

Asperger Syndrome as a psychosomatic imprinting disorder

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Abstract

The purpose of this review is to represent a variety of research findings on Asperger's etiopathogenesis and to incorporate them into a psychological-neuropsychological interpretation. Research on brain regions and neural networks, as well the different psychodynamic theories, are analyzed. Persons with Asperger's syndrome have been shown to experience difficulty in understanding the compositionality of each other's subjective experience, developing an empathy by incorporating mainly their own personal objective experience. This bewilderment can lead to an accumulation of charged energy which seeks to defuse itself by finding a way out in a psychosomatic imprint. The present review creates interest in examining the psychosomatic trace, as an imprint of the social interaction difficulties faced by persons with Asperger's.

Key-words

Asperger, autism, alexithymia, theory of mind, empathy, emotions, caregiver

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Introduction

In recent years, both in the field of neuroscience and psychology, a multitude of questions have gradually emerged around the so-called *autistic spectrum disorder*. Diagnostic criteria of a person being in the autistic spectrum have been supposed to revolve around the inability to social interaction, which severity extends from the inability to follow the flow of a conversation to the deficient emotional response to social - environmental stimuli. Stiffness in social interaction can be succeeded by imperfect verbal and nonverbal communication, weak eye contact and inadequate organization of body movements in space, hindering psychomotor coordination through repetitive stereotypical movements or movements that are not amenable to the command of modification or inhibition in order to protect the individual and weak coordination of internal mental shapes and communicative expressions with the social environment. Furthermore, there is a weakness in the maintenance, perception, and attachment of social relationships, that extend from the non-adaptation in the environment and the problematic participation in imaginative play. There are also identified a series of repetitive stereotypical movements, persistence in ritual performance of behaviors, attachment to unusual objects, and fluctuations in reaction sensitivity to stimuli. In this article we will focus on a critical approach to etiopathogenesis contributing to the process of Asperger's syndrome {F84.5, ICD 10}, as well as, in emotional and social interaction seen from the psychoanalytic-psycho-somatic area. The paradox with Asperger's syndrome, that is distinguished from other aspects of the autistic spectrum, is that the patient not only does not have performance deficits in intelligence tests, but in some cases it seems to score higher than the control group (in tests related to the recording of visual-spatial skills, eg. cubes). *Savant syndrome* occurs as comorbid in some cases with Asperger's syndrome, giving a charismatic connotation to the nature of the disorder. But what keeps the interest in Asperger's Syndrome intact is how *emotional alexithymia* could develop into acceptance, understanding and expression of the inner world of the patient [1, 2].

Neurobiological findings

Research cannot specify in the exact brain mechanism that is disordered in Asperger's Syndrome [3]. Becker suggested the Cerebellar Cognitive Affective Syndrome, which affects more complex functions, such as executive and emotional intelligence. She reported also low volume and impaired grey matter at the cerebellum cortex [4]. Other findings suggest

that the cerebellum function is problematic in terms of behavioral conditioning responses to a stimulus. This finding is associated with the paradox of familiarity with certain stimuli and non-familiarity with certain others. Some researchers believe that it would be better to focus on changes occurring at a more general level in brain physiology, since many regions are interconnected and a dysfunction in one area may affect another [5]. Patients with frontal-temporal deficits can't learn the association between stimulus and reaction, no matter how many attempts were made by the experimenter to introduce them to this learning process. However, these deficits cannot be called *mnemonic* simply related to learning associative responses to stimuli. In addition, excessive adherence to a not so important stimulus could be due to excessive myelination in the cerebellum area and frontal regions, which may result in hypofunctional myelination in surrounding areas. It is possible that this growth trend of piecemeal myelination at the beginning is then accompanied by sudden apoptosis leading to attention deficit or emotional apathy [6]. Synaptic pruning, apoptosis and reconstruction during development plays a major role. Regions with similar thickness in the cortex can better organize their neuronal connections and thus collaborate more effectively in the transmission of information [7, 8].

In Asperger syndrome there is reduced responsiveness to an important social stimulus and high attachment to an insignificant stimulus visual, sound, etc. This could mean that the Asperger patient chose a different assessment of the importance of the external environment, since the communication of the external and internal world is limited. In addition to synaptic pruning, neuronal process, may become problematic is the migration of neurons. For example, neurites may move towards the wrong target or be released in the wrong position, disrupting the physiology and functionality of the region. Some scientists also refer to Von Economo neurons, which are active in the frontal lobe and their underfunctionality is responsible for social distancing [9]. Structures on the insular cortex have been also shown to participate in the process of internal projection of external motor stimuli, in order to carry out an internal mental simulation. In addition, it is argued that in "larger" brains, as is the case of Asperger's, it is possible that the interconnections become weaker, since it has to cross longer distances and the information becomes weak and unable to reach fully organized.

Rizzolatti observed and recorded a process of internal mental replication of a subject's energy in relation to the process that another third can perform in space. Since someone can mentally repeat a third-person process, he can automatically place it to his place, a process known as *empathy*. Also, the *mirror neuron system* contributes to imitation, that is, the

process of mental replication that may already exist in newborns [10]. Each system of mirrored neurons is responsible for conducting a specific aspect of the individual's functionality, which allows us to have optimistic thoughts about plasticity and collateral mirrored neural networks of rehabilitation, in case of under-functionality or damage. The imitation games connect emotionally parents and children, and contribute to the infant's sense of intersubjectivity. In Asperger's syndrome we encounter an inability of the individual to fully perceive and consequently to carry out this internal mental transfer of the executive actions of third parties. Perhaps the diffuse system of mirror neurons is the system that underperforms or displays a malfunction of incomplete execution of that process. The Asperger's "stiffness" maybe is related with the adaptability of specific neurons to respond to specific activities [11].

Contention scheduling is the system that reconfigures responses to routine activities. For example, after the necessary response patterns are organized to external stimuli, the best manner are chosen to respond to the requirements of everyday life, while ensuring his survival. Inhibitory attention control mediates, in order to prevent confusion and induce a desired learned response to the same external stimulus. However, if a frontal lobe structure is damaged or poorly developed, either because the appropriate environmental stimuli were not given or because such a weakness was biologically predetermined, as in the case of Asperger's, this implies a problematic response to stimuli. If the individual has not mastered some organized cognitive schemas, then the actions on the stimuli of the external environment become different from those expected, resulting in anxiety or even difficulties to the person (utilitarian attitude), [6, 12]. Rolls (1995) signified the response to the external stimulus through the influence of positive and negative reinforcements, in order to explain the prevalence of a positive behavior and the need to quench another deviant respectively. The function of the orbitofrontal area is co-operative as a corrective filter by correlating responses to stimuli with the previous experience of the individual in similar circumstances. In Asperger's, therefore, there is no proper filtration, and an incorrect reaction is attributed to an exogenous factor, or even, the reinforcement does not occur in such a way that it is effective to reward/promote or inhibit some responses to the external stimuli.

The "emotional blindness"

Empathy could be achieved a deeper understanding of the emotional experience and the position of others. Hoffman referred to four stages of developmental progress of empathy,

imparting a complex trait to the fundamental psychological component, paralleling/ comparing it with Piaget's stages of cognitive development. According to his theory, infants of the first 2 days show automatic reflexes when they hear other infants crying and copy crying as a form of understanding the emotions of others. Thus, the 1st stage of development called, "newborn reactive cry". The 2nd stage is during the 2nd year of the child's life and is called "egocentric empathic distress", because the child perceives the inconvenience of the other person but the egocentrism of his developmental period, does not allow him to fully perceive the experience of the other and respond in a similar way. In the 3rd stage that occurs in the first childhood, the development of language works in conjunction with the sense of the uniqueness and peculiarity of the other and the characteristics it bears. The experience of the other is fully understood in the 4th stage, which begins in middle childhood and enables the child to perceive, translate and empathize mentally-conceivable in this experience, being able to interconnect and relate it to his own personal experience [13, 14, 15]. The experience of the body has a dual role: as an object understanding the experience of his own experienced body and as a subject understanding the substance of his body through the experience with other people and the aesthetic contact with them. It is at this point that the individual understands the concept of intersubjectivity and can through the synchronization of experiences understand his individuality and others [16].

Alan Leslie (1987) referred to the impossibility of pretending, that is, the creation of an imaginary construction with mental participation. Attwood, through research with faces expressing emotions, talks about two poles of emotions in Asperger's syndrome, that is, patients can understand extreme emotions, while emotions with their subtleties create confusion [17]. Adults with Asperger's Autism maintain a distance with the feelings and thoughts expressed by the actor in the film, while at the same time in an intense emotional scene to maintain an apathetic gaze compared to other viewers. Oriented to this apathy and emotional remoteness from events, they maintain contact with the external environment and can understand this, but at the same time they demonstrate a reduced understanding of internal and external emotional reality. Finally, patients with Asperger seem distracted from the social situation and does not seem to actively participate in it, showing a turn in him, lost in his own thought [18].

Persons with Asperger's syndrome tend to show less eye contact compared to the population in the control group, avoiding to "encoding" the emotional expression of others by looking into their eyes and understand the deeper meaning of their thought. Also, the *theory of mind* argues that people

with Asperger's tend to respond differently to the stimuli of the social situation because they happen to perceive them differently or to offer excess excitement than what is expected in each case, it is as if they cannot fully assimilate the range of processes that occur around them or evaluate certain points wrong and thus cannot respond with anything imposed by social imperatives [19]. In some cases they seem to be confused with the excessive information they encounter around them, constituting an internal confusion. This peculiarity and incomplete skill in distinguishing the subtleties of the actions and so-called of others, and consequently overreacting about the stimulus they receive can create a wrong belief about aggression or even paranoid ideations. It seems that dysfunctions occur in the cingulate cortex, which is responsible for social interactions and in limbic system, which is the area of emotions. [20].

The stimulus-behavioral connections alter Damasio's *somatic markers*, which are imprinted/converted through the limbic cortex. According to Damasio, intuitive responses are unconscious and are supported by the person's recorded previous experience in relation to reinforcing or avoiding a behavior that was associated with a stimulus. Research findings support the connection between emotion and body, implying that an external stimulus and the positive or negative signature that it carries in its revival through dysfunctional "tools", like stress, can impart a body imprint [21, 22]. Quite important to the study around Asperger syndrome is the function of the vagus nerve, which function is correlated with automatisms. The abdominal aura, which accompanies raw sensations provokes intense feelings of fear of persecution. According to the hypostasis of "primitive visceral level/stage", neurotic emotions threaten the psyche discharge, through the inhibition of the viscera function, represent a higher level of organized thinking and expressions of anger [23, 24]. Kubie attributed a neurobiological basis, claiming that the limbic system and temporal cortex are the brain structures that can translate symbols into physical dysphoria [25].

Based on the theory of laterality, each hemisphere seems to be more specialized in some processes than in others. Left hemisphere is the dominant one in terms of rational processes and language abilities, while the right one is specialized in emotional conception and music and spatial perception. It has been argued that also in the right hemisphere is based divergent thinking, which is a key characteristic of creativity and by extension of gifted, such as Savant syndrome, mentioned in the beginning [26]. The main emotional, motor and motor of the perceptual recognition of the affective expressions of others is considered to be the right hemisphere, while Smokler & Shevrin found that obsessive compulsions are associated with

insulation of emotion and entailment with left laterality [27]. When Asperger patients experience negative stimuli the right hemisphere was activated more while increasing heart rate, whilst when emotional stimuli were positive the hemisphere was more activated [28]. Similarly, the existence of *alexithymia* has been linked to the prevalence of the left hemisphere, while individuals with alexithymia report their inability to see dreams and reproduce fantastical representations [29]. It is open to future research whether alexithymic characteristics are associated with a problematic communication between the limbic system and the diencephalon areas, or whether this could exist as a result of the weakness of mental imprint, because of the deficient interconnections between the two brain segments [30].

McDougall reported that people who carry *alexithymic* traits develop a "pseudo-normality" because they perceive and respond to external stimuli in a constructively mechanical way [32]. This is reflected in their social connections and makes them distance themselves. This partial abstinence from the social environment correlates with a difficulty in empathy since the alexithymic persons find it difficult to combine the internal assimilation of his experiences with those of others. Just as is the case with social interactions in Asperger's syndrome, alexithymic elements are likely imprinted on someone with Asperger's. Furthermore, the psychosomatic trace that could be considered to be imprinted in Asperger's syndrome could only be due to the difficulty of full empathy. Therefore, this is reflected in the difficulty of communicative mental and emotional symbolization in social-emotional relationships, causing a mental-emotional confusion. Due to the incomplete empathy and the weak internal representations, persons with Asperger feel frustrated, signaling an inadequate interpretation of intransitive stimuli, which lead to mental distortion, to wit an internal imprint / trace that creates confusion. Thus, the psychosomatic arises as a symbolic representation of the inadequate interpretation of a combination of internal and external environment. According to McDougall's theory, strong emotions cannot repel by alexithymic individuals or be re-invested in another way, so that the psyche restores balance levels, but mental tension builds up. The psychosomatic symptom is generating when repression (the protective membrane of the psyche, which prevents unconscious impulses from finding an outlet in the psyche and fragmenting it), is under-functioning and cannot "filter" the confrontational forces. This leads to an inability of symbolization and to the deficient development of the imaginative guidance schemes of the psyche [33].

Psychodynamic aspects

The mother-infant relationship is at the center of analysis of psychoanalytic-psychodynamic thinking approaches. Mahler reported to normal autistic behavior as a developmental behavioral response of the infant to the subjective sensory experiences of his body [34]. Mahler explained this behavior with an "omnipotent" model of the infant, according to which the infant can understand its existence, but in the early stages hush the contribution of maternal care to the fulfillment of its needs. But then the infant accepts it, assimilates the mother's contribution, and they both act like an impenetrable whole bound in very strong fetters. This process occurs gradually as the infant finds it difficult to differentiate the ego and the non-ego as its mental development and the formation of the basic structures of its psyche has not yet been completed. Klein simulated this mother - infant relationship with autism as a process of protective attachment of the infant to the womb with the strong bond of protection and satisfaction the umbilical cord. A normal/typical infant according to the researchers could pass into the hatching phase where a healthy psyche is born autonomous by leaving the protective environment of the mother [35]. In Asperger's, however, research focuses mainly on how the infant assimilates and creates mental representations of himself and his mother. Grotstein argued that the infant creates a mental representation of merging himself and the mother by creating "the dual track" [36]. Instead, Stern referred to the possibility of the infant to form in parallel many internal constructions for both the self and the merger with the significant other (caregiver /mother). In Asperger syndrome, we could assume that the process and the constitution of the psychic and mental imprints occurs in deficit, constructing a confused psychic - mental trace for the self, and for the empathy with the important other (caregiver/mother). Here attached, the inability of the infant with Asperger's to smile in the first few weeks and project each other's social feelings, a first token of empathy (empathy blindness) [37].

Kohut argued that empathic interaction with the mother's self-object and the continuous deconstruction of the self-object lead to the constitution of the self-object in the context of an externalized representation. According to his theory, the infant acquires, transmutes, modifies the aspects of the mother's self-object and constitutes his own self-object and thus records his developmental path. In an infant of abnormal development, like in autism, infant cannot fully structure, organize and internalize his self-object and thus, cannot "detoxify" himself from the mother's self-object, following an abnormal developmental path. This occurs due to the lack of empathic experience of an infant - mother and the

mother's inability to mentally reared, contained and project the infant's psyche [38].

Winnicott also analyzed the supportive environment in the evolution of difficulty with the confrontational model of psyche in *holding theory*. According to this theory the construction of the infant's ego occurs by the caregiver who has a duty to hold the fluid partially confused disorganized psyche of the infant [39]. In the autistic phase, what prevails is "self-sensory", as the infant with autism experiences completely external experiences on the basis of sensory stimuli using his body as a basic tool. Thus, the child perceives his own body as a transmitter of perception and processing of the world, but he cannot distinguish between ego and non-ego and thus incorporates sensory objects as an integral part of the ego (eg. thumb, mother's breast). So the caregiver can play an important role in how the child integrates and builds his ego incorporating the idea of an internalized object in relation to external reality and psychosocial interaction. In the case of Asperger's and the autistic spectrum in general, the infant cannot realize during development and cerebral maturation the caregiver as a separate person, but "sublimate" him/her as an integral part of his ego. In addition, psychoanalytic thinking argues that in a circumstance that will bring about stress in the form of excessive tension as in the case of empathy confusion in which the person with Asperger participates, allowing regression to earlier/ primitive stages of psychosocial development and formation allowing the symbolization of abstract representations and connection of the self with the internalized object, through the mechanism of projective identification [40].

Thus, when experiencing stress the function of the protective membrane of repression fails to contain the nonconscious impulses of the psyche, persons with Asperger syndrome reciprocates and uses the mechanism of *projective identification*, in order to discharge tension. The form that will discharge the tension could leave a symbolic imprint of psychomental content "withdrawing" the person to use his social-emotional abilities and internalize them as unacceptable, leading to the mobilization of repetitive movements through the mechanism of cancellation and self-harming or other relative deviant behaviors [41, 42].

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