohol use, and intimate partner violence: Evidence from two samples. Law and Human Behavior, 40(5), 517–523. doi:10.1037/lhb0000192

6) Warren, G. (2009) The relationship between psychopathy and indirect aggression in a commuity sample. PhD thesis, University of York.

7) Chabrol, H., Bronchain, J., Morgades Bamba, C. I., Raynal, P. (2020). The Dark Tetrad and radicalization: personality profiles in young women. Behavioral Sciences of Terrorism and Political Aggression, 12 (2), pp.157-168. doi:10.1080/19434472.2019.1646301

8) Dil, S., Kazmi, S. F. (2022). Moderating role of personality types in relationship between psychopathy and extremism. Russian Law Journal 10(3):11.

9) Meffert, H., Gazzola, V., den Boer, J. A., Bartels, A. A. J., & Keysers, C. (2013). Reduced spontaneous but relatively normal deliberate vicarious representations in psychopathy. Brain, 136(8), 2550–2562. doi:10.1093/brain/awt190

10) Carney, T. (1989). The Unexpected Victory. In Karl D. Jackson, ed., Cambodia 1975–1978: Rendezvous With Death. Princeton University Press, pp. 13–35

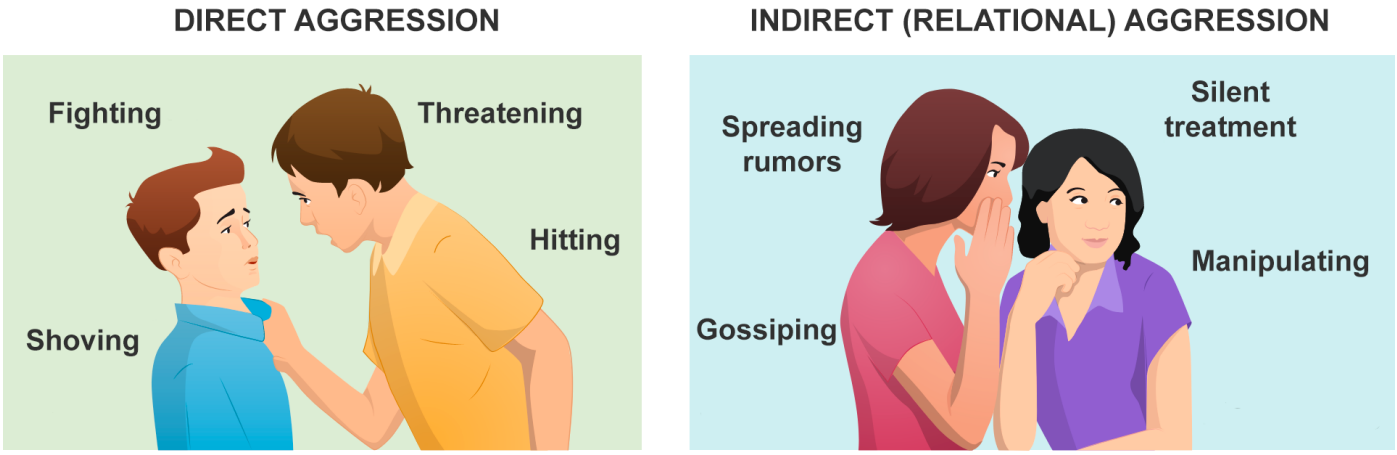
11) The Crime of Cambodia: Shawcross on Kissinger's Memoirs New York Magazine, 5 November 1979

12) The Khmer Rouge National Army: Order of Battle, January 1976. New Haven: Yale University Cambodian Genocide Program, 1976

13) Locard, H. (2005). State Violence in Democratic Kampuchea (1975–1979) and Retribution (1979–2004). European Review of History: Revue Européenne D'histoire, 12(1), 121–143. doi:10.1080/13507480500047811

14) Kierman, B. (2023). The Demography of Genocide in Southeast Asia: The Death Tolls in Cambodia, 1975-79, and East Timor, 1975-80. Critical Asian Studies 35(4). doi:10.1080/1467271032000147041

The problem of indirect violence



Psychopathic predispositions are significantly associated with dysfunction of the violence inhibition mechanism, and the more pronounced they are in individuals, the more likely they are to commit acts of violence. But how true is this rule if we talk not only about direct violence but also about some indirect aggressive actions aimed at harming other people without coming into physical contact with them?

A series of experiments were conducted to test the hypothesis that indirect aggression is associated with psychopathy[1]. **Indirect, relational, or social aggression was defined as a type of social manipulation whereby the aggressor manipulates others to attack the victim or, by other means, makes use of the social structure in order to harm the target person without being personally involved in the attack.** A study, conducted on 103 students, found that this behavior had a strong association with the level of psychopathy, and this association persisted even when the influence of direct violence and social desirability (the respondents' tendency to give answers that appear preferable in the eyes of others) were taken into account. Especially indirect aggression was associated with impulsive antisociality and coldheartedness.

Two more studies on 201 students showed that the relationship between psychopathy and indirect aggression was significantly mediated by deficits in affective (emotional) but not cognitive empathy. However, this is more characteristic of males, whereas such deficits play a lesser role in the case of females, indicating a difference in the manifestations of indirect aggression between male and female psychopaths. For example, men are more likely to resort to malicious humor than women, who are more likely to induce guilt in others. Also, a study of social skills in 107 students found that, in general, they had little effect on the relationship between psychopathy and indirect aggression. Although specifically nonverbal social skills did significantly mediate it in the student sample, this result was not replicated in two other studies with community samples of 204 and 117 participants. However, these studies confirmed the other findings.

As we can see, the problem of indirect violence, when a person seeks to harm other people, resorting not to physical attack but to social manipulation and various kinds of pressure, is strongly associated with the presence of psychopathic predispositions. In addition, it is affective psychopathy, and in the case of males, a deficit in affective empathy, that plays a significant role, which is explained by the dysfunction of the violence inhibition mechanism.

[1)] Warren, G. (2009) The relationship between psychopathy and indirect aggression in a commuity sample. PhD thesis, University of
York: https://web.archive.org/web/20240324101044/https://core.ac.uk/download/pdf/40039219.pdf

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Proactive epigenesis: upbringing and education as a method of epigenetic fixation of non-violence

As we know, the human brain has certain intrinsic and innate predispositions, including a predisposition to violence inhibition. However, although humans are neurobiologically predisposed to certain values, it is very important to take into account the influence of culture and society. In this case, we should consider epigenetic mechanisms that play an important role in how the structure of the brain develops in response to ethical and social norms. This can greatly help us with the problem of how to eradicate violence from human relationships.

To begin with, it is worth briefly considering what epigenetics is. This branch of genetics studies changes in gene activity during cell growth and division, that is, changes in protein synthesis caused by mechanisms that do not change the DNA structure itself. Such changes can persist during cell division and even be inherited, but this heredity is temporary and is not passed for more than several generations. From an evolutionary point of view, this is a mechanism for creating temporary adaptations to temporary changes in environmental conditions. A good example of this is a study that found that the grandsons (but not granddaughters) of men who went through a famine in Sweden in the 19th century were less prone to cardiovascular disease but more prone to diabetes[1]. It is also known that factors such as stress, hunger, and environmental temperature that affect the mother during pregnancy determine the epigenetics of the child. However, it is worth noting that, unlike mutations, epigenetic changes are reversible.

Understanding the epigenetic influence on human development has led some researchers to the idea of such a concept of upbringing and education of children as proactive epigenesis. This idea suggests

that the moral education of children from kindergarten should rely on an understanding of how human neurophysiology works and how it interacts with cultural and social influences. It is also, of course, necessary to understand that inspiring models and gentle encouragement have a strong positive effect, while violence, for example, corporal punishment, can seriously harm a child[2]. And for a better understanding of this idea, we should consider in more detail some of its points.

Based on it, if new cultural patterns, such as a better ability to control aggression, become epigenetically fixed in our brains, then more peaceful societies might hopefully develop. However, it is doubtful that they can be accepted in a society in which the inhabitants' nature is in conflict with them. It is unlikely that societies that encourage violence will be able to stabilize non-violent traits. The solution to this is the use of special education programs for many generations, which, in any case, will have a positive impact.

We should add that there is definitely no conflict, at least with the biological nature of humans, in an education aimed against violence since humans are naturally predisposed precisely to the inhibition of violence. Although the real problem may be authoritarian governments in some countries that normalize violence as an acceptable, if not necessary, tool in the control of public order.

Also, the idea of proactive epigenesis in itself does not say which particular neurophysiological mechanisms in humans should be paid attention to in the formation of educational programs. But it is obvious that, first of all, it is important for us to be familiar with the theory of the violence inhibition mechanism, based on which we can connect the innate predisposition to inhibition of violence with the serotonergic system, as well as the genes and enzymes that affect its function. For example, we can consider the MAOA gene. As one study shows, it mediates the impact of abuse in childhood on violent behavior in adulthood. Compared to the more stable carriers of the high-activity variant of this gene, carriers of its low-activity variant are exposed to certain risks. Maltreatment makes them 4 times more likely to commit violent crimes. However, under normal treatment, they do not become more violent than carriers of the high-activity variant[3].

The idea of proactive epigenesis involves the search for some universal ethical norm that must be fixed epigenetically. But, again, it is not clearly stated what kind of norm this should be, although in general, the idea is about creating a non-violent society. Ethics can be a subject of heated debate, so it is important for us to define some sort of minimum standard that everyone can actually agree on, and non-violence is just that. Moreover, the presence in a human of an innate violence inhibitor points to this norm as a natural part of human behavior, while many other norms can already be more a product of culture and environment. So, the question of a universal ethical norm can already be considered solved.

The problem that the idea of human biological enhancement has negative connotations associated with its use by some dictatorships to create a society predominantly populated by “good citizens” or “racially pure citizens” can also be considered solved. We understand that such formulations can be determined by a long list of claims coming from the subjective opinion of authorities. The norm of non-violence is the minimum possible norm, it is already inherent in the vast majority of people from birth, and the ability to easily commit violence due to violence inhibitor dysfunction can be clearly defined as a pathology and mental disorder. The caution called for by the researchers who put forward the idea of proactive epigenesis is already provided in the norm of non-violence; the main thing is not to go beyond it and not add any other norms, which is what dictators have always done in practice. The norm of non-violence is a sufficient norm to achieve a better society.

Finally, they are also cautious about the idea of drug and gene therapy to treat the problem of violence because of a lack of understanding of the effects of this on the functioning of the human brain. Of

course, based on the available research and the concept of the violence inhibitor, we can see great promise for this approach, especially given that dysfunction of the violence inhibitor is a pathology and therefore needs to be treated. But nothing prevents the development of both ideas in parallel. While there are no reliable and effective therapeutic solutions to the problem of violence, it can be mitigated by proactive epigenesis, which is a more cautious solution. Also, keep in mind that epigenetic influences can be temporary and reversible, so we cannot drop the search for a more effective therapeutic approach.

Proactive epigenesis is a great idea for those who would like to change society in a better, more non-violent direction through social methods and especially through upbringing and educating children. Anyone who does or plans to do this should better study human neurophysiology and become familiar with the specifics of the violence inhibition mechanism. If you get a good understanding of what an individual needs in order to experience inner resistance to violence and be able to show empathy, your efforts will definitely not be in vain.

[1)] Pembrey, M. E., Bygren, L. O., Kaati, G., Edvinsson, S., Northstone, K., Sjöström, M., Golding, J. (2006). Sex-specific, male-line transgenerational responses in humans. Eur J Hum Genet. Feb;14(2):159-66. doi:10.1038/sj.ejhg.5201538
[2)] Evers, K., Changeux, J.-P. (2016). Proactive epigenesis and ethical innovation: A neuronal hypothesis for the genesis of ethical rules. EMBO reports, Vol 17, No 10. doi:10.15252/embr.201642783
[3)] Caspi, A. et al. (2002). Role of Genotype in the Cycle of Violence in Maltreated Children. Science, 297(5582), 851–854. doi:10.1126/science.1072290

Violence inhibitor dysfunction is a cause of serious problems in interpersonal relationships

When entering into any kind of relationship, and especially when it comes to romantic relationships and starting a family, people, as a rule, expect to receive mutual benefits. Of course, there are rarely relationships without flaws and problems that, one way or another, will have to be solved or accepted as they are. But what people definitely do not want from them is harm in any of its forms, including physical and psychological. The problem of abusive relationships has a fairly significant place in our society. It can be given many possible explanations and different solutions. But what we should pay attention to in the first place is the people themselves who seek to harm their close ones.

It is known that the ability to perceive the suffering of other people plays an important role in the inhibition of harm. This is what the Violence Inhibition Mechanism (VIM) model tells us about. People with a fully functioning violence inhibitor will obviously be predisposed not to harm others. Often, the very intention to take the actions leading to this will already cause an aversive reaction and inner resistance in them. And such a reaction will necessarily appear as an unconditioned reflex in response to direct observation of the suffering of another person, and especially non-verbal distress cues such as sad and fear expressions or crying.

The result of violence inhibitor dysfunction in humans is increased levels of instrumental aggression, antisocial behavior, and even psychopathic traits. And we will now look at examples of what relationships with individuals with this dysfunction can lead to.

Many studies show low levels of happiness and long-term violence in relationships with psychopatic individuals. For example, as one Canadian study of victims of abuse in heterosexual relationships shows, up to 30% of abusers meet the criteria for psychopathy, and it is exactly these people who are the strongest predictors of long-term violence in relationships. Also, due to a dysfunctional violence inhibitor, they easily ignore distress cues from their partners unless they can use them for their own manipulative purposes. For example, by manipulating fear, they can intimidate their partners, force them to have sexual contact, or take substances. And the main conclusion of the study is that

psychopathic abusers have the worst effect on the mental health of their partners, leaving them with post-traumatic stress disorder[1].

Another study confirmed that, according to the VIM model, violence by husbands toward their wives is associated with diminished sensitivity to expressions of fear. Also, their psychopathy was associated with misidentifying fearful expressions as neutral[2]. And one more study found that the presence of callous and unemotional traits in a partner is associated with reduced relationship satisfaction. Antisocial behavior, in turn, is associated with psychological aggression and short relationship duration. And speaking of physical aggression, it is associated with three components of psychopathy at once, including the two already mentioned and impulsivity[3]. The situation is similar with sexual satisfaction; it is lower in those women whose partners have psychopathic traits[4].

A huge review of research on the impact of psychopathy on family and other relationships was made by Professor Liane J. Leedom[5]. It addresses the claim that psychopathic individuals change their partners very easily, so they are characterized by sexual promiscuity and multiple short-term marital relationships. Such a claim is questioned in view of the evidence of psychopathic individuals who maintain long-term relationships and, unfortunately, cause harm to their partners. Relationships with them are often assessed as unsatisfactory, characterized by frequent conflicts and even physical violence. Also, psychopathic individuals tend to stalk their former partners and can behave vindictively when threatened with abandonment. And finally, cheating is common in such relationships.

It is worth briefly mentioning how psychopathic individuals behave in other types of relationships. When making friendships, they only try to satisfy their material and social needs while being cruel and often not helping others. But their friends are reluctant to break off such relationships, which can be explained by the psychopaths' effective manipulation and the establishment of a strong social bond with them. As parents, psychopathic individuals act in an obsessive, hostile, and neglectful manner toward their children, leading them to psychological traumas, behavioral problems, problems with settling down in life, poverty, and substance use. Problems are also encountered when normal parents have children with psychopathic tendencies. From such children, they can expect abuse, ignoring their problems, and parasitism. Also, a significant problem occurs when there are both normal children and those with psychopathic traits in the family. It is violence against siblings that is the most common form of domestic violence in Western countries. The same is also true for domestic sexual violence.

As we mentioned earlier, psychopathic individuals, because of their ability to ignore the suffering of other people, can easily manipulate them. Women who love psychopaths and cannot leave them are often held back by such manipulation. And they may enter into relationships with such individuals by being fascinated by their manipulative skills. Also, do not forget that people tend to become attached to other people, even those as bad as psychopaths. Moreover, a disorder of the opposite nature – hyper-empathy – can sometimes play a role. Thus, women with it worry about their partners regardless of their behavior[6].

By reviewing all the facts listed here, we can see how terrible the consequences of relationships with individuals who have a dysfunction of the violence inhibition mechanism are. It is this pathology and the psychopathic traits that arise from it that well explain why some partners can behave cruelly, spoil relationships, manipulate others, and negatively affect the mental state of their close ones. Relationships with them should clearly be avoided, and in the long term, we need to work on developing therapeutic approaches to treat such a pathology. The quality of romantic, family, and other relationships in society will greatly increase if people begin to take seriously the problem of violence inhibitor dysfunction in some individuals.

[1)] Humeny, C., Forth, A., Logan, J. (2022). Psychopathic traits predict the severity of post-traumatic stress in survivors of intimate partner abuse. Personality and Individual Differences. Volume 193. doi:10.1016/j.paid.2022.111611
[2)] Marshall, A. D., Holtzworth-Munroe, A. (2010). Recognition of wives' emotional expressions: a mechanism in the relationship between psychopathology and intimate partner violence perpetration. J Fam Psychol. 24(1):21-30. doi:10.1037/a0017952
[3)] Golmaryami, F. N. (2016). The Romantic Relationships of Young Adults with Elevated Callous-Unemotional Traits. University of New Orleans
[4)] Pilch, I., Lipka, J., Gnielczyk, J. (2022). When your beloved is a psychopath. Psychopathic traits and social status of men and women's relationship and sexual satisfaction. Personality and Individual Differences, Volume 184. doi:10.1016/j.paid.2021.111175
[5)] Leedom, L. J. (2017). The Impact of Psychopathy on the Family. In (Ed.), Psychopathy - New Updates on an Old Phenomenon. IntechOpen. doi:10.5772/intechopen.70227
[6)] Brown, S. L. (2008). Women Who Love Psychopaths: Inside the Relationships of inevitable Harm With Psychopaths, Sociopaths & Narcissists

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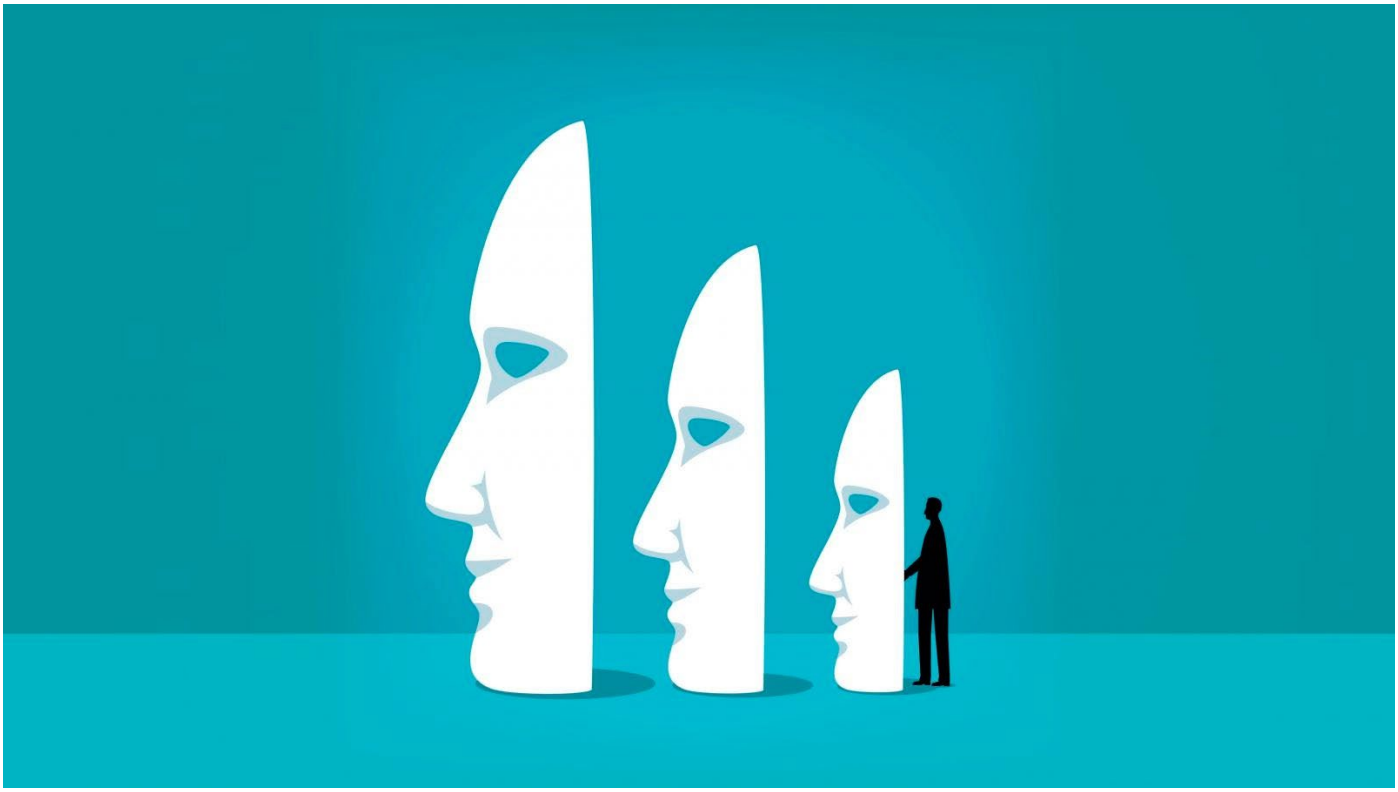
How psychopaths behave towards other people



Here is a list of traits that characterize the behavior of psychopathic individuals but do not necessarily involve direct and overt acts of violence[1][2]. It is important to familiarize ourselves with them in order to be able to identify such individuals in our community. It will also allow us to better understand that harming people is not limited to acts that we can clearly identify as violations of social norms and condemn accordingly. This means that some forms of intentional harm will always exist as long as psychopathic individuals themselves exist. Of course, some of the traits listed here may be shared by many people, but if someone has multiple matches on the list, we should be wary of them.

1. Superficial charm. Psychopathic individuals adapt their personalities to others in order to take advantage of them. Accordingly, different people in their environment will give different, even contradictory, descriptions of their personalities. They are also capable of changing their commitment to something instantly, with no second thought, which they use to establish trust when introducing themselves to others.

2. Turning against each other. Psychopathic individuals love to gossip and make themselves look like victims of other people. Therefore, if you suddenly have a bad opinion about someone without a real reason, consider whether you are being manipulated. They also provoke the emergence of envy between people, love triangles, etc.

3. Intentionally causing chaos. They can systematically provoke you, and when you get openly angry with them, they will make themselves look like the victim, and you will look like an impulsive person who attacks other people for no good reason. Also, in discussions and debates, they will provoke you to react emotionally in order to weaken your position.

4. Lack of guilt and regret. They will never apologize for their harmful actions, unless it is beneficial or necessary to preserve their reputation.

5. Pathological lying. They will lie even without a reason, as they often have to lie for their own benefit, causing them to become lost in their lies.

6. Causing doubt. Even if you rationally realize that you are not guilty of anything, psychopathic individuals will try to change your mind so that you doubt yourself and don't have time to doubt them.

7. Success is the first priority, and norms are not important. Psychopathic individuals only care about success, money, or power. They don't care about social or moral norms. They consider themselves “special” to whom the rules between people do not apply.

8. Lack of empathy. If the only thing that stops someone from harming others is fear of the consequences and nothing more, then that person is a psychopathic individual.

9. Poor impulse control. Psychopathic individuals are easily involved in committing violence, promiscuous sexual activity, and risky behavior.

10. Narcissism. They have an inflated, unrealistic view of their own qualities and achievements, and tend to treat others as “stupid.”

11. Inability to get along. They find it easier to imagine themselves ruling others rather than cooperating as equals.

12. Manipulating emotions. They will intentionally try to trigger some feelings in you to get you to do what they need you to do.

13. Early behavioral problems. The psychopathic individual, even as a child, has abused animals, lied, or caused harm in other ways.

14. Simulating emotions. Psychopathic individuals demonstrate exactly the emotions that other people expect them to demonstrate in order to get a benefit. They have little of their own emotions or will not demonstrate them.

15. They are very bored. Psychopathic individuals are always bored and in constant need of stimulation, and if it is not provided, they will create their own “drama.”

16. Sabotage on important dates. They may try to intentionally bring you to tears on your birthday or provoke you into an impulsive reaction at a family celebration.

17. Exhaustion. They will lead you into sleep deprivation, for example, by constantly having arguments late at night, or they will exhaust you somehow else so that your mind and body are always tired and you don't understand whether your own actions are benefiting you.

18. Ignoring. Psychopathic individuals will end a conversation before it even begins, will not respond to your requests, or their responses will not match them. This is intended to make you anxious and self-doubting.

[1)] 20 Ways to Spot the Psychopath in Your Life: https://www.myfloridalaw.com/twenty-ways-to-spot-the-psychopath-in-your-life/
[2)] 5 Terrifying Ways Narcissists and Psychopaths Manufacture Chaos and Provoke You: https://psychcentral.com/blog/recovering-narcissist/2019/10/5-terrifying-ways-narcissists-and-psychopaths-manufacture-chaos-provoke-and-manipulate-you

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Why psychopaths tend to deny their disorder and what to do about it

Identifying violence as a pathological form of behavior may face the problem that people who, due to a dysfunctional violence inhibition mechanism, are able to commit violence easily will unlikely consider themselves unhealthy individuals. Many disorders result in negative symptoms that are clearly felt by the individual, such as anxiety, mood deterioration, depression, suicidal thoughts, and so forth. But the

case is more complicated if the disorder itself does not cause suffering, and violence inhibitor dysfunction is just such a disorder.

According to Robert Hare, who developed the well-known Psychopathy Checklist (PCL-R) test, psychopaths have a narcissistic and grossly inflated view of their self-worth and importance, a truly astounding egocentricity and sense of entitlement. They see themselves as the center of the universe, as superior beings who are justified in living according to their own rules. Hare also addressed the issue of treating psychopaths. According to him, the term “treatment” implies that there is something to treat: illness, subjective distress, maladaprive behaviors, and so forth. But, as far as we can determine, psychopaths are perfectly happy with themselves, and they see no need for treatment, at least in the traditional sense of the term[1].

Psychopaths definitely have an inflated view of themselves. They see themselves as important and entitled. They often feel justified to live according to their own rules, and they think that the laws don't apply to them. They tend to have grandiose ideas about their potential. They believe that they deserve to be the CEO, or they are convinced that they are the best at everything they do[2][3].

Such personality traits in psychopathic individuals are not surprising. Since childhood, they have not experienced any bad feelings when they caused harm to others, and accordingly, they considered this to be the norm. They view empathy, compassion, and the inability to commit violent attacks, which are characteristics of the average healthy individual, as weaknesses. Perhaps this is what predisposes them to put themselves above others.

All this, of course, prevents the eradication of violence from society since its perpetrators often do not consider themselves abnormal and ill. They should always be reminded of this by referring to the theory of the violence inhibition mechanism and the pathological nature of their condition. One may recall the Wakefield criteria for disorder: a condition is a disorder if it leads to harm to oneself or others and is associated with the failure of some internal mechanism to perform a function for which it was biologically designed. And violence inhibitor dysfunction meets these criteria[4][5].

Violent individuals can also be encouraged in any way possible to undergo therapy, or it can be offered as an alternative to punishment for their offenses. Finally, social pressure can be applied. Individuals with violence inhibitor dysfunction need to realize that no one will risk having a relationship with them until they agree to therapy that restores inhibitory control over aggression. It is worth noting that in some circumstances, such people can be even more dangerous than, for example, those suffering from contagious infectious diseases, who, if they refuse to undergo treatment, are now unlikely to be accepted to study or work, and few people will risk starting a family with them; in general, everyone who knows about their condition and unwillingness to be treated will not go near them. This is a perfectly understandable and normal safety practice. And violence inhibitor dysfunction is also a serious safety threat. If significant parts of society understand this and act accordingly, many violent individuals will undergo treatment based on rational considerations.

Certainly, there will be those who will not undergo therapy to restore violence inhibitor function, even under social pressure. They must be monitored closely, and we must be prepared to apply therapeutic interventions to them as part of a defensive response to any attempted violent attack by them. Obviously, it is reasonable not to ask a person who is directly committing acts of violence about their willingness or unwillingness to undergo such therapy.

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The influence of diet on the propensity for violence

There are many studies on how the presence or absence of certain compounds in an individual's diet can affect the development and functioning of the brain. In particular, some of them address the topic of aggression, if not directly the influence of diet on the functioning of the violence inhibition mechanism. Given the importance of some of the evidence they provide, which may even suggest new possible approaches to the treatment of violence inhibitor dysfunction and violent behavior, it would not be unreasonable to list them.

Omega-3, physical aggression, and the electrophysiology of the violence inhibition mechanism

Omega-3 polyunsaturated fatty acids have been studied a lot in relation to aggression and antisocial behavior[1]. Low levels of eicosapentaenoic acid (EPA) are associated with increased aggression in animals and psychometric measures of aggression in humans. And its inclusion in the diets of substance-using patients, patients with borderline personality disorder, prison inmates in Britain and the Netherlands, and children exhibiting both reactive and proactive aggression reduced anger, aggression, and violent behavior. In children with attention deficit hyperactivity disorder (ADHD), its

blood levels were negatively correlated with callous and unemotional traits, which are prerequisites for psychopathy in adulthood, but in their case, another acid, docosahexaenoic acid (DHA), played an important role too.

A study of 63 participants who completed a questionnaire assessing the presence of omega-3s, including EPA, in their diet over the past 6 months showed a significant negative correlation between EPA intake and physical aggression. However, although physical aggression had a significant correlation with callous-unemotional traits, EPA intake had no such correlation with them. In the other 47 participants, it was also demonstrated that higher EPA intake was associated with reduced physical aggression. In addition, it positively correlated with successful motor extinction in response to observing fearful facial expressions, but there was no such relationship with motor extinction in response to observing sad expressions (both of these cues lead to activation of the violence inhibitor in a healthy individual). Electrophysiological measures such as N170 and Stop-P300 amplitudes are important in assessing violence inhibitor functioning. Neither EPA nor DHA intake correlated with N170 amplitude, but EPA intake positively correlated with Stop-P300 amplitude responses to both sad and fearful expressions.

As a result, we find that intake of EPA, but not DHA, mediates electrophysiological measures related to the recognition of the need to inhibit behavior and the efficacy of motor extinction. This suggests the importance of further exploring the possibility of omega-3 intake as a therapy for individuals with dysfunction of the violence inhibition mechanism, despite the limited current knowledge on the subject.

How important is tryptophan, the precursor to serotonin, not only for physical health but also for mental health?

Tryptophan, the precursor to serotonin, is one of the most studied amino acids. Tryptophan supplementation can increase serotonin levels in the brain, and for this reason, numerous studies have examined whether it can positively influence social behavior through serotonergic function[2]. For example, in the case of aggressive men, taking such supplements resulted in less aggressive reactions to provocations. Also, in some studies, it led to a reduction in anger, hostile attitudes, and irritability.

The history of the populations for which corn was a staple food is very interesting[3]. For example, this was the case with the Native American population (especially the Aztecs) and the rural population of various European countries in the 19th century. Such a diet led to a skin disease called pellagra, which is caused by reduced tryptophan intake. Of course, it also reduces serotonin levels in the brain, which can lead to antisocial behavior, mania, and aggression, often seen in those suffering from pellagra. Also, at least two studies of criminal offenders have found an increased percentage of those suffering from pellagra among them. Among murderers who were characterized as “insane,” more than one-third had pellagra.

At the time of 1973, it was noted that even the poorest diet of North Americans had two times more tryptophan than the recommended allowance (500 mg/day). The recommended allowance is enough to prevent pellagra, but it may not be enough to maintain “psychic balance.” One study showed that taking twice the recommended amount of tryptophan for a year led to psychological improvements that were not seen when taking only the recommended amount. And in North America at that time, there were still populations that could suffer from tryptophan deficiency, such as the Native American population. As it was noted, about 10% of medical patients from a large Indian community in Saskatchewan, Canada, suffered from subclinical pellagra, which, among other things, was accompanied by increased irritability and aggression.

Today, pellagra is still common in South American and African populations and is also found among chronic alcoholics. It is caused by a diet consisting mainly of starch-rich foods. A diet rich in fruits, vegetables, milk, and meat prevents the disease.

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