

## The importance of games for the therapy of children with ADHD



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### ABSTRACT

Attention Deficit Hyperactivity Disorder is conceptualized in two distinct aspects: the biomedical concept and the historical-behavioral theory. Many studies are focused on pedagogical strategies and methodologies that help in the therapy of children with ADHD and, consequently, in the improvement of learning, behavior and relationships, since studies on the disorder are closely linked to the school context, as this is where the diagnosis usually takes place as well as the follow-up of treatments and therapies. One of the methodologies used both in behavioral therapy and in the school context is the methodology of games or gamification, which, through play, aims to develop skills and competences as well as behavioral, social and intellectual aspects of children with ADHD. The present study aims to analyse the importance of games in the therapy of children with ADHD, weaving some characteristics in the therapy, conceptualizing gamification in the school context and relating both to the disorder. For this, we used bibliographic research, of a descriptive and exploratory nature, regarding the proposed objectives. The resulting textual production comprises the results obtained by the bibliographic exploration of the theme, as well as by the relationship of importance analyzed. The author's conclusions and impressions are in the final conclusions.

**Keywords:** Education, Games, ADHD, Therapy.

## 1 INTRODUCTION

According to the APA (American Psychiatric Association), Attention Deficit Hyperactivity Disorder is considered one of the most prevalent childhood disorders, comprising 5% of the school-age population (APA, 2014).

ADHD is studied and conceptualized from two different angles: biomedical and historical-behavioral psychology. For an understanding of the biomedical concept, the DSM-V (Diagnostic and



Statistical Manual of Disorders) is cited. (2014). In agreement, Barkley (2002) conceptualizes ADHD as a neurodevelopmental disorder that has a basic symptom triad: disorganization, inattention and/or hyperactivity-impulsivity. Disorganization and inattention delimit characteristics such as an inability to stay on task, not seeming to listen when called and constantly losing objects, while hyperactivity-impulsivity is presented as excessive activity, restlessness, an inability to remain seated, meddling in other people's affairs and not being able to wait their turn (APA, 2014; Goulardins et al., 2015; Reinhardt, 2013 apud Theodório et al., 2020).

Cultural-historical psychological theory seeks a broad understanding of man now and in the future, i.e. how he is and how he might be over time, due to the transformations undergone by individual development and the cultural being. In this context, the breadth comprises the biological, the social and the cultural, aware that man is a social being, influenced by the society in which he lives (Rosa & Franco, 2016).

In this conception, the development and learning that comprise higher psychic functions such as attention and voluntary control of behavior depend fundamentally on the appropriation of signs (language) and culture through mediation by other people. Thus, children with ADHD have a partial appropriation of human activity, and culture and cognition are inseparable elements in the construction of the human psyche have difficulties and deficits in learning, behavior and relationships (Leite & Tulesky, 2011; Ribeiro & Viegas, 2016; Meira, 2012; Eidit & Tulesky, 2007; Silva et al., 2011; Leite & Rebello, 2014 apud Viana & Coelho, 2019).

Many studies are focused on pedagogical strategies and methodologies that help in the therapy of children with ADHD and, consequently, in the improvement of learning, behavior and relationships, since studies on the disorder are closely linked to the school context because this is where the diagnosis usually takes place, as well as the follow-up of treatments and therapies (Ribeiro et al., 2017; Wagner et al., 2016 apud Theodório et al., 2020).

As such, among the methodologies that provide therapy for this population is an active methodology called gamification or game methodology. This, according to Nick Pelling (2002), although based on the characteristics of games, goes beyond this concept, as it uses game components to captivate, engage and sustain students' attention in various situations (Menezes & Bortoli, 2018).

Due to its fundamental characteristics, gamification has become a practice widely used in therapy as well as to help children and adolescents with ADHD learn (Menezes & Bortoli, 2018; David et al., 2016; Theodório et al., 2020).

This study aims to analyze the importance of games in the therapy of children with ADHD, weaving some characteristics into therapy, conceptualizing gamification in the school context and relating both to the disorder.

To this end, bibliographical research was used, which according to Gil (2008) is based on



material that has already been prepared, mainly in scientific articles and books, of a descriptive and exploratory nature, with regard to the proposed objectives.

This study used the virtual environment to search for scientific articles and academic papers published in relevant virtual databases such as Pepsi, Scielo and recently published conference proceedings that include relevant discussions, as well as printed books and books in pdf format, with the descriptors: Education, games, ADHD and therapy. Correlations were made between the texts and the theme addressed in order to provide a theoretical foundation for the use of gaming methodology (gamification) both in therapy and for the learning of children with ADHD. The results obtained were discussed and written up in two sections: The use of games in the therapy of children with ADHD; Games in the school context: gamification, an aiding methodology. The author's conclusions and impressions can be found in the Final Considerations.

## **2 THE USE OF GAMES IN THE THERAPY OF CHILDREN WITH ADHD**

The theme of games and gamification immediately brings to mind playfulness, of Latin origin (*ludus*) and means children's games and play, which are fundamental for children to develop, facilitating the development of symbolism, creativity, imagination, reasoning and self-esteem, allowing children to release feelings and emotions such as aggression, tension, insecurity, frustration, fear, among others (Piaget, 1998 apud Nizo & Silva, 2015).

From a behavior-analytic perspective, child therapy for ADHD uses play activities as important intervention tools, since purely verbal therapy will not reach deeper levels of treatment (Guerreras et al., 2000; Regra, 2000 apud Tintori et al., 2011).

In keeping with this perspective, many authors believe that play promotes the necessary interaction between the child and the other and between the child and the environment so that they can act and receive from their action and thus work on various cognitive, behavioral and response aspects, among others (Guerreras et al., 2000; Regra, 2000 apud Tintori et al., 2011).

Games are a recent form of treatment for ADHD, designed to educate, train and change behavior. All in a fun situation, even if that's not their aim, but rather education. Many of the games used are pedagogical in order to promote reasoning and learning, as tools for integral development, skills and competencies (Zyda, 2005; Read & Shortell, 2011; Corrêa et al., 2008; Falkembach et al., 2006 apud Theodório et al., 2020).

Araújo (1992, p. 64 apud Nizo; Silva, 2015, p. 16608) considers the concept of play to be "a spontaneous and disinterested activity, admitting a freely chosen rule that must be observed, or a deliberately established obstacle that must be overcome", i.e. it releases action aimed at some learning that can be related to the pedagogical and therapeutic context.

Among the characteristics, it is believed that games do not need to be digital, but there are



several games that can be used online (Tárrega et al., 2015; Bakker et al., 2016 apud Theodório et al., 2020). Generally used to improve children's attention, these work on psychological, therapeutic and pedagogical aspects, in diversities such as: game of mistakes and memory game (they work on the development of attention and memory functions) (Nascimento et al., 2019; Theodório et al., 2020).

One game used with ADHD children is *Treinamente*, which is a digital educational game developed for computers (it works on cognitive development).

With regard to the *Treinamente* game developed, it currently has two styles of game, *Jogo dos Erros* and *Jogo da Memória*, which aim to help develop attention and memory functions in a playful way. These are simple games, focused on children aged 4 to 12, which aim to help develop cognitive functions as well as support the diagnosis of the disorder in them, which is not available in the games mentioned above. The game's platform is the PC, but it can be adapted for other platforms such as mobile, using resources from the Unity creation engine itself (...) It is a set of mini-games capable of developing characteristics such as attention, memorization, non-precipitation and the focus of the respective players" (Nascimento et al., 2019).

In a play situation, the child is exposed to a variety of stimuli and learns different behaviors according to the situations presented and the demands that the games provide. In this context, the professional can observe and make notes on the behaviours and triggers in the relationships between the children, which develop during the games, or in the relationships with themselves (dealing with emotions and feelings), and thus assist in the development of skills such as: "self-control repertoire, development of attention repertoire, expansion of social repertoire, improvement of self-esteem, acquisition of organizational behaviours and development of academic and cognitive repertoires (Tintori et al., 2011, s.p.), 2011, s.p.) In a group situation and group therapy, the use of games, through their playful nature, allows for the development of healthy interpersonal relationships and the child's relationship with the therapist, developing cognitive and motor aspects, social and academic, as well as allowing situations of reinforcement (Shives, 2007 apud Tintori et al., 2011).

In the school context, games are part of active methodologies and are known as gamification in their own right majority.

Active methodologies are learning methodologies that are considered to be the starting points from which learners access more advanced processes of reflection, cognitive integration, generalization and re-elaboration of new practices, involving them in increasingly complex activities (gradually) (Morán, 2015).

The schools that are showing us new paths are changing the disciplinary model for models that are more focused on active learning with problems, relevant challenges, games, activities and readings, combining individual time and collective time; personal projects and group projects. This requires a change in the configuration of the curriculum, teacher participation, the organization of teaching activities, and the organization of spaces and times. In active learning methodologies, learning is based on real problems and situations; the same ones that students will experience later in their professional lives, in advance, during the course (Morán, 2015, p. 19).



From this perspective, games and lessons programmed within this language, which is well received by students, have gained prominence as an active and successful methodology, since they can be collaborative and individual, competitive or not, digital, with a strategy of stages and skills according to the students and the objectives of the lessons, the subjects and contexts.

### **3 GAMES IN THE SCHOOL CONTEXT: GAMIFICATION, A HELPING METHODOLOGY**

According to Andrzej Marczewski (2013 apud Soares, 2020), gamification is the application of game metaphors in non-playable contexts to influence behavior, increase motivation and improve audience engagement.

Menezes and Bortoli (2018) point out that gamification means using the mechanism of games oriented towards solving practical problems or engaging a certain audience.

Faced with a wide range of concepts, it can be said that there is no exact conceptualization for the term, which encompasses similar contexts that have some indirect connection with games.

In education, the applicability of the concept aims to arouse interest, develop cognitive skills, promote stimulation, creativity, autonomy and solve problem situations, in other words, the quest to achieve one's own goals. Using elements of the game as a tool to fuel learning.

Learning is more meaningful when we motivate students intimately, when they find meaning in the activities we propose, when we consult their deep motivations, when they engage in projects to which they bring contributions, when there is dialog about the activities and how to carry them out (Moran; 2018, p.43).

From this perspective, gamification or game methodology aims to work on attention, behavior and relationships, motivating and engaging students.

According to Rau (2007 apud Nizo & Silva, 2015), the game creates opportunities for learning and development of the subjects, because play promotes learning through playing, for children with ADHD it is very important because it develops self-control and skills, offering opportunities to exercise creativity, collaboration, acquiring respect, dignity and solidarity.

When mentioning games that he considers competitive, Lopes (2000 apud Nizo & Silva, 2015) clarifies that the practice of exercises that involve competition, once the consequent and involved emotions have been worked on, promotes the internalization of concepts in children so that they learn to deal with feelings in a group context, facilitating the socialization that prepares them for life in society.

Another important feature of using games in education or gamification for children with ADHD is the development of attention and engagement or motivation. These aspects, when well worked on and developed correctly, favor the learning of this population, correcting some aspects and educating



behaviors. On this subject, Morán (2015, n.p.) states:

Some components are fundamental to successful learning: the creation of challenges, activities, games that really bring out the skills needed for each stage, that ask for relevant information, that offer stimulating rewards, that combine personal journeys with meaningful participation in groups, that are inserted in adaptive platforms, that recognize each student and at the same time learn from interaction, all using the appropriate technologies.

Therefore, playful activities and, above all, educational games are an important tool for learning with ADHD students, because it's not just a relaxed and cool moment, but a moment of motivation, overcoming and incentives, enabling students to better understand their limits and the limits of others. They are also tools for the intellectual and social development of hyperactive children (Nizo & Silva, 2015).

#### 4 FINAL CONSIDERATIONS

Attention Deficit Hyperactivity Disorder is conceptually approached from two angles, which consider it to be a complex disorder that requires precise diagnosis and comprehensive treatment, carried out by a multidisciplinary and diverse team that includes parents, guardians, psychologists, speech therapists, psychiatrists, teachers, pedagogues, among others.

One treatment tool that is being used both clinically and in the school environment is the methodology of games or gamification, aimed at educating behavior or learning, as a practice in individual or group therapies.

This methodology aims to minimize and/or remedy the behavioral, cognitive, social, attention, memory and intellectual difficulties of children with ADHD, as the games are motivational and work on engagement and higher brain functions.

Therefore, they can be considered an active educational methodology that proposes new ways of learning, including respect, self-esteem, dignity and integrality for these children.

In short, this research has provided an in-depth analysis of the significant contribution of games in therapy for children with Attention Deficit Hyperactivity Disorder (ADHD). The results discussed here solidify the notion that games offer an effective and engaging therapeutic approach for treating these individuals, providing benefits that go beyond traditional therapies. Through analysis of the accumulated evidence, it is clear that games can be used as personalized therapeutic tools, adapted to the specific needs and preferences of each child, maximizing the effectiveness of treatment.

The intersection between gameplay and therapy has proved particularly suitable for addressing the challenges associated with ADHD. The immersive and interactive nature of games captures children's attention, promoting concentration, focus and emotional regulation. In addition, games allow children to practice cognitive and social skills in a playful and repetitive way, favoring learning and the internalization of therapeutic strategies. This integrated approach not only improves ADHD



symptoms, but also enables children to face everyday challenges more effectively.

However, it is crucial to emphasize that the implementation of games as part of ADHD therapy requires a balance between entertainment and therapeutic goals. Careful selection of games, appropriate guidance from therapists and ongoing monitoring are essential to ensure that therapeutic benefits are achieved without compromising the process. Furthermore, it is essential to recognize that games should not be seen as a complete replacement for traditional therapeutic approaches, but rather as a valuable complement.

As a constantly evolving field, the use of games in the therapy of children with ADHD still requires further investigation. Longitudinal studies, comparative evaluations and detailed analyses of the underlying mechanisms are needed to further solidify the effectiveness and viability of this approach. However, the evidence to date is promising and offers an encouraging path towards improving the quality of life of children with ADHD by capitalizing on technology in an instructive and stimulating way.

Ultimately, games emerge as an innovative therapeutic tool, offering a unique and attractive way of addressing the challenges faced by children with ADHD. By fusing entertainment and treatment, this approach recognizes and values the individuality of each child, providing an environment conducive to the development of cognitive, social and emotional skills. As research in this field advances, it is expected that games will continue to play a central role in the empowerment and progress of these children, offering a promising horizon of therapeutic possibilities.



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