v. 5, n. 12, 2025

International Journal of Health Science

Acceptance date: 25/02/2025

ADHD IN ADULTHOOD: DISCOVERY OR DEVELOPMENT?

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Abstract: Attention Deficit Hyperactivity Disorder (ADHD) is a neuropsychiatric condition that affects both children and adults, characterized by symptoms of inattention, hyperactivity and impulsivity. This article reviews the behavioral differences of ADHD in childhood and adulthood, and explores the brain regions and neurotransmitters involved. It also discusses genetic and hormonal influences, possible treatments and appropriate lifestyles, as well as investigating the relationship between ADHD and giftedness. An additional point of analysis is the comparison between ADHD and behavioral disorders derived from excessive use of social networks, highlighting the overlaps and distinctions between the two conditions.
Keywords: ADHD, neurobiology, genetics, behavior, giftedness, social networks.

INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a neuropsychiatric condition of complex origin that affects both children and adults, characterized by symptoms of inattention, hyperactivity and impulsivity. These symptoms can vary in intensity throughout life, with distinct behavioral manifestations in childhood and adulthood. In childhood, ADHD often presents with academic difficulties and behavioral problems, while in adulthood, manifestations can include difficulties in the workplace, interpersonal relationships and personal organization.

From a neurobiological point of view, ADHD is associated with alterations in various regions and sub-regions of the brain, such as the prefrontal cortex, basal ganglia and limbic system. These areas are responsible for regulating attention, motor control and emotions, and show morphological differences, such as a reduction in volume in certain structures. In addition, studies point to dysfunctions in neurotransmitter systems, particularly those involving dopamine and noradrenaline, which are crucial for modulating attention and impulsive behavior. Dysfunction can occur at various stages, including the production, reuptake or reception of these neurotransmitters, and may be associated with genetic variants that influence these processes.

In addition to neurobiological aspects, ADHD has also been linked to hormonal factors and gene expression. Research into specific genes and variants, such as those related to sphingolipid metabolism and myelination, has provided information on the mechanisms underlying the disorder. The treatment of ADHD generally involves a combination of medication, which acts mainly to regulate neurotransmitters, and behavioral interventions, which can be complemented by lifestyle modifications.

Another relevant aspect to be explored is the relationship between ADHD and giftedness, an area of research still under development that seeks to understand whether there is a link between these conditions. In addition, with the increased use of social networks, there is growing concern about the impact of these platforms on mental health, especially in relation to behavioral disorders that share traits with ADHD, such as difficulty concentrating, impulsivity and social isolation. Comparing ADHD and behavioral disorders derived from excessive use of social networks can reveal important overlaps and differences, helping to differentiate between symptoms arising from a neurobiological condition and behavioral effects induced by contemporary environmental factors.

This review aims to evaluate the behavioral differences of ADHD in childhood and adulthood, explore the brain regions and neurotransmitters involved, examine the influence of genes and variants, consider possible therapeutic approaches, and compare ADHD with disorders related to excessive use of social ne-

tworks, as well as investigating the possible relationship with giftedness.

DEVELOPMENT

The transition from childhood to adulthood in individuals with Attention Deficit Hyperactivity Disorder (ADHD) reveals complex neurobiological and genetic aspects that suggest both late discovery and persistence of symptoms from childhood. Recent genetic studies show that ADHD is highly heritable, with common and rare genetic variants playing significant roles in the manifestation of the disorder at different stages of life (RAJAGOPAL et al., 2021). Genetic evidence, especially in genes related to dopaminergic neurotransmission, suggests that ADHD in adulthood is not a new development, but rather the persistence of an underlying neurobiological vulnerability from childhood (FRANKE et al., 2017).

Neuroimaging tests have revealed atypical brain maturation patterns in individuals with ADHD. These studies show that although the volume of cortical grey matter normalizes in adulthood, abnormalities in white matter connectivity persist, suggesting a continuation of the neurological deficits associated with the disorder (FRANKE, 2017). In addition, the discovery of variants in genes related to sphingolipid metabolism and myelination reinforces the hypothesis that adult ADHD may be a reflection of genetic and neurobiological alterations established from early neurodevelopment, but which manifest or are recognized more clearly in later stages of life (HENRIQUEZ-HENRIQUEZ et al., 2020).

These findings corroborate the view that adult ADHD is not a "discovery" phenomenon resulting from new environmental or social factors, but rather a neurodevelopmental condition that can manifest itself in a varied way throughout life, depending on genetic factors and their interaction with the environment. The continuity of symptoms suggests that the etiology of adult ADHD is deeply rooted in the same genetic and neurobiological processes that give rise to childhood ADHD, with the variation observed throughout life being modulated by these underlying factors.

MAIN BEHAVIORAL TRAITS OF INDIVIDUALS WITH ADHD IN CHILDHOOD COMPARED TO ADULTHOOD

Attention Deficit Hyperactivity Disorder (ADHD) has behavioral and personality manifestations that vary considerably between childhood and adulthood. In childhood, ADHD is predominantly characterized by a clinical picture that includes inattention, hyperactivity and impulsivity. Children with ADHD often exhibit difficulty maintaining attention in school activities, exhibit agitated behavior and tend to interrupt or invade other people's activities. These symptoms manifest themselves in multiple environments, such as at home and at school, leading to academic difficulties and social challenges (AMERICAN PSYCHIATRIC ASSOCIATION, 2013).

In the transition to adulthood, the behavioral traits of individuals with ADHD tend to change, reflecting changes in environmental and social demands. The physical hyperactivity typical of childhood may subside, giving way to an internal restlessness or a constant need to be busy. Inattention, however, tends to persist, manifesting itself as difficulty organizing tasks, following plans or staying focused on prolonged activities. In addition, impulsivity, which in childhood can manifest itself as disruptive behavior, can evolve into rash decisions and time management difficulties, affecting the professional and personal lives of adults with ADHD (BIEDERMAN et al., 2012).

These differences in behavior patterns between children and adults with ADHD suggest that the disorder may not simply be a static condition, but rather a neuropsychiatric continuum that adapts to changes in the environment and life context. The persistence of symptoms of inattention and impulsivity into adulthood, even in the absence of marked physical hyperactivity, can result in late diagnosis, especially in adults who, during childhood, had subclinical symptoms or who were able to mask the signs of ADHD due to environmental factors or the development of compensatory strategies (WYMBS et al., 2013).

Empirical evidence suggests that although ADHD traits may change over time, the functional impact and associated difficulties remain significant in adulthood. A study conducted by Barkley et al. (2008) points out that adults with ADHD tend to have greater difficulty in achieving job stability, a higher rate of traffic accidents and more conflictual interpersonal relationships. This shows that ADHD, even if it presents a different symptomatic pattern in adulthood, continues to have a negative impact on the quality of life of affected individuals.

THE MOST COMMON TRAITS IN CHILDHOOD

INATTENTION

- Difficulty keeping their attention on tasks or games;
- He doesn't seem to listen when people speak directly to him;
- Has difficulty following instructions and completing tasks;
- Easily distracted by external stimuli;
- Loses objects needed for tasks or activities;
- Avoids, dislikes or is reluctant to engage in tasks that require sustained mental effort;
- Has difficulty organizing tasks and activities;
- Frequently forgetting daily tasks.

HYPERACTIVITY

- They move their hands or feet or squirm in their chair;
- He gets up from his chair in situations where he is expected to remain seated;
- Runs or climbs in inappropriate situations;
- They find it difficult to play or carry out leisure activities calmly;
- It is always "on the move", as if it were "powered by an engine";
- Talks excessively.

IMPULSIVENESS

- Answer before the question is fully asked;
- He has trouble waiting his turn;
- Invades other people's conversations or activities.

OTHER TRAITS THAT MAY BE PRESENT

- **Academic difficulties:** Difficulty concentrating in class, doing homework and keeping up with the pace of the class.
- **Behavioral problems:** Aggressiveness, irritability, defying rules and authority.
- Difficulties **in social relationships:** Difficulty making friends, maintaining friendships and dealing with conflicts.
- **Low self-esteem:** Due to the difficulties faced, children can develop low self-esteem and feelings of inadequacy.

DOI https://doi.org/10.22533/at.ed.1595122524026

TRAITS THAT ARE MORE COMMON IN ADULTHOOD

INATTENTION:

- Difficulty organizing tasks and projects;
- Easily distracted by irrelevant stimuli;
- Chronic procrastination;
- Losing or forgetting important objects;
- Difficulty staying focused in conversations or meetings;
- Difficulty learning new skills or following complex instructions.

IMPULSIVENESS

- Difficulty controlling impulses, such as interrupting others or making rash decisions;
- Difficulty waiting their turn;
- Tendency to take unnecessary risks;
- Difficulty in maintaining stable relationships.

HYPERACTIVITY

- Internal restlessness, difficulty sitting still;
- Difficulty relaxing and slowing down;
- Constant need for stimulation;
- Difficulty concentrating on a single task for a long time.

OTHER TRAITS THAT MAY BE PRESENT

- **Professional difficulties:** Difficulty keeping a job, problems with deadlines and organization, difficulty working as part of a team.
- **Financial problems:** Difficulty managing money, impulsive buying.
- Difficulties **in interpersonal relationships:** Difficulty maintaining stable relationships, communication problems, impulsiveness in relationships.
- **Low self-esteem:** Feelings of inferiority, insecurity and inadequacy.
- **Comorbidities:** ADHD in adulthood can coexist with other mental disorders, such as anxiety, depression and bipolar disorder.

TYPICAL BEHAVIORAL AND PERSONALITY TRAITS IN PEOPLE WITH GIFTEDNESS

SIMILARITIES BETWEEN ADHD AND GIFTEDNESS

- **Inattention:** Both children with ADHD and some with giftedness may find it difficult to keep their attention on tasks that they find un-challenging or repetitive. The mind may "wander" to other ideas or interests.
- Impulsivity**:** Impulsivity, such as difficulty in waiting one's turn or making hasty decisions, can be present in both cases. People with giftedness can act impulsively due to intense curiosity, emotional swings or the search for new experiences.
- **Social difficulties:** Both children with ADHD and some with giftedness can have difficulties relating to their peers, especially when their interests or abilities are very different.
- **Behavioral problems:** In some cases, both children with ADHD and giftedness can display challenging behaviors, such as disobeying rules or being impulsive.

DIFFERENCES BETWEEN ADHD AND GIFTEDNESS

- **Intensity and frequency:** ADHD symptoms tend to be more intense and frequent, significantly impacting the child's or adult's daily functioning. In giftedness, behaviors can be more episodic and related to specific situations.

DOI https://doi.org/10.22533/at.ed.1595122524026

- **Quality of attention:** Children with ADHD generally have difficulty keeping their attention on any task, while gifted children can concentrate intensely on subjects that interest them.
- **Motivation:** Children with ADHD may find it difficult to motivate themselves for tasks that require effort, while gifted children are usually highly motivated by activities that challenge their abilities.
- **Creativity:** Creativity is a marked trait in gifted children, whereas in ADHD impulsivity can lead to unstructured ideas or difficulties in completing projects.

One way of comparing people with ADHD and giftedness is to understand the nuances behind similar traits. For example, internal restlessness, common in people with ADHD, can also manifest itself in gifted people, possibly due to their intense curiosity and need to seek out new knowledge. High anxiety is also a common trait in both cases, although for different reasons. The feeling of inadequacy can also be present in both, but with different origins.

Gifted people can find it difficult to relax and slow down due to the intensity of their brain connections and intense curiosity, a consequence of genetic mechanisms that can lead to greater production of substances related to learning and the formation of memories. The constant need for stimulation is common in both cases. Internal restlessness is related to the need for the new.

Difficulty controlling impulses can be common in gifted people due to their emotional intensity, but they don't have great difficulty making decisions, unless they are maladaptive perfectionists. Gifted people are not easily distracted by other things that might take their attention away, and if this happens, it may be due to sensory sensitivity or too much information in the environment. However, they tend to be able to get back on track better than people with ADHD, who may forget what they were saying.

Procrastination is also common in both cases. In gifted people, it can be related to the energy-saving mode and also to the increase in cortisol derived from anxiety excessive and a constant lack of motivation. Gifted people are generally better at directing their attentional focus.

In general, gifted people are more organized and tend to meet deadlines. They also don't often forget things. They tend to focus on what interests them and don't lose concentration, devoting most of their time to figuring out or finishing what they are doing. Gifted people tend to have better control of their emotions, are more preventative and can make decisions more dynamically, but with less risk, because they reflect quickly on the nuances and consequences.

Gifted people tend to pay attention to what the other person is saying. What can happen is that if the subject isn't interesting, they get bored and try to speed up the conversation process. Gifted people love complex tasks that require greater mental effort. They also tend to be more curious than people with ADHD. They are more analytical and reflective.

Gifted people don't usually invade the conversation and wait for the other person to finish speaking. They may interrupt when they realize that there is no point to the conversation or that it is going nowhere. Gifted people are less physically restless. Interest and curiosity are greater.

COMPARISON OF THE BEHAVIORAL TRAITS OF PEOPLE WITH ADHD AND SOCIAL NETWORK DISORDERS

Attention Deficit Hyperactivity Disorder (ADHD) and behavioral disorders derived from excessive use of social networks share characteristics in terms of clinical manifestation and neurobiological alterations, but differ significantly in their etiology and the brain regions affected. Both conditions can manifest with attention difficulties, impulsivity and

DOI https://doi.org/10.22533/at.ed.1595122524026

emotional regulation problems, although the underlying causes and consequences of these characteristics vary

Behavioral Traits: People with ADHD typically have persistent difficulties in maintaining attention, controlling impulsivity and restlessness, whether physical or mental. These difficulties are observed in different contexts, such as academic, professional and social environments, and are accompanied by a clinical history dating back to childhood. Impulsivity can manifest itself in rash decisions and difficulty planning activities, while inattention is reflected in the inability to concentrate on prolonged tasks (AMERICAN PSYCHIATRIC ASSOCIATION, 2013). On the other hand, disorders derived from excessive use of social networks, such as "Internet Addiction Disorder" (IAD) or "Social Media Addiction" (SMA), manifest predominantly with addictive behaviors and compulsive use of digital platforms, leading to progressive social isolation and difficulties concentrating on activities unrelated to the use of social networks. Impulsivity in these cases may be related to the constant need to check notifications and the uncontrollable use of networks, while inattention is often restricted to activities outside the digital environment (ANDREASSEN et al., 2012).

Regions and Subregions Involved in the Brain: In ADHD, the most affected regions include the prefrontal cortex, with emphasis on the dorsolateral (involved in planning and organization), ventromedial (related to emotional processing and decision-making) and orbitofrontal (important for evaluating rewards and inhibiting inappropriate behavior) subregions. These areas are responsible for inhibitory control and executive functions. In addition, the basal ganglia, which modulate motivation and motor behavior, and the cerebellum, which impacts coordination and temporal processing, also show alterations (FRANKE et al., 2017). In contrast, disorders related to excessive use of social networks show alterations in areas of the brain related to the reward system, such as the nucleus accumbens and the orbitofrontal cortex, which are associated with reward-seeking behavior and emotional regulation (KIM et al., 2011). In addition, other regions such as the amygdala and medial prefrontal cortex can also be affected, impacting emotional processing and decision-making. Problematic use of social networks can also lead to impairments in cognitive processes such as memory and attention.

Neurotransmitters Involved: In ADHD, the main neurotransmitters involved are dopamine and noradrenaline. Dopamine, which is crucial for regulating motivation and pleasure, shows dysfunctions in transmission, especially in the mesocorticolimbic pathways. Noradrenaline, which regulates attention and alertness, is also dysfunctional, contributing to symptoms of inattention (ARNSTEN, 2009). In disorders derived from the use of social networks, dopamine is also central, but the dysfunction is more related to hyperstimulation of the reward system, leading to addictive behavior and compulsive search for pleasant stimuli (KO et al., 2009).

Hormones involved: Hormones also play different roles in the two contexts. In ADHD, cortisol, which is related to the stress response, may be altered due to dysfunctions in the HPA axis, which affects emotional regulation and the stress response (ISERIN-MUNNIK et al., 2016). In social media disorders, there is evidence that compulsive use can lead to changes in cortisol levels, particularly in situations of deprivation or disconnection, reflecting a state of stress associated with digital addiction (MEIER et al., 2016).

Genes and Variants Involved: ADHD has a strong genetic basis, with genes such as *DAT1*, *DRD4* and *COMT* often associated with the disorder. These genetic variants affect the function of dopamine transporters and receptors, contributing to the neurochemical dysfunctions observed in ADHD (BROOKES et

al., 2006; FARAONE et al., 2005). On the other hand, disorders derived from the use of social networks do not yet have a clearly defined genetic profile, but initial research suggests that variants in genes related to the dopaminergic system, similar to those observed in ADHD, may predispose individuals to digital addiction behaviors (MONTAG et al., 2019).

Although ADHD and social media overuse disorder are distinct conditions, they share some behavioral traits and symptoms, possibly due to the influence on similar brain regions and neurotransmitters. For example, both can present attention difficulties, impulsivity and emotional regulation problems. However, it is crucial to remember that the underlying causes and long-term consequences of these manifestations differ between the two conditions. Excessive use of social media in people with ADHD can, in fact, exacerbate pre-existing symptoms and increase psychological damage, such as anxiety and low self-esteem.

MORPHOLOGY, NEUROBIOLOGY AND GENOMICS OF ADHD

Attention Deficit Hyperactivity Disorder (ADHD) is a neuropsychiatric disorder with a complex neurobiological basis involving morphological brain alterations, neurochemical dysfunctions and specific genetic predispositions. This multifactorial panorama contributes to the manifestation of ADHD symptoms throughout development, from childhood to adulthood.

REGIONS AND SUB-REGIONS INVOLVED IN THE BRAIN

Neuroimaging studies indicate that ADHD is associated with structural alterations in several brain regions, mainly the prefrontal cortex, the basal ganglia (particularly the caudate nucleus and the putamen) and the cerebellum. The prefrontal cortex, which is crucial for executive functions such as planning, decision-making and inhibitory control, often shows a reduction in volume in individuals with ADHD. This volumetric decrease is correlated with functional deficits in attention regulation and impulsive behavior (FRANKE et al., 2017).

The basal ganglia, which play a key role in modulating motor behavior and motivation, also show significant morphological changes. The caudate nucleus and the putamen, in particular, have their volume reduced, which is related to the hyperactivity and impulsivity observed in ADHD (CORTIE et al., 2012). In addition, the cerebellum, which is involved in motor coordination and temporal processing, can atrophy in specific regions, contributing to the coordination and temporal notion difficulties often observed in individuals with ADHD (VALERA et al., 2007). In addition to these regions, ADHD is also associated with differences in the activity and connectivity of other important brain areas, such as the anterior cingulate cortex, involved in conflict processing and decision-making, and the parietal cortex, which plays a role in spatial attention and sensory integration. These alterations in various brain regions contribute to the complexity of the symptoms and challenges faced by individuals with ADHD.

NEUROTRANSMITTERS INVOLVED

The dopaminergic system is widely recognized as central to the pathophysiology of ADHD. Dopamine, a key neurotransmitter in the modulation of reward, motivation and attention, is dysfunctional in several stages, including production, reuptake and reception. In particular, the dopaminergic hypothesis of ADHD suggests that there is a deficiency in dopaminergic transmission in the mesocorticolimbic pathways, resulting in decreased activation of the prefrontal cortex and associated subcortical structures (VOLKOW et al., 2009).

In addition to dopamine, noradrenaline also plays a crucial role in ADHD. Noradrenaline, which regulates vigilance and attention, has its activity altered, particularly in regions such as the locus coeruleus and its projections to the prefrontal cortex. Deficiency in noradrenergic neurotransmission can exacerbate symptoms of inattention and lack of focus (ARNSTEN et al., 2009).

HORMONES INVOLVED

Hormones, especially cortisol, have been investigated in the context of ADHD due to their role in the stress response. Individuals with ADHD may have dysfunctions in the hypothalamic-pituitary-adrenal (HPA) axis, resulting in altered cortisol levels. These alterations can influence stress reactivity and emotional regulation, factors that are often dysfunctional in individuals with ADHD (ISERIN-MUNNIK et al., 2016). Cortisol dysregulation may also be related to the comorbidity between ADHD and anxiety disorders, indicating a complex interrelationship between the neuroendocrine and neurotransmitter systems in ADHD.

GENOMICS: GENES AND SNPs INVOLVED

ADHD genomics reveals a significant hereditary component, with several genetic variants associated with the disorder. The DAT1 gene (SLC6A3), which encodes the dopamine transporter, is among the most studied. Polymorphisms in this gene, particularly in the VNTR (Variable Number Tandem Repeat) in the 3' UTR region, have been associated with ADHD, suggesting that alterations in dopamine reuptake are implicated in the pathophysiology of the disorder (BROOKES et al., 2006).

Another widely studied gene is DRD4, which encodes the D4 dopamine receptor. Variants in the DRD4 gene, such as the presence of the 7-repeat allele, have been associated with ADHD, with implications for the modulation of dopaminergic transmission and impulsive behavior (FARAONE et al., 2005). In addition, the COMT (catechol-O-methyltransferase) gene, which is involved in the degradation of catecholamines such as dopamine, has variants that affect the efficiency of dopaminergic catabolism, influencing cognitive function and inhibitory control in individuals with ADHD (DIAMOND et al., 2004).

Recent studies also point to the implication of genes related to neuroplasticity, such as BDNF (brain-derived neurotrophic factor), which is involved in neuronal growth and survival. Polymorphisms in BDNF have been associated with ADHD, suggesting that dysfunctions in synaptic plasticity may contribute to the etiology of the disorder (KRISTINSSON et al., 2016).

THERAPEUTIC PROCESS AND INTERVENTIONS IN THE TREATMENT OF ADHD

The treatment of Attention Deficit Hyperactivity Disorder (ADHD) is multifactorial, involving pharmacological and non-pharmacological approaches aimed at relieving symptoms and improving the individual's overall functioning. The therapeutic process is therefore personalized, tailored to the specific needs of each patient, taking into account factors such as age, comorbidities and the impact of the disorder on daily life.

- **Pharmacological Approach:** Drug intervention is one of the main strategies in the management of ADHD, with psychostimulants being the most commonly prescribed drugs. Among psychostimulants, methylphenidate and amphetamines are widely used due to their effectiveness in improving attention, impulsive control and the ability to concentrate. These drugs act mainly by increasing the availability of dopamine and noradrenaline in the prefrontal cortex, critical areas

for regulating executive functions (BIEDERMAN et al., 2004). In addition to stimulants, non-stimulant drugs such as atomoxetine, which inhibits noradrenaline reuptake, are also used. These drugs are particularly indicated for patients who are intolerant of stimulants or who have comorbidities that contraindicate the use of psychostimulants (WILENS et al., 2006). Tricyclic antidepressants may be prescribed. When ADHD is accompanied by mood or anxiety disorders, SSRIs can be used for comorbidity (GREENHILL et al., 2002).

- **Non-pharmacological interventions:** Behavioral and psychosocial interventions are fundamental in the treatment of ADHD, complementing the effect of medication. Cognitive-behavioral therapy (CBT) is widely recommended, as it helps patients develop strategies for dealing with inattention, impulsivity and disorganization. CBT can include techniques such as social skills training, time management and problem solving, which are essential for improving daily functioning and reducing the impact of ADHD on interpersonal relationships and academic or professional performance (ANTSHEL et al., 2011). In addition to CBT, psychoeducation plays a crucial role, both for patients and their families. Understanding the characteristics of ADHD and its implications helps to create realistic expectations and develop practical strategies for managing the disorder. In some cases, family interventions or family therapy may be necessary to improve family dynamics and reduce the stress associated with ADHD (CHACKO et al., 2005).
- **Habits and Lifestyle:** Lifestyle modifications are also recommended as part of ADHD management. Regular exercise has shown positive effects in reducing ADHD symptoms, especially in relation to hyperactivity and impulsivity. Regular exercise increases the release of neurotransmitters such as dopamine and serotonin, which are deficient in individuals with ADHD, as well as improving mood and emotional regulation (SMITH et al., 2013). Adopting a balanced diet rich in nutrients is equally important. Although the relationship between diet and ADHD is still an evolving field of study, there is evidence that diets rich in omega-3 fatty acids and low in food additives may benefit some patients (RICHARDSON et al., 2006). In addition, sleep hygiene is fundamental, as sleep disorders are common in people with ADHD and can exacerbate symptoms. Establishing regular sleep routines and avoiding exposure to screens before bedtime are recommended practices (CORKUM et al., 2011).

FINAL CONSIDERATIONS

This study investigated Attention Deficit Hyperactivity Disorder (ADHD) in its complexity, from its manifestation in childhood to its expression in adulthood. The persistence of symptoms throughout development, with nuances and contextual adaptations, highlights the need for longitudinal and individualized monitoring. The phenotypic heterogeneity of ADHD, evidenced by the variability of its clinical presentation, is echoed in the complexity of its neurobiology, which involves multiple brain regions, neurotransmitter systems and genetic factors. The transition to adulthood poses specific challenges for individuals with ADHD, who may face difficulties in the professional, social and emotional spheres. Late diagnosis, often due to under-reporting or masking of symptoms in childhood, can aggravate these difficulties, highlighting the importance of raising awareness and improving diagnostic tools for this population.

Comparative analysis with behavioral disorders associated with excessive use of so-

cial networks revealed an intriguing overlap of symptoms, such as difficulty concentrating and impulsivity. However, investigation of the neurobiological and genetic bases pointed to crucial distinctions, suggesting that although they may share some phenotypic characteristics, these disorders have distinct etiologies and pathophysiological mechanisms. The problematic use of social networks in individuals with ADHD can, however, exacerbate pre-existing symptoms and increase the risk of comorbidities such as anxiety and depression.

The relationship between ADHD and giftedness, although still lacking conclusive research, suggests a possible coexistence, which requires a thorough and multifaceted clinical assessment. Giftedness, commonly associated with traits such as high intellectual capacity, intense curiosity and a need for stimulation, can be misinterpreted as a symptom of ADHD, highlighting the importance of a careful differential diagnosis.

Advances in neuroscience and genomic research have uncovered the neurobiological underpinnings of ADHD, opening up new perspectives for the development of more effective and personalized therapeutic interventions. The combination of pharmacological, psychotherapeutic and psychosocial approaches, together with lifestyle changes, offers a promising therapeutic arsenal for the management of ADHD at all stages of life.

Ultimately, ADHD is a multidimensional challenge that requires an integrated and individualized approach. Understanding its complexity, from its neurobiological basis to its behavioral manifestations, is fundamental to promoting the well-being and full development of affected individuals. The future of ADHD research lies in the search for more accurate biomarkers, the development of innovative therapies and the promotion of a more inclusive and welcoming society for those living with the disorder.

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