WHICH EDUCATIONAL PERSPECTIVES FOR ADHD STUDENTS IN POST PANDEMIC? BETWEEN ANALOGUE AND DIGITAL DIDACTICS PRACTICES

QUALI PROSPETTIVE EDUCATIVE PER GLI STUDENTI ADHD NEL POST PANDEMICO? TRA PRATICHE DIDATTICHE ANALOGICHE E DIGITALI

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ABSTRACT
Students with ADHD have problems maintaining an attentive focus in traditional teaching and the situation may have become more complicated with COVID-19 pandemic. There are conflicting results in literature: some reported the frustration experienced during online activities, others described distance learning as a positive experience. The aim of this article is to deepen the phenomenon in literature, to identify teaching methods that help students with ADHD to live school with more success.

Gli alunni con ADHD hanno problemi a mantenere un'attenzione nell'insegnamento tradizionale e la situazione potrebbe essere diventata più complicata con la pandemia da COVID-19. Ci sono risultati contrastanti in letteratura: alcuni hanno riportato la frustrazione vissuta durante le attività online, altri hanno descritto la didattica a distanza come un'esperienza positiva. Lo scopo di questo articolo è di approfondire il fenomeno in letteratura e di individuare strategie didattiche e metodologiche che aiutino gli alunni con ADHD a vivere la scuola con più successo.

KEYWORDS
ADHD, Didactics, Attentive Focus, Best Practice
ADHD, Didattica, Focus Attentivo, Buone Pratiche

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Introduction: A Necessary Pedagogical Framework[1]

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by impulsivity, hyperactivity, and poor attentional regulation. These aspects are still underlined by the most recent diagnostic text revision of the DSM-5-TR (APA, 2022). It is classified in the neurodevelopmental disorders category with the code 6A05 (WHO, 2020) and it is necessary that the conditions last for at least six months, so that it can be diagnosed (Kim, 2018). ADHD is a behavioral disorder of uncertain cause that commonly appears in school-aged children and typically persists into adolescence and well into adulthood (Case-Smith & O'Brien, 2010), with a great impact on learning behaviors (Colomer *et al*., 2017) and learning outcomes (Biederman *et al*., 2004).

The prevalence of ADHD worldwide occurs in most cultures in approximately 5% of children and approximately 4.5% of adults (APA, 2022). For this reason, ADHD is the most common childhood neurobehavioral disorder (Gharebaghy, Rassafiani, & Cameron, 2014). The WHO data (2020) on the prevalence of ADHD in adults (18-44 years) in 10 countries are also interesting. The estimate of prevalence is around 3.4% with a higher value in France (7.3%) and lower in Spain (1.2%) while in the United States it is equal to 5.2%. The same data show that the prevalence of ADHD in Italy varies from 2.8% to 7.3% in adulthood. This disorder is quite frequent at school: in Italy it is present in about 4% of primary school children (Bianchini et al., 2013), which means that it is possible that there is at least one child with ADHD in a classroom since the early stages of school life.

Many of the children with ADHD also have an associated disorder (Tarver, Daley, & Sayal, 2014), which means that the clinical picture is still highly variable. Thus, it is difficult to establish whether, in addition to the characteristic features of inattention and hyperactivity, there are others which are an integral part of the syndrome or whether there are other underlying reasons that explain this association. The association, often found, with Oppositional-Defiant Disorder (40-50% of cases) and Conduct Disorder (10-15% of cases), but not only, causes greater

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[1] *The article is the result of a joint work of the three authors. The paragraph "*Introduction: A Necessary Pedagogical Framework*" was written by *Angelo Basta*, the paragraph *"1. Sets and Setting During COVID-19 Pandemic: Which Characteristics?"* was written by *Sergio Bellantonio*, the paragraph *"2 Possible Future Scenarios for ADHD Students: Between Analogical and Digital Practices"* was written by *Anna Dipace*, the paragraph *"Conclusions: What We Learnt from Pandemic and What We Can Do in Post-Pandemic"* was written by the three authors together.

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difficulties at school, in the class group and in carrying out the homework (Faraone, Biederman, & Monuteaux, 2002). The strong component of negativity, provocation and hostility further complicates the already present difficulty in maintaining attention for prolonged periods (Capodieci, Cornoldi, 2013).

The mechanism underlying the onset of the disorder is not yet clear, but numerous evidence (De Felice *et al*., 2015) underline how it can originate from a biological dysfunction of some neurotransmitters. From a pedagogical perspective we wonder if the disorder may have also originated from inadequate educational relationships. Although the disturbance seems to have a clear neurobiological origin, the educational modalities used can have important consequences on the intensity of the symptoms, aggravating them or reducing their intensity, thus highlighting how the environment, interpersonal relationship, set and setting of teaching and learning can have a great influence on ADHD. Not all children present the same difficulties: each child can present very different manifestations and behaviors from one another, and these problems can evolve during development, modifying the impact and severity of symptoms on daily life, including, of course, school (Ianes, Camerotti, 2012).

With COVID-19 pandemic, the school environment has suddenly changed. The physical environment has gone from a school class, classmates, and the teacher, to a room of their own home, where the children found themselves studying independently. From a pedagogical point of view, the teacher took the place of a member of the family and there was no longer any interaction with classmates. In fact, this period has put children with ADHD in the face of considerable challenges (Zhang et al., 2020), which require in-depth theoretical and research perspective to wisely manage future scenarios in education and teaching.

1. Sets and Settings During COVID-19 Pandemic: Which Characteristics?

In the educational management of neurodiversity at school, teachers may often encounter students with ADHD, a disorder that involves a series of difficult-to-understand attitudes and behaviors that require in-depth knowledge to be adequately treated. As already emerged in the previous paragraph, students with ADHD are not inattentive or distracted by their own will but, simply, do not have the ability to self-regulate and, consequently, to manage emotions and behaviors. This fundamental premise can help teachers understand that blaming or scolding pupil with ADHD is a wrong educational approach (Ianes, Camerotti, 2012) and that it is necessary to find alternative ways to get in tune.

School includes educational and didactic activities necessary for learning and participation in the environment that enable the students to acquire the basic skills and capabilities (Nussbaum, 2003; Sen, 1999) necessary for a successful transition from childhood and adolescence to adulthood, in neurodevelopmental disorders and disabilities (Biggeri, Bellanca, 2011). School is thus an important area of participation and social inclusion, as it can positively influence the educational, social, and psychological well-being of communities (Barkley, 2018).

With the COVID-19 pandemic, individuals with ADHD have been faced with a lot of challenges (Zhang *et al*., 2020). They potentially represent a group vulnerable to the effects of social confinement and the health crisis for several reasons: the measures implemented, including the sudden closure of schools, have caused the loss of daily routine, leading to lack of interpersonal and social interaction; on the contrary, time with the family has increased but fear has also arisen given the potential anxiety-producing nature of this health and economic crisis (Bobo *et al*., 2020).

According to Bobo *et al*. (2020) these changes could influence ADHD symptoms, while according to Zhang *et al*. (2020) symptoms could worsen as the changes could be potential risk factors for mental health. The COVID-19 pandemic, being a serious challenge for everyone (OECD, 2020), has raised concern about the situation and this can further aggravate children's well-being and worsen their behavioral problems. During pandemic the gap between children with ADHD and children without ADHD increased. According to Ozgung *et al*. (2023), the long-term impact of the COVID-19 pandemic on ADHD children's daily life has been significant. The children with ADHD were determined to play computer and video games significantly more than children without ADHD. The mean frequency of participation in arts, crafts, music, hobbies, school preparation, and homework was significantly higher in children without ADHD.

At this point, we well understand that if *ad hoc* educational and behavioral supports are fundamental for the well-being of children with ADHD, it is conceivable to think that the abrupt interruption of these supports has exacerbated some behaviors (Summers *et al.*, 2021). Then, from an educational perspective, confinement becomes a real educational challenge (OECD, 2020), because this situation required a sudden adaptive change of daily lifestyle caused by the restrictions imposed in a family context (Cortese *et al.*, 2020).

There are conflicting results in the literature concerning the educational management of set and settings of learning at home at school, in ADHD, but not only. On the one hand, some argue (Ausbury *et al*., 2021) that parents have found themselves managing all the problems of their children, and others (Breaux *et al*.,

2021) report the frustration experienced during online school activities. On the other hand, Bobo *et al*. (2020), underline that the confinement situation has had several positive effects on children with ADHD, like the improvement of symptoms of inattention; decrease in symptoms of agitation; decreased opposition/aggression; greater awareness of parents about children's difficulties; respect for the need for rest and sleep; improvements in restlessness and study duration in relation to a decrease in the discomfort created by the rhythm imposed by school activities.

Furthermore, others (Melegari *et al*., 2021) argue that the forced intrafamilial condition could lead to general relaxation for children and adolescents with ADHD who have experienced different external stressors, as well as improved behavior and mood tone (McGrath, 2020).

There are still several contrasting opinions about the organization of educational sets and settings following the COVID-19 pandemic. It is important to monitor the short and long-term effects to direct educational action towards increasingly competent systemic actions. In this regard, it is important to underline the strengths and weaknesses that distance learning has had during COVID-19 pandemic (Capperucci, 2020), to think about analogue and digital teaching activities that in the future can be well integrated and enter daily school practices.

2. Possible Future Scenarios for ADHD Students: Between Analogical and Digital Practices

The deep digital transformation that has occurred in recent decades requires a rethinking of educational and teaching models. It is a reorganization of roles and functions of work and of socio-cultural models that need a triangulation among *digital technologies*, *human development* and *sustainability* that directly call into question pedagogy reflection and didactics interventions. The COVID-19 pandemic has brought to the fore some educational themes that need to be pedagogically explored, such as pain, mourning and loss; the value of science and the health professions; social distancing; isolation, caring for others and self-care; the crises of the current model of civilization (Mariani, 2020).

The technological changes that have already taken place in recent decades have made it necessary to redefine and modify pedagogical approaches, educational systems, and teaching processes, which had an even more decisive boost with the advent of the COVID-19 pandemic. The Corona virus has affected the regular functioning of school and university, with the gradual transition from traditional teaching to distance learning, up to the application of hybrid models. If in the past

distance learning was one of the possible teaching alternatives, with the COVID-19 pandemic it has become the only way to continue guaranteeing the didactics activities (UNESCO, 2023). The teaching-learning practices implemented during COVID-19 pandemic can be defined as *emergency remote education/emergency remote teaching* and these practices are quite different from planned practices such as *distance education*, *e-learning*, or other well-structured derivations (Bozkurt *et al*., 2020). It is worth remembering that there is a difference between emergency remote education/emergency remote teaching and e-learning: the latter is an option, a theoretical perspective and an operational intervention that led to meaningful choices of didactic and educational actions, while the former is compulsory, and finds its necessary application in a widespread state of emergency (Fuchs, 2022).

Above all, e-learning has its validity and educational value (Xiao, 2018); since the beginning, research (Russell, 1999) showed that there is no difference among the different forms of distance education and face to face education.

But what happens when the described phenomenon affects students with ADHD, also with reference to the period of confinement that we have left behind? Which pedagogical reflections should be done? Which mistakes have been made in pandemic and which possible scenarios arise from our experience?

Indeed, the consequences of confinement have caused a fusion of life and workspaces: work and home life suddenly took place in the same place, making it more difficult to carry out one's tasks or disconnect from work. Thus, it is necessary rethinking teaching, promoting hybrid methods, appropriate to the objectives of inclusion and educational success, compared to the univocal approach of traditional lessons. The emergency remote teaching used during COVID-19 pandemic had a sort of *retrospective effect*, allowing a re-evaluation of alternative methodologies or of integration to the frontal lesson, cooperative learning, debate, flipped classroom, scarcely used in most widespread ways of teaching (Bonaiuti, Dipace, 2021). With reference to a new integrated analogical and digital paradigm, it is therefore necessary to distinguish among the axiological, methodological, and praxeological level, to understand how we can better reconfigure teaching after pandemic.

During pandemic, to deal with the health emergency, digital platforms were used in education and learning which, however, can still be used in school and extracurricular activities also in presence, integrating analogical and digital methods. The novelty now is the educational and didactics planning of one's own teaching in this dual modality, aware that even if there were no longer any compulsory reason to teach online, these have already entered the possible options

by right, effectively giving life to *Blended Classroom* and *Integrated Digital Teaching*, preparing teachers adequately (Starkey, 2020).
In the case of ADHD students, the theoretical framework is the Universal Design for Learning (UDL) and its main three principles: providing multiple representation; providing multiple action and expression; providing multiple forms of involvement (Novak, 2022). Efficient lesson planning with UDL enables teachers to meet students' ADHD needs also find great correspondence more effectively in distance learning, with the use of organized platforms.

Conclusions: What We Learnt from Pandemic and What We can Do in Post-Pandemic

The described symptoms of students with ADHD make learning more difficult and influence planning, organization, and behaviour management (APA, 2022). Such limitations make it difficult to deal with a radical change, such as the introduction of a new learning environment (OECD, 2020). It is also known that the concentration difficulties of the students with ADHD can improve considerably if they are in an environment where distractions are reduced, such as the classroom. But the potential distractions that come with staying home and online are endless (Biederman *et al*., 2004).
Movement is central to the students with ADHD, because they need to move to focus attention optimally. The online school environment therefore risks becoming not only boring, but also completely demotivating. For children and adolescents with ADHD who tend to have more difficulty with boredom and mental strain, virtual learning may lack the novelty and stimulation to keep them engaged in learning activities (Barkley, 2018).
The school is also the place where students, in addition to learning, can interact with their peers. Children with ADHD are more likely to have some difficulty in social relationships and these are often their most important source of stimulation (Colomer *at al*., 2017). Emergency remote teaching has provided fewer opportunities to interact freely with one's peers and strengthen those social and emotional skills that are then essential inside and outside the classroom (Breaux *et al*., 2021).
Although emergency remote teaching has created new challenges for the management of students with ADHD, it is important to underline that not only negative aspects have emerged. A lot of children and adolescents with ADHD achieved greater stability or an improvement in their well-being during the period

of containment (Bobo *et al*., 2020). Improving their children's anxiety was one of the main topics discussed by parents and was attributed to less school pressure and having flexible schedules during emergency remote teaching.

We will list below some advantages in support of possible future scenarios that can integrate analogue and digital teaching for ADHD students at school.

- *Widespread access to study materials*: an advantage is in fact the possibility of accessing lecture materials at any time during the semester.
- *Improved attention focus*: a student who struggles to follow the lesson from beginning to end can benefit from more breaks and, thanks to the ability to review the video recordings, can improve attention.
- *Microteaching:* ADHD students tend to learn best in small parts. This greater freedom also means being able to study at the most effective time of day for the individual, which is not always the morning.
- *Respect for pace of learning*: although activities may be more sedentary, ADHD students are allowed to learn in accordance with their own times and ways of learning.
- *Reduce of school pressure and flexible timing*: thanks to e-learning students with ADHD can improve general well-being.
- *Parental awareness*: the close view of parents of ADHD students promotes awareness of their educational role and the difficulties encountered by children in school learning.

In conclusion, is important to promote and stimulate the role of students with ADHD with a great variety of teaching methods and educational relationships, making students active in the learning process. In addition to teachers, classmates can also be a key resource in managing ADHD symptoms. Finally, the technological resources available in the classroom can play a fundamental role in limiting the cognitive weaknesses in students with ADHD and be a key element in making teaching and learning more interactive and enjoyable, both analogue and digital.

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