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ORIGINAL PAPERS

Why Do Children Become Aggressive?

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Abstract
The term aggression is common in the media. What is sad is that we see cases of aggressive children which are worrying. It is true that this pandemic has made people understand how important health is and some parents of children with a high level of aggression have started doing cognitive behavioral therapy at certain psychologists. It is good, but still in some cases this aggression comes from internal causes, certain biochemical disorders. Increased testosterone levels in boys are a common cause. Psychologists at the beginning of therapy should suggest parents to perform a complete set of tests that should not miss the analysis of thesosterone, cadmium, and vitamin B12. In the case of vitamin B12, if it is in small amounts in the body it can affect the behavior leading to greater agitation and even aggression. What is again extremely important is to perform a brain MRI to observe the activity of the amygdala and cerebral cortex. A disorder of these can be the cause of aggressive behavior in children. A good collaboration between the family, the psychologist and the doctor will be able to lead to solving the problems of aggressive behavior.

Keywords: aggression, children, biochemical analysis, testosterone, B12 vitamin

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Introduction

Aggressive behaviors most often occur in children's games, especially in boys, when they are competitors or simply play, much more complicated. Only through good collaboration between parents, teachers, psychologists and doctors can solutions be found to reduce the level of aggression in children. In general, children with an extraverted temperament, who are more hyperactive or impulsive, may manifest, under certain conditions, a level of aggression towards those around them, which can sometimes reach alarming levels. The biochemical changes that occur in some cases in some children are triggers of this scourge called aggression. The problem of juvenile crime is very topical. Parents need to understand the importance of their role and to do their utmost to exercise their duties. The education, love and attention provided by parents are a predictor for a

harmonious development of children. We consider it important to mention that school psychologists have an important role. They should develop special programs whose purpose is to reduce deviant behaviors in students and to increase their self-esteem, even in the primary classes, if any. It is very important that these students do not get into the position of committing crimes and implicitly being deprived of liberty. The school must work closely with the families of the students so that together, they will face a common front against juvenile delinquency. But then aggression is based on medical causes, such as, increased testosterone levels in boys or even heavy metal poisoning, especially cadmium and lead, the situation is community should take the initiative and carry out projects to prevent the occurrence of deviant behavior, projects that have a positive impact on adolescents. It is true that everyone is busy in ensuring the good condition of their family and they do not have the time or the desire to help others. This involvement should be done on its own initiative and do not force those who will or will have benefits. Involving the local community in special programs to reduce deviant behavior in children can lead to the cessation of the criminal phenomenon. The European Union grants non-reimbursable funds for these kinds of projects. Only those people who want to get involved in solving the problem of juvenile delinquency in Romania need to be found.

Aggressive behavior - general notions

Aggressive behavior has long been studied by many researchers, who have tried to determine the causes and even prevent the different states that determine this type of behavior. According to the dictionary definition, aggression is a destructive and violent behavior that is oriented towards people, habits or self. A first acceptance given to aggression is that of aggressive behavior. From this perspective, aggression can be defined as "an assembly of hostile behaviors that can manifest themselves consciously, unconsciously or ghostly in order to destroy, degrade, constrain, deny or humiliate a person, to an object¬¬ invested with social significance or oriented towards one's own person (self-aggression), such as self-destructive behaviors encountered in some mental disorders or even outside them (rational suicide)" (Gorgos, 1987, pp 110-111).

The term juvenile delinquency refers to "inadequate behavior of young people who have not reached the age of majority, being applied to those who break the law, but also to those who integrate into potentially delinquent entourage, having an evasion behavior, to those who have fled from home or from school environment, wandering, those who have behavioral disorders". The legal point of view reduces delinquency in relation to criminal law and the harmful consequences of actions that are legally sanctioned (*Marica, 2007, p. 9)* .

The term deviance was first used in 1938 by American sociologists Sellin as "the set of behaviors directed against norms of conduct or institutional order" and

by Merton, who considers deviance as "a normal reaction of normal people under abnormal conditions." (*Rădulescu* & *Banciu* 1990, p. 19).

According to the "Dictionary of sociology" deviance represents "any act, conduct or manifestation that violates the written or unwritten norms of the society or of a particular group." (Zamfir & Vlăsceanu, 1993, p. 57),

The scope of the concept of "deviance" is broader and encompasses the notion of "delinquency" as a particular form. In this sense, it has been shown that the deviation consists of "any act, conduct or manifestation that violates the written or unwritten norms of the society or of a particular social group." , but any "deviation" of conduct that does not have a pathologically established medical character and represents a deviation from the social norms, being defined or perceived by the members of a social group. *(Nistoreanu* & *Păun, 1996, pp. 25-26).*

The theories regarding the biochemical imbalance

Biological theories are the oldest explanations in this field. According to some explanations elaborated since the 19th century, the delinquent child, like the adult offender, is defined by certain genetic traits, inherited from the ascendants. The notion of degeneration, extremely widespread at that time, was trying to explain that the descendants of vicious (alcoholic or immoral) or criminal persons would become themselves, vicious and / or criminal. The positive school of criminology (Lombroso) appreciated that the degeneracy can be identified by the typical "stigmas" of the individual, synthesized by a specific bodily constitution. In this sense, the representatives of this school believed, the offender is not a product of the environment, but an effect of the invasion on a genetic scale, being born with criminal tendencies and skills. (Lombroso, 1992). Lombroso belived that some persons were born criminal and that according to the above point of view, one may say that everyone is a born criminal and the human needs are satisfied without inhibitions until the person through a normal mental development reaches sufficient maturity (Hurwitz, Christiansen, 1983).

For William Sheldon, who advanced the concept of body constitution, delinquents are characterized by a somatic type the mesomorphic particle (defined by the muscles and athletic body), which is the most inclined, due to its bodily structure, towards aggression, violence and delinquency (Sheldon, Harti, McDermott, 1949).

Little is known about the biological mechanisms supporting the developmental transitions in emotion regulation during early childhood or about the biological bases of individual differences in developmental pathways. This is unfortunate because information about the brain mechanisms underlying the typical and atypical development of emotion regulation could greatly inform our understanding of early social development as well as the disorders of emotion regulation (Lewis & Stieben, 2004; Lewis & Todd, 2007). Thus far, investigation

of brain mechanisms for the development of emotion regulation has employed event related potential (ERP) measures to implicate the prefrontal cortex in cognitive control of emotion. Lewis, Lamm, Segalowitz, Stieben, & Zelazo (2006), for example, discovered that a temporary loss of points towards a desired prize triggered an increase in the frontal P3 response, and this response changed with age to a more midline localization. This developmental change coincided with a decrease in self-reported negative emotions in children (ages 5-16 years). Here, we report the results of one of the first functional magnetic resonance imaging (fMRI) studies of emotion regulation process in school-age children (Perlman, Pelphrey, 2010). The anterior cingulate cortex (ACC) is a specialized prefrontal region that has been consistently implicated in affective regulation in the adult neuroimaging literature (Allman et al., 2001; Bush, Luu, & Posner, 2000). Located between the neocortex and the limbic system, the ACC is well positioned to serve as an interface between cognition and emotion. This region contains spindle-shaped neurons allowing for widespread connections to other brain areas. Found only in humans and great apes (Nimchinsky et al., 1999), these cells become functionally mature at four to six months of age, coinciding with an infant's developing ability to divert attention and self-soothe (Grolnick et al., 2006). Posner and Rothbart (1998, 2000) have noted an increase in cognitive control of emotion at the age of 4, which they relate to the child's emerging capacity to employ the ACC to manage impulsive emotional behavior through conscious regulatory strategy use. These theorists have hypothesized that variation in functional ACC maturation, and, consequently emotion regulation, is related to developmental and temperamental differences in the modulation of attention. Models of ACC function hypothesize divisions of a “cognitive” dorsal region, in proximity to dorsolateral prefrontal cortex (PFC), and an “emotional” ventral region close to orbitofrontal cortex and the amygdala (Bush et al., 2000). The dorsal division has been most often implicated in “cool” (Zelazo & Müller, 2002) executive function, activating during error monitoring and cognitive stroop tasks, while ventral activity is most often linked to “hot” executive function (Zelazo & Müller, 2002), including emotional stroop tasks and recall of emotional events (Bush et al., 2000). Both divisions project to the amygdala, and via these connections, are thought to support affective down-regulation. However, the dorsal pathway is hypothesized to be preferentially involved more in deliberate and consciously controlled regulatory processes (Lewis & Todd, 2007).

The connection between neuropsychiatric abnormalities and violent criminal behavior noted that “orbitofrontal injury is specifically associated with aggression” and “focal frontal lobe dysfunction is associated with aggressive dyscontrol and increased risk of violence” (Brower, Price, 2001).

Similarly, the neurobiology of personality disorders concluded that impulsive aggression is characterized by abnormal functioning in the amygdala, OFC, DLPFC, and anterior cingulate cortex (ACC) (Goodman, New, Siever, 2004).

Biochemical peculiarities of people with a high level of aggression

People with a high level of aggression have some changes in metabolism, a disorder of serotonin levels and very strong functional connections in the cortex.

Impulsive aggression is characterized by an inability to regulate affect as well as aggressive impulses, and is highly co morbid with other mental disorders including depression, suicidal behavior, and substance abuse. Specifically, serotonin hypo function may represent a biochemical trait that predisposes individuals to impulsive aggression, with dopamine hyperfunction contributing in an additive fashion to the serotonergic deficit. A number of studies indicate that serotonin and dopamine (DA) systems interact closely at a basic neurophysiological level (Daw, Kakade, & Dayan, 2002; Kapur & Remington, 1996; Wong, Feng, & Teo, 1995), and that impairment of the serotonin system function can lead to dysregulation of the dopamine system (De Simoni, Dal Toso, Fodritto, Sokola, & Algeri, 1987). Additionally, activation of the prefrontal cortex (PFC), specifically the orbital and ventromedial PFC, has been implicated in the behavioral control of aggression, and impairments in these areas are related to an increase in impulsive aggression (Anderson, Bechara, Damasio, Tranel, & Damasio, 1999; Davidson, Putnam, & Larson, 2000). These lines of evidence suggest that aggression and its comorbid disorders may come from an underlying neurobiology, specifically serotonin and dopamine interaction in the prefrontal cortex. Other biological factors, such as norepineprine (Barrett, Edinger, & Siegel, 1990) and testosterone (Giammanco, Tabacchi, Giammanco, Di Majo, & La Guardia, 2005) may also contribute to aggression. However, the focus will be on the interaction between serotonin and dopamine, because of their well-established relations with impulsive aggression and their significance in explaining comorbid disorders. (Seo, Patrick, 2009),

The evidence for the relationship between testosterone levels and aggressive behavior is derived from several correlation and experimental studies. In the later stages of pubertal development in boys, Olweos, Mattson, Schalling, and Low (1988) examined the causal link between testosterone and aggression and reported that testosterone exerted a direct influence on aggressive behavior. Testosterone indicates a low level of resistance to frustration among boys. (Golu, 2015,),

Changes in thyroid function may affect mood, behavior, and cognitive function. Hypothyroidism occurs when the thyroid gland doesn't send out enough thyroid hormone to the body. Teens are more likely to experience behavioral problems from hypothyroidism https://pubmed.ncbi.nlm.nih.gov/11601874/

Cadmium is a toxic metal. The category of acute effects caused by ingestion of foods with a high level of cadmium includes headache, mood disorders, fever, lung changes (shortness of breath, cough), vomiting, cramps and diarrhea. Chronic effects result mainly from the effect of exposure to low levels of cadmium and are represented by chronic obstructive disorders of the lungs and kidney system. Early prevention, diagnosis and intervention in children are important for the recovery and normal development of children (Rong et al., 2014).

Neuropsychiatric manifestations of vitamin B12 deficiency include dementia, delirium, cerebella ataxia, psychosis, neuropathy, and mood disorders (*Stabler, ,2013,*).

Case Study

The S family came to psychologist therapy with their son S.A. He is 13 years old and from the age of 12 years and 6 months he started to be more agitated and even to fight with friends and not to listen to anyone. This behavior worried parents who turned to a psychologist. This change in behavior also coincided with the coronavirus pandemic, with aggressive behavior beginning in February this year. The situation worsened when his father lost his job because he worked as an engineer at an oil company in the Emirates. He earns extremely well but has been laid off for 4 months, trying to find work. He found it this month but with a low salary. The child goes to therapy but does not improve his behavior. I also met the child and I suggested to the parents to perform a complete set of tests and to do a brain MRI. The results of the analysis indicated what I suspected. The child had high testosterone levels- 3.21 - Reference range (0.03-0.86) and lower blood sugar – 70mg/dl, which certainly influenced the behavior. Vitamin B12 was at a lower level -220 - reference range (197-771pg / ml) and cadmium was within normal limits. The MRI could not perform it because it is on a waiting list to do it for free. They will communicate the information to me later. They went to the family doctor and started a drug therapy.

Conclusions

Increased testosterone level confirms previous research that high testosterone levels lead to aggression.

Hypoglycemia can influence behavior, with the child having a higher state of agitation. Hypoglycemia is characterized by adrenergic and neuroglycopenic signs and symptoms. Among the neuroglycopenic symptoms we mention: - headaches, concentration disorders, accentuated fatigue. - Behavioral disorders, irritability, aggressive behavior. - confusion, apathy, delirium, disorientation.

The problem of aggression from an early age is very topical. Parents need to understand the importance of their role and try their best to perform their duties as

best they can. The education, love and attention provided by parents are a predictor for a harmonious development of children.

If one observes a high level of aggressiveness with security there is also an internal problem. Conducting intense biochemical investigations can reveal a number of imbalances that may be the cause of this aggression.

Internal rebalancing will lead to a balanced social life. Solving this puzzle is an urgent task, because only in this way we can save the society.

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