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Violence regulation and dysregulation system⁵

Abstract

Very early in childhood, relational trauma can lead to affect dysregulation in two directions: while intense fear determines the dysregulation of the brain system responsible for flight, uncontrolled aggression means the dysregulation of the brain centre responsible for fight. Both systems send the message of dysregulation in the autonomic nervous system. In both cases, there is a dysregulation of sympathetic arousal that exceeds the individual's ability to cope with stress in a functional and effective manner. In other words, the flight response is triggered by immense fear, and the fight response is caused by intense anger and rage, which is functional in a normal response to trauma, while in the case of a dysregulated psycho-organic system it indicates a disorder that can have long-term consequences. These disorders can occur at a very early stage, in children who are at the time exposed to severe stress situations; this can lead to changes in the child's neurobiological system, which may later become a source of psychopathology.

Keywords: regulation of violence, dysregulation system, intense fear, uncontrolled aggression, changes in the child's neurobiological system.

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Introduction

Research shows that very early childhood trauma can lead to an inability to regulate aggressive impulses. If we look at the two most common disorders, the borderline and the antisocial – both being distinctive disorders of the dysregulation of aggression affect – we can see that typical of both structures, antisocial as well as borderline, are deficits in the regulation system, which causes intense irritation reflected in frequent physical assaults and abuse. Both personality structures are therefore prone to inappropriate expressions of anger, which manifest themselves in violence, especially towards others, in aggressive emotional states, imbued with anger and rage, which can last for a very long time and are often expressed very unpredictably and brutally. Both personalities literally drive hyperactive, subcortical psycho-organic forces, which are dysregulated in intensity as well as in duration and at the same time cut off from the feedback system, both internal and external, and therefore without basic information that could allow these individuals to make judgments. On this basis, it is evident that it is impossible to define aggression without taking into account everything we know about the early psycho-organic roots of human development. We have to mention, as we will see later, that it is of utmost importance in what conditions a child lives from the beginning of their life, since the first weeks, months and years are crucial for the entire further development – they mark the child and lead him in many respects throughout his life. Due to the contemporary research that we will mention here, we already have solid knowledge about the structure and process of the psycho-organic development of the human brain, so we can say with certainty that the definition of aggression goes beyond mere psychological theories and research. In understanding this complex phenomenon, therefore, we need to consider two backgrounds and reasons: psychological (it is essential to know the family background) and biological. We know very well that neglect and abuse in early childhood not only cause complications and brain damage, but also cause children to develop their own disturbed personality structures, namely, antisocial, psychopathic and borderline, to mention the most obvious ones. We therefore speak of a definition that takes into account the whole spectrum of psycho-organic knowledge and research.

1. Father's role in the development of the regulation system

Before taking a closer look at the psycho-organic background of the development of the regulation and dysregulation system or, more specifically, the

regulation of aggression in an aggressive personality, we must focus on a certain stage of the child's development, which necessarily requires the presence of father. In view of the development of the aggression regulating mechanism, it is especially important that the child, after forming the attachment bond with his mother, which happens in the first year of life, becomes attached to his father. This attachment develops in the second year of the child's life (Schoore 2016). The biorhythm with the father and mother enables the child to develop this much needed interaction or emotional harmony with two different caregivers (Schoore 2016). Similarly, research in developmental psychology (Chaffin, M. 2006, pp. 663–684; Schoore 2019a) points to the fact that attachment to the father really develops in the second year of the child's age and is based on previous attachment to the mother, but the quality of the child-father relationship is completely different. The relationship with and attachment to the father develops fully when the child begins to make the first steps of separation from both parents (Schoore 2019a).

In other words, research shows that the quality of the child's attachment to the father is something entirely unique, in short, independent of the attachment to the mother, and that at eighteen months the attachment to both parents is already in full swing (Schoore 2016). In the second year of age, the child also shows greater interest in the father's emotional availability, and at that time the child's sense of being protected, loved and wanted by the father begins to gradually internalize, becoming a lifelong model of security and protection in a healthy relationship (Schoore 2019a). This is also the time when the toddler becomes more emotionally inclined towards the father, and the mother is no longer the only source of emotional attachment. Changing emotional attachment is of paramount importance, since it is the father who becomes extremely important in the child's development of the regulation system as well as the mechanism for regulating aggression (Kaplow, Widom 2007, pp.176–187). This is true for both genders, but especially for boys who are usually prone to stronger aggressive impulses.

Therefore, when the child's system of affect regulation is being established, the father is so important because by accepting their angry, furious, and aggressive challenges and responses, he helps the child to develop the ability of coping with uncontrolled affects: first he accepts and internally processes them, then he calms down and returns the affects to the child in a form acceptable for the latter (Kaplow, Widom 2007, pp.176–187; Schoore 2019a). In this way, healthy attachment to the father is created while establishing a system of regulation. During father-child interaction, the sympathetic nervous system is first awakened between them, e.g. blood pressure is raised, and when a smile appears on the

father's face indicating that the parasympathetic system has become involved, the child calms down, too. In this way, a special non-verbal communication is gradually developed and strengthened between the father and the child, as before between the mother and the child; signals are created that are gradually internalized by the child and become part of his autonomic nervous system (Schoore 2016). It is crucial to know that the dyadic communication system that establishes or outlines the basics of attachment is also the system that regulates aggression (Cozolino 2017).

It is the father's task to develop a relationship with the child that gradually begins to regulate the affects of aggression. These can repeatedly awaken in the child with every major frustration, especially when the child enters the second year of development (Schoore 2016; Schoore 2019b). In the father-child relationship, the father begins to co-create the child's developing right-hemispheric, and later significantly also left-hemispheric system, the development of which depends notably on the father's presence (Schoore 2016). Optimally regulated communication by the father, imprinted in the relationship of experiencing secure, healthy attachment, thus co-creates the central nervous system and impacts the development of the limbic system, which processes and regulates social-emotional stimuli, and the autonomic nervous system that creates somatic representations of emotions (Frewen, Lanius 2015). The limbic system collects subjective pieces of information coming from emotions, and these guide behaviours and functions that allow the brain to adapt to an ever-changing environment. In this, the father plays a very special role. He is one who helps the child process subjective information that is often riddled with anger and frustration that the child is not yet able to process (Briere, Scott 2015; Cozolino 2017).

Both the autonomic and central nervous systems develop slowly, and the connection between the limbic and autonomic systems in the right hemisphere, which is dominant in responding to stress, depends directly on the relationship, i.e. attachment that the child and parents co-create. First the mother and later the father, who is essential, control the child's stress response, especially when it comes to the development of the regulation system and to the regulation of aggressive responses resulting from frustration and the child's evolving personality structure; the latter gradually begins to take hold, in sometimes rather angry responses, which the father is able to metabolize, model and return to the child in a suitable form (Rothschild 2017; Schoore 2016). We can therefore imagine how alone and helpless a child is in experiencing all these affects if he lacks an appropriate caregiver, a mother or a father, i.e. if the mother and father are unable to be in tune with his distress, fears, and aggressive challenges and responses. In these cases, the child has no alternative but to suppress unwanted and dis-

turbing emotions, dissociating them (Ogden, Fisher 2015). However, in the case of aggression, this process is not so straightforward and self-explanatory, as it is about affects and, above all, complex psycho-organic contents that, due to their intensity and sharpness, remain in the body of the victim of neglect, violence or abuse; if not processed, they can guide – very unpredictably – the individual's behaviour, as well as the feelings and way of thinking.

2. Roots of violence in an abusive relationship

As mentioned earlier, when parents abuse or neglect their children, their system of regulation almost never functions properly; and since they are unable to regulate frustration, abused or neglected children can always be candidates for spreading violence or falling victim to violent relationships. This pattern can be found in as many as eighty percent of abused children (Briere, Scott 2015; Frewen, Lanius 2015; Rothschild 2017; Schore 2016). In these cases, the child finds himself in an extremely paradoxical situation, because his parents offer him the most catastrophic circumstances instead of a safe, loving and stimulating environment. Due to such abusive environment, a child can show quite disturbing behavioural responses as early as at the age of twelve months; already at this age, acute discomfort can be observed on his face, which repeatedly turns into a state of freezing (Frewen, Lanius 2015; Schmelzer 2018). Even at this age, the child can manifest severe internal distress, which is reflected in various forms of angry and furious outbursts. Unfortunately, parents who are not in harmony with the child's distress usually violently repress these outbursts, or even punish the child for his behavioural failures.

By doing this, the parents only further reinforce the child's belief that they will not take care of him, that he is always left alone, and that he should rely only on himself, while at the same time planting the most negative elements of extremely unhealthy attachment. Children from environments where violence is present very early have extremely low tolerance for stressful situations, are unable to establish or develop a functional method of coping with stress they experience when interacting with their parents, and the defence mechanism of dissociation only reinforces their unhealthy attachment style. This is very pronounced in the so called "strange situation" where in these children, unlike their peers, heart rate and the release of stress hormones increase (Ogden, Fisher 2015; Steele, Boon, van der Hart 2017), which can seriously threaten the connection in the hypothalamic-pituitary-adrenal axis, which is responsible for a functional stress response. Not only are these children under severe psycho-

logical pressure, they can experience very serious brain injuries due to constant stress situations that they are unable to cope with (Schore 2016; Steele, Boon, van der Hart 2017).

In other words, when a child encounters relational trauma, he immediately begins to process information coming from both his external and internal world. Of course, the child will immediately look into the parent's face, unless he is already so deeply dissociated that he freezes with each subsequent stressful outbreak. Otherwise, he is looking for a solution, for a source of regulation on the parent's face, since the face is the strongest visual stimulus and a direct look at it can calm the child, helping him to regulate the affects of stress. The same parental face, however, can be a source of aggressive messages that are deeply internalized in the child's psyche and remain there; especially because they are always accompanied by somatic implicit or psycho-organic memory, which, even after many years, can awaken extremely unpleasant sensations and aggressive responses, e.g. in a totally new environment and with a loved person (Rothschild 2017). In addition, the early experience of trauma and aggression can leave organic impact that can make it virtually impossible for this individual to get closer to others, since his body can completely freeze with every intimate touch.

We should add that e.g. the mother's or father's angry face, together with a chaotic atmosphere, can be deeply imbedded in the child's developing limbic system and becomes part of the right frontal lobe (Schore 2016; Schore 2019a; Schore 2019b; Siegel 2017). These episodes are processed and stored in the implicit memory of the right hemisphere, which directs the responses of the autonomic nervous system to aggressive emotional challenges. It also regulates the sympathetic and parasympathetic components of the physiological and cognitive elements of emotional processing, so the prolonged and repetitive aggressive atmosphere can leave a very strong organic mark in a child's experience; namely, dysregulated aggression always activates subcortical centres of fight and sympathetic hyperarousal (Cozolino 2017; Schmelzer 2018; van der Kolk 2014). Since in these cases there is no possibility for the child to calm down internally, i.e. to achieve the level of severe affect regulation (his parents, who should be the source of regulation, are essentially the source of dysregulation), this extremely tense state remains in him and can have extremely unpredictable consequences for his entire further development.

When the child perceives restlessness and chaos in the parent's face, and especially when he feels terror and hostile dysregulated expression and, consequently, parental withdrawal, additional stress awakens as the child concludes that he is guilty of this withdrawal or does not deserve parental attention. In

both cases, the child is pushed into a state of extremely strong sympathetic hyperarousal, which can indicate the beginning of a process called dissociation (Ogden, Fisher 2015; Schore 2016; Schore 2019a; Schore 2019b; Steele, Boon, van der Hart 2017; van der Kolk 2014). Dissociation is the first response to the psychological shock or terror and a high level of arousal that a child experiences upon such parental response. Because of dissociation the child loses the ability to effectively process information from the outside world, e.g. an angry parental face and voice, to their inner world, which in these cases is all chaotic and organically disturbed (Steele, Boon, van der Hart 2017). It is important to remember that dysfunctional patterns that the child develops in emotional contact with his parents are deeply embedded in his inner psychic as well as organic structure. This can be seen in as many as seventy percent of hostile aggressive preschool children (van der Kolk 2014).

With indignation, we must also mention a phenomenon which shows extreme injustice towards the child: parents often unconsciously, but with all precision, transmit to their children all angry and furious impulses that were injected into and transmitted to them by their parents. In many cases, the story does not end here, as parents try to see their wrong ideas and beliefs in the child's behaviour, and the child always listens to them and follows them, because this is where the strongest dynamic of attachment is hidden. The child is helpless here: and he is all the more helpless because impulses do not come from within but are imposed on him from the outside; they are the so called generational heritage that he cannot fight against. Parents do not really think about this, but as their parents once did, they now unconsciously transmit painful internal contents that they have never fully resolved and integrated. These contents thus remain unaddressed and are therefore even more poisonous because they are primarily unconscious and therefore have even greater disruptive power.

Clearly, this is an extremely painful and disastrous picture. Instead of helping the child, because he may be reacting inappropriately and unacceptably to the environment in which he lives, his parents further reinforce his beliefs that he is impossible and ineducable because he is too stubborn and wilful. In short, they are convinced that he is unmanageably aggressive and that this aggression will escalate into violence. And when the child really responds to all these pressures in accordance with parental beliefs, the parents do not calm him down, they are not there for him, they do not seek to help him regulate his affects that are unmanageable for him; instead, they ignore him, and often mock, shame and humiliate him (Schmelzer 2018). It could even be said that these parents already chart the path of their child's aggression, terror and violence in advance, and unfortunately, the children often follow this path to the smallest detail.

The child is also deeply affected by marital conflict, especially when accompanied by emotional and physical abuse. For the child, this brings terror that he cannot regulate, and since his parents are not available to help him, he remains completely alone in his terror and can literally freeze. The greatest terror is being abused by the father – of course, by the mother, too, but mothers do not physically or sexually abuse as frequently as fathers. Studies have shown that children who have not been abused will be very quick to help other children in need, which is not always the case in children who have been physically or sexually abused. Sometimes, abused children are much more sensitive to the pain of others, but sometimes, especially in cases where they have dissociated the abuse, they respond very poorly to others' distress. Quite often later in life they identify with the abuser and become abusive themselves or, on the other hand, very soon become prey to abuse (Schmelzer 2018). This can be understood from our knowledge about dysregulated aggression, which remains very firmly rooted in the psycho-organic structure of the child and can strongly affect even an adult who was a victim of abuse in his childhood. But it also affects people around him, who are often turned away by him, since they do not understand his pain or why he constantly gets involved in relationships in which he is abused again and again.

In a functional relationship with healthy attachment, parents are the interactive regulators of fear and aggression by creating an environment that stimulates growth and in which the child's regulatory system can mature to such level that he can establish an autoregulatory system later in adulthood. Considering the role of the father here, as we have already noted, we see that he is an essential figure in the regulation of the affects of anger and fear and the feelings of aggression, so it is even more disastrous if he is the abuser: this will prevent the child from developing a dysregulatory system, and in addition to that, unquenchable "thirst and hunger for father" will emerge (Briere, Scott 2015; Cozolino 2017; Schmelzer 2018). Even later in life, this child will always look for his father. He will look for him among a wide variety of authorities, and, most tragically, repeatedly in persons who will abuse him again, as he will look for men who will offer him a similar style of insecure attachment he had once experienced with his father. He will also seek out the authority that would enable him to regulate aggression by repeatedly engaging in conflicts, e.g. with his peers, and hope that an adult authority would understand him and help him regulate his furious responses.

If we once again turn to the parental transgenerational dynamics for a better understanding of the parents' irresponsible or abusive attitude towards the child, we soon find that many parents also suffer from their own unre-

solved traumas. Trauma embedded into their right hemisphere corticolimbic system, whose contents or elements are terror, rage and dissociation, and at the same time the primary mechanisms of the intergenerational transmission of violence (Briere, Scott 2015; Schore 2016), will be traumatic for future generations, too. Traumatic violence can be transmitted over five generations (Dutton, D.G. 2007; Ogden, Fisher 2015; Steele, Boon, van der Hart 2017), and the dynamics of these atrocities can manifest in a wide variety of forms of abuse and violence. We are talking about the transmission of affect, which occurs in extremely cruel and brutal forms of sexual as well as physical abuse, but perhaps the most classic example of violence transmission is the transmission of affects that accompany the horrors of war violence. Most often, the only real defence against all this violence is dissociation, which, because of its dynamics, predicts intergenerational transmission of cruel trauma. In this way, children and grandchildren of war veterans are often literally addicted to the affects that belong to war circumstances, but through psycho-organic intergenerational transmission they can also become part of their daily lives (Frewen, Lanius 2015; Schmelzer 2018).

Therefore, if a child, especially one born with genetically encoded contents that belong to previous generations and can alter his neuropsychological dispositions, does not have an appropriate experience of being an important member of the family but has parents who are emotionally irresponsive to his needs and desires, it will be very difficult for him to develop an adequate regulatory system. His corticolimbic structure requires much more responsiveness of primary caregivers than can be seen in normal, functional conditions (Schore 2016; Schore 2019a; Schore 2019b). Unfortunately, it is precisely the families that are marked by violence, which are often very rigid and static, because they are constantly unconsciously fighting terrifying interactions that, in the light of their past experiences, can produce new traumas. For this reason, it is also very difficult to expect that their child will truly be able to gain new socio-emotional experiences which will facilitate his growth and development. This structural restriction can therefore have a very negative effect on the growth of the right hemispheric corticolimbic portion of the brain (Rothschild 2017; Schore 2016).

3. Limbic system and aggression

Modern research, as we have seen, finds that relational trauma and related aggression can inhibit the functional development of the right cerebral hemi-

sphere at its very core; in particular, it can damage the developing limbic system of the infant brain (Rothschild 2017; Schore 2016; Schore 2019a; Schore 2019b). At the earliest stage of development, the child is extremely neurologically vulnerable, especially if he experiences at that early age that the environment in which he is placed is not secure and developmentally stimulating. At this early stage, i.e. during the first months of development, the genetic predispositions of the infant brain structure begin to gradually develop, with the growth of synaptic networks that connect various parts of the brain into a complex brain structure. This development is mainly dependent on the stimulating environment, to such an extent that brain synaptic cells and structures that are not stimulated or are suppressed, e.g. due to stress and aggression, die off (Schore 2016). In this regard, relational trauma, especially maternal neglect and abuse, can have a catastrophic effect on all subsequent development of the child, especially the right hemisphere and, specifically, the limbic system, since in this part of the brain it can cause the so called neuronal death (Cozolino 2017; Siegel 2017; van der Kolk 2014).

Relational trauma is therefore not only deeply embedded in the developing brain and limbic system, but can in many ways regulate, direct and structure all subsequent brain development. Research has shown that the affects of aggression can significantly inhibit the development of the hippocampus, and thus the entire limbic-neural system, when the child experiences that his parents do not feel his needs or even neglect and abuse him (Schore 2016). The cerebral synaptic networks, together with the myelin systems, develop rapidly during the first eighteen months of the child's life, which is significantly related to the maturation of the limbic system and other cortical parts of the child's brain (Schore 2016). Research in the development of the brain and the limbic system concludes that this is the most basic maturation of the limbic mechanism responsible for social control; in short, this is a mechanism whereby parents are essential agents, since they must help the child to choose positive responses, which further promote corticolimbic development (Fonagy, Gergely, Jurist, Target 2007; Rothschild 2017; Schmelzer 2018; van der Kolk 2014).

It is quite understandable, therefore, that parents who do not participate in the child's development or even abuse him, not only prevent the child from developing healthily and functionally but also literally alter the development of his brain. The child, and later adult, will always feel these changes or their consequences, as this process of development involves the maturation of very important neural cells, in our case in the limbic system, which can die off rather than mature due to deprivation and, above all, abuse (Fonagy, Gergely, Jurist, Target 2007; Cozolino 2017). It can be stated with certainty that parental func-

tions, such as being in tune with the child, understanding his distress, needs and desires, and encouragement, are the basis for normal socio-emotional development, where healthy attachment is its essential prerequisite. It is therefore a double-layered development, both biological and socio-emotional, which can be suppressed in many respects unless accompanied by proper parenting. Moreover, it is not only suppressed, but goes its own way in the direction of aggression, which means that the basic mechanisms of affect regulation, functional decision-making ability and mature and responsible relationships with others do not develop.

A child who experiences relational traumas without a real chance of resolving them, literally drowns, and his accumulated aggression can erupt unpredictably on a day-to-day basis in cases that greatly surprise the child himself. This child therefore acts solely on impulse. When threatened by an actual or imagined gesture or person in his surroundings, this child, and later adult, responds without thinking, without a moment of circumspection or even the possibility of reflection or self-reflection. This dynamic is even more alarming because these children and later adults, in their sometimes very cruel behaviour, often act totally mercilessly and without compassion for the victim. When they were victims of their parents, they learned to be insensitive to themselves and to completely suppress all emotions, because otherwise it would be difficult for them to survive. Because they have not been able to develop any real empathy, primarily because they have not experienced it from their parents, they are not able to feel compassion even with their own suffering, much less with the suffering of others. At times, they even feel that they are not even worthy of any true understanding, consolation, and compassion. And when they are able to show compassion, it is often not genuine and sometimes it is even calculating. It is very frightening that, in extreme cases, the victims of childhood abuse act entirely insensitively to their victims, maltreating and torturing them. In a way, they “retaliate” or use retaliatory tactics in particular in all those relationships in which they could potentially be hurt.

It should be reiterated here that these personality structures are not only created by an abusive psychosocial environment, but that the same environment can cause very concrete biopsychic or psychoorganic changes in the brain structure in the early childhood development; and these changes, especially in the frontolimbic part of the brain structures, are the cause of an individual's sometimes extremely dysfunctional and even pathological behaviour. The child, and later adult, often feels unable to help himself, especially when he is overwhelmed by fear and horror, which he is not even aware of. Therefore, he responds impulsively, or as if driven by some strange internal force that is un-

known to him (Briere, Scott 2015). So a child in his environment may very soon experience, for example, that a particular peer irritates him and, therefore, approaches him rudely, attacking him without really knowing why; it is enough to awaken in him a sense of danger or to unconsciously feel or experience in this potential victim that this is someone who will accept his uncontrollable and dysregulated feelings.

An entirely innocent person in the child's environment may in the next moment become a victim of his unmanageable aggressive feelings, which have long been stored in his intrapsychic or psycho-organic world and are just waiting to find an expression. In this way, he hopes to be able to relieve his inner distress, anger and rage, which repeatedly and unconsciously force him to act aggressively. In other words, in a person with this personality-disordered structure, there are so many dysregulated affects and sensations that have been suppressed based on the mechanism of dissociation (Rothschild 2017; Briere, Scott 2015; Frewen, Lanius 2015; Schore 2016) that due to certain stimuli or triggers, they can constantly look for expression, many times in extremely unpredictable and hostile aggressive reactions. The child, and later adult, overwhelmed by these uncontrollable affects and sensations, feels as if he has completely lost control of his future and the way he will respond to stressful situations in his surroundings. However, he is unwilling or unable to consciously admit it to himself and is therefore always looking for the culprit for his behaviour, for his responses in his surroundings, which further prevents him from taking full responsibility for his behaviour and reactions. And taking responsibility is essential because otherwise it is impossible to expect any change. This, however, certainly means a tremendous amount of effort on the part of the person suffering from these psycho-organic disorders.

A child who experiences that his parents are not sufficiently interested in him, or that he is rejected or even abused, and feels his attachment to them as extremely unhealthy and dangerous because he is repeatedly exposed and his internal psycho-organic homeostasis is repeatedly breaking down, must therefore turn completely inwards and find sufficient energy for his mere survival. In this state, he will do his best to get rid of terrible internal distress, and that is why by means of his inappropriate behaviours he wants to alert his parents to the fact that the affect he cannot manage is accumulating in him. If parents even in this state, when the child is literally screaming for help, do not respond or offer him the so called reparative functions (Schmelzer 2018; Steele, Boon, van der Hart 2017) that could help him reduce stress so he can restore psycho-organic balance, then his limbic system that is in the process of maturation and connection with other parts of the brain, is exposed to toxic chemicals that can

have a very negative effect on his developing brain. Increased levels of cortisol which is abundantly excreted in stressful situations, can therefore have a very dramatic impact, in particular on the developing limbic system (Schmelzer 2018; Steele, Boon, van der Hart 2017).

Research in this regard further demonstrates how hostile and threatening experiences in the child's early social life, i.e. in his critical developmental process, can cause a permanent change in his receptor systems and in the amount of hormone secretion, such as corticosteroid, corticotropin, dopamine, noradrenaline and serotonin. These changes in the hormonal system or in the brain receptors can, in the developing brain, and especially in its limbic system, create a state of constant reactivity or hyperreactivity, since damage in the limbic system and in dopamine, noradrenaline and serotonin receptors is significantly related to dysregulation of aggression or violent behaviour (Briere, Scott 2015; Schore 2016). According to this research, healthy early attachment is not only extremely important in developing a sense of self and in establishing social interactions and intimate relationships, but also in the most basic bio-hormonal or bioreceptor activities that characterize, guide and determine an individual's perception of the social world at the very core, and especially their reactions to the outside world and the ability to cope with stress, particularly with stressful situations caused by various forms of relational trauma (Cozolino 2017; Schore 2016).

As previously noted, the right cerebral hemisphere is more deeply connected with the limbic system than the left, so chronic reactivity or arousal is also imprinted in the corticolimbic system of the right hemisphere, in short, in the cerebral hemisphere which is responsible for the regulation of stress hormones such as cortisol and corticotropin (Schore 2016). Recent studies also show that the increased amount of glucose in the limbic system depends on social conditions in which the child lives, and that stressful situations have a highly negative effect on the child's developing brain. That being said, it is a long-term brain cell death, or the so called neuronal death, and elevated corticotropin can also have a long-term effect on the developing brain, since it is possible that brain hyperactivity causes seizures similar to epileptic (Kaplow, Widom 2007, pp 176–187). Similar symptoms can be frequently seen in adults who suffer from PTSD symptoms and have been physically or sexually abused in childhood (Rothschild 2017). These symptoms are often very frightening for the victims of abuse because they do not know what is really happening to them and are therefore fairly regular visitors to various health clinics where, however, they fail to find anything tangible.

When it comes to relational trauma and aggression, one must always return to the hierarchical structure of interconnected parts of the brain, namely the

limbic system in the orbitofrontal cortex, the insula cingulate and the amygdala, which acts as a system of affect regulation, as these three brain centres always cooperate. They are especially active in any stressful situation. These corticolimbic elements develop from the very simple amygdala system present at birth, through the cingulate, which matures at the end of the second month of age, to the orbitofrontal cortex, which matures at the end of the first year of the child's age, meaning that the prenatal stressors most deeply affect the developing amygdala (Schore 2016). This may be due to excessive amounts of corticotropin, which can affect foetal development. Relational trauma, however, can damage the right insula, which is responsible for information regarding various physical states, as early as in the second and third quarters of the first year of life; it can also damage cingulate, the organ which is responsible for social behaviour and opens the activity of amygdala (Schore 2016; Steele, Boon, van der Hart 2017).

Conclusion

To conclude, it can be stated with certainty that unhealthy attachments styles, especially those formed between the child's twelfth and eighteenth month, may, primarily due to relational trauma, inhibit the functional development of the orbitofrontal parts of the brain organization. At that age, relational trauma can particularly damage functions such as attachment, ability to form relationships, empathy, ability to play, the affect regulation system, and especially aggression control (Briere, Scott, 2015). In other words, because of the poorly developed orbitofrontal organization, these children find it very difficult to develop the affect regulation mechanism, including the mechanism for regulating aggression. Based on a growing body of research, (Cohen, Mannarino, Deblinger 2006; Fonagy, Gergely, Jurist, Target 2007; Kaplow, 2007, pp 176–187; Schore 2016) it can also be argued that dysregulation, i.e. changes in the orbitofrontal cortex, which is directly related to the amygdala, always lead to pathologically aggressive behaviour. More specifically, it can be said that the damaged and thus ineffective orbitofrontal system fails to regulate the subcortical limbic structures responsible for controlling aggression. Therefore, the child, and later adult, is unable to control their aggressive impulses, which are a constant in personalities with antisocial disorder.

To conclude, once again, we should mention the connection between the orbitofrontal parts of the brain and the hypothalamus, which is the basic organ of the autonomic nervous system (ANS) and the control system for fight-or-flight

responses, and the amygdala, which is the primary centre of fear and aggression in the brain (Schore 2016). We can identify two types of aggression: affective, impulsive reactive, defensive aggression, uncontrolled due to uncontrolled impulses and affects; and premeditated and planned aggression, which is a deliberate form of violence. Both types of aggression are led along very specific neuroanatomical pathways (Schore 2016). Affective rage involves the hypothalamic sympathetic ventromedial nucleus, while planned aggression involves the parasympathetic lateral hypothalamus, a system that is also involved in the so called tonic immobility and dissociation (Schore 2016). This distinction is essential, as the two processes involve very different organic systems, and, according to modern research, these two systems are also very strongly linked and conditioned by influences arising from different types of attachment (Cozolino 2017; Schore 2016; Siegel 2015).

We should add that a sufficiently mature orbitofrontal system can help, i.e. suppress or limit defensive reactions that awaken in the amygdala, and thus correctly and in an adaptive way regulate the amygdala, which is driven by autonomous hyperarousal. But stress can exclude prefrontal brain functions and activates more routine responses driven by subcortical structures that regulate behaviour. All too often, this happens in cases where the individual has been neglected or abused and has therefore failed to develop a functional frontolimbic system that would not constantly rely on lower subcortical mechanisms in stressful situations (Schore 2016). This child, and sometimes adult, simply cannot help himself, or at least he feels so, as his responses and reactions to environmental responses and challenges always seem to overtake him, sometimes in cruelly surprising ways. This individual can therefore get involved in conflicts that he does not really want. All this is happening because, when he was growing up, he did not have the opportunity that his parents could help him regulate his difficult affects; he lived in a hostile environment that did not allow him to first assess the situations that occurred and to respond to them only later.

This is especially the case when an individual's amygdala is overloaded with information and flooded with hormones that occupy it to such extent that even hippocampal functions shut down. In short, we are talking about a process whose functionality is largely dependent on parental availability to help the child regulate severe affects before the hippocampus matures. And if this is not the case, or if the child even experiences neglect and trauma instead, then the child internalizes into his right cerebral temporolimbic sphere, specifically in his implicit memory, abusive, distrustful parental gestures, which are manifested in their facial mimics and particularly in their behaviour. They are imprinted in the right hemisphere, which is responsible for assessing whether or not faces

are trustworthy, and is also responsible for the unconscious processes of intimidating and aggressive facial emotional expressions (Schoore 2016). An abused child also internalizes defence mechanisms by means of which he defends himself against dysregulated arousal. The amygdala is also involved in this process, which thus imprints in its implicit memory both the affects of abuse and the responses, i.e. defence mechanisms: in the case of abuse it is highly possible that this defence mechanism is dissociation (Steele, Boon, van der Hart 2017; Ogden, Fisher 2015). This means that in the amygdala, with a similar affect as is already imprinted in it, an experience from the past will be awakened, with very little or no connection with the present. In addition, on a purely unconscious level, the defence mechanisms will be awakened, so that, when a particular affect awakens, an individual can also use the defence mechanisms associated with the original affects.

Therefore, a person who has been physically abused may also freeze, fight, flight, experience hyperarousal, etc., when experiencing a certain feeling that can only be faintly reminiscent of a tragic event of the past. It can be said, therefore, that the right side of the amygdala, in particular, is a very dynamic emotionally stimulated collecting system, specialized in responding to intensely arousing negative stimuli awakened by non-verbal facial and vocal responses to fear. The amygdala, however, is always involved when it comes to identifying hostile and threatening affects, which it does on the basis of somatic psycho-organic implicit memory, which may have been created long ago, based on experience. This process can therefore contain many perceptions, because the amygdala cannot differentiate the past from the present. For the amygdala, therefore, the present is a perfect transference or a snapshot of the past, which is constantly – entirely unconsciously – renewed. This is especially reflected in emotionally deeper relationships, especially when it comes to finding an intimate partner. Then horrifying, unmanageable feelings and affects may awaken, which may not even belong to the present and the individual's present relationship, and the individual who is experiencing all this does not even know where it all comes from. He is aware that it is hurtful and upsetting, and that the relationship that had felt so promising has become complicated and conflicting, and that he needs someone to regulate his affects.

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