The Virtual Reality as an Innovative Therapeutic Tool in Primary Schools

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Abstract The research paper examines the use of virtual reality (VR) as an innovative therapeutic tool to reduce school-related anxiety for children in primary school. It focuses on simulating stressful school scenarios (such as entering a new school, finding a classroom, or speaking in public) in a safe and controlled environment under the guidance of a therapist. The study aims to evaluate how effective VR is in lowering anxiety levels and to explore therapists' views towards the use of virtual reality as a therapeutic tool. Findings indicate that VR therapy can significantly reduce anxiety while also enhancing social skills and boosting self-confidence among pupils. Although therapists see VR as a valuable tool, they highlight the need for clearer guidelines to effectively incorporate it into therapeutic practices. The research highlights the importance of tailoring VR content to the needs of children with various learning and social challenges. Despite these challenges, VR represents an important step forward in therapeutic approaches, as it allows students to gradually adapt to stressful situations without pressure from the real world.

Keywords: • virtual reality • school anxiety • primary education • therapy • mental health

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1 Definition of virtual reality

The use of virtual reality technology represents a significant technological advance in the field of human-user interaction, as it allows the user to become completely immersed in a digitally created three-dimensional environment (Grochowska, Wichniak, & Jarema, 2019). Today's standard VR systems use either head-mounted displays (HMDs) or multi-projection environments that create realistic visual, auditory, and other sensory experiences in virtual space. Virtual reality thus provides a variety of visual and auditory stimuli and also includes tactile and olfactory sensations that allow users to experience and remember the experience as real. Although individuals are aware that this is an artificially created world, they may feel that they have truly experienced the events depicted in VR (Kim & Kim, 2020).

It is therefore a multisensory experience in which the user interacts with the digital world via a device, enabling active participation and a sense of authenticity in an artificially created space. The concept of cyberpsychology, a branch of psychology that studies the relationship between humans and digital technologies, especially computer systems, is closely related to the definition of virtual reality. The concept as we know it today was first defined by Jaron Lanier in 1986. Although technology has developed tremendously since then, the basic idea has remained the same—creating a sense of physical presence in a digital environment. Modern virtual reality is based on three key elements:

- Immersion in three-dimensional space with the help of appropriate devices (e.g., head-mounted displays)
- Interaction with the virtual environment via sensors
- Feelings of presence or the impression of being "here and now"

The user can thus enter a specially designed virtual world in which situations with high psychological value are recreated. This is particularly important in a therapeutic context, where effective treatment requires the triggering of appropriate mental and emotional responses (Grochowska, Wichniak, & Jarema, 2019).

Virtual reality is now widely used in gaming, education, and business applications, as well as in medicine—particularly in radiology, preoperative planning, image-guided surgery, and rehabilitation such as physical therapy and occupational therapy (Kim & Kim, 2020). As VR technology becomes more accessible and user-friendly, it allows individuals to create their own digital worlds with minimal investment. Connecting these environments via the internet enables global collaboration and interpersonal interaction, which significantly influences the experience of the world. Virtual reality thus represents a promising tool that offers a safe environment for exploration, therapeutic work, learning, and skill development (Asiain, Braun, & Roussos, 2022).

2 Use of virtual reality in therapeutic environments

Virtual reality (VR) is one of the most innovative technologies of our time, gradually penetrating many fields, including psychology. An important aspect of VR use is its role in the treatment of anxiety disorders (Maples-Keller, Bunnell, Kim, & Rothbaum, 2017). Almost 160 years after the birth of Sigmund Freud, we are witnessing a period in which computer science is merging with disciplines such as psychiatry and psychotherapy. Digital technologies, including VR, are increasingly being incorporated into therapeutic and diagnostic processes, marking a turning point in the development of approaches to mental health. Virtual reality is thus establishing itself not only as a technological novelty, but also as a tool that enables a more in-depth, patient-tailored, and experiential approach (Grochowska, Wichniak, & Jarema, 2019).

Advances in technology for detecting biological signals, such as body movement or heart rate, enable the collection and analysis of data on an individual's behavior and symptoms in specific situations within a virtual environment (Kim & Kim, 2020). Research is increasingly focusing on studying the effects of VR therapies on various psychological disorders, such as depression, anxiety, social phobia, social anxiety in school settings, post-traumatic stress disorder (PTSD), autism, and impulsive behavior. In addition, VR is also used to teach relaxation techniques and reduce stress. Therapies involving virtual environments have also proven effective in treating specific phobias, such as fear of heights, flying, spiders (arachnophobia), and fear of doctors or dentists. For example, individuals with a fear of heights can gradually overcome their fear in a controlled virtual environment without actually being exposed to danger. Such forms of therapy allow patients to face their fears in a way that is safer and less psychologically stressful than real-life situations. Simulating potentially dangerous situations, such as flying or walking on a tightrope, allows patients to gradually expose themselves and learn to cope with anxiety without being exposed to physical risk (Maples-Keller, Bunnell, Kim, & Rothbaum, 2017).

Gradually, the tool has been expanded to other disorders such as anxiety disorder, obsessive-compulsive disorder (OCD), post-traumatic stress disorder (PTSD), eating disorders, addictions, psychoses, autism, and attention deficit hyperactivity disorder (ADHD). In anxiety disorders and phobias, VR technology can help by gradually exposing the person to triggers/threats in a safe and controlled environment. For patients, facing stressful situations in such a virtual environment is less stressful. VR is effective in teaching social, cognitive, and daily living skills to children and adults with autism. Despite promising results in VR therapies, technical and financial limitations remain. The costs of developing and using VR systems are high, and therapeutic content needs to be better adapted to the specific needs of patients. In addition, more research is needed to confirm the long-term effects of therapy. Nevertheless, VR represents an important step in the development of clinical psychology (Emmelkamp & Meyerbröker, 2021).

For patients with post-traumatic stress disorder, re-exposure to traumatic events in a real-world setting is often too risky and emotionally overwhelming. The use of virtual reality in these cases allows for the creation of a controlled therapeutic environment where patients can confront their traumas in a safer context. Kim and Kim (2020) report that such forms of VR therapy are often used with war veterans (e.g., Vietnam or Iraq War) and survivors of terrorist attacks (e.g., September 11). In these types of therapies, patients use VR glasses to relive traumatic situations in a simulated environment, which allows for a gradual reduction in the intensity of emotional responses. Positive effects have also been reported in people who have experienced serious traffic accidents. The results show that the effects of PTSM therapy last from three to six months (Kim & Kim, 2020). The use of VR is also promising in the field of diagnostics. Virtual scenarios allow the simulation of realistic situations where the symptoms of mental disorders can be assessed. For example, in social anxiety disorder, VR allows the observation of characteristic patient reactions, such as avoidance of eye contact or increased anxiety in virtual social interactions. Diagnostic procedures using VR also include measurements of physiological responses such as heart rate and skin conductance, allowing for more accurate tracking of changes during therapy (Wiebe et al., 2022).

When treating autism spectrum disorders (ASD) or autism, VR is a useful tool for learning social skills and improving cognitive functions. An example of such use is the BTS-Nirvana program, which combines VR with exercises to strengthen attention, visual-motor coordination, and problem solving. Studies have shown that the combination of VR and cognitive behavioral therapy (CBT) in children with autism leads to significant improvements in social interactions, adaptability, and emotional regulation skills (De Luca et al., 2021).

Based on an analysis of numerous studies, Ghaddaripouri et al. (2021) found that professionals working with children used various forms of virtual reality tailored to the goals of each therapeutic group. In many cases, virtual reality was used as an effective distraction tool, designed to divert the child's attention away from a stressful situation and engage them in a pleasant, interactive virtual environment. In dental practice, researchers most often used VR glasses and headphones that duplicated animated worlds or playful virtual games for children. This approach allowed children to divert their attention away from feelings of pain and discomfort, which significantly contributed to reducing anxiety and improving cooperation with the dentist. Similarly, the use of VR was also effective in preoperative procedures, where children participated in interactive games, explored animated worlds, or followed soothing stories. Such experiences have been shown to reduce fear and tension associated with waiting for surgery and promote a sense of safety and control. In two studies, virtual reality was also incorporated into radiological examinations, which typically require complete immobility and therefore often cause discomfort. Children were given the opportunity to explore virtual landscapes or participate in playful activities, which helped them to relax and remain calm during the procedure. Despite the differences between the various forms and contents of VR

environments, a common feature of all approaches is the sense of authenticity and safety that the technology provides. Virtual reality offers children an attractive, often playful experience that effectively replaces or mitigates unpleasant real-life situations. It works on both a cognitive and emotional level, diverting attention away from stressful stimuli while strengthening feelings of control and relaxation (Ghaddaripouri, Mousavi Baigi, Noori, & Mazaheri Habibi, 2022).

Meditation has long been established as an effective therapeutic tool for reducing physical and psychological stress in both healthy individuals and those with various anxiety disorders. Numerous studies confirm that mindfulness programs incorporated into the school environment contribute to greater stress resilience, improved cognitive functioning, and reduced test anxiety. Recently, there has been growing interest in the use of technology in meditation practices, with virtual reality proving particularly promising. Research has shown that learning mindfulness in a virtual environment has a positive effect on individuals' emotional state and overall mental health. In addition, VR meditation programs have been rated as equally effective as traditional approaches in reducing negative moods, while proving to be more successful in maintaining motivation and regular therapy practice. Based on these findings, it is assumed that VR meditation could be a useful approach to reducing test anxiety in school-aged children and adolescents. Since previous VR programs for managing assessment anxiety were developed more than a decade ago, there is a need to re-examine their effectiveness and applicability in the modern context (Kwon et al., 2020).

3 Obstacles and opportunities for the future in the field of virtual reality

Despite its promising potential, the use of VR also has certain limitations. One of the main obstacles is the accessibility of the technology, as advanced VR devices are often expensive and require trained therapists. The high cost of advanced VR devices limits their wider availability. In addition, some patients are resistant to using new technologies, which can limit their acceptance of therapies. Another important limitation is methodological—most studies in this field have small samples and short follow-ups of long-term effects—there are no longitudinal studies (Beele et al., 2024).

In order for VR to become more widely accessible and useful, further development of technologies and research focused on standardizing protocols is crucial. For example, adapting VR therapies for more accessible devices such as smartphones and low-cost VR headsets could significantly reduce costs and increase the availability of these therapies in regions with limited resources. In addition, the use of artificial intelligence (AI) in combination with VR is a promising direction, as AI enables the personalization of therapies according to the individual needs of patients (Valmaggia, Latif, Kempton, & Rus-Calafell, 2016).

The combination of VR and AI also offers the possibility of self-directed therapies, where patients use VR applications without the direct presence of a therapist. Such therapies could be particularly useful in regions with limited access to healthcare services or for patients who avoid traditional forms of therapy due to shame or stigma. However, it is crucial that the applications are properly designed and supported by research that ensures their effectiveness and safety. In the field of eating disorders, VR offers innovative approaches to improving body image and managing food-related anxiety. By simulating various situations, such as exposure to food or viewing the body in a virtual mirror, patients can practice accepting their own bodies and develop strategies for emotional regulation. Similarly, VR is used in addiction treatment, where patients develop skills to manage triggers such as cigarettes and alcohol in a simulated environment (Freeman et al., 2017).

We can conclude that VR is a promising tool for the treatment and diagnosis of mental disorders. Its flexibility, accessibility, and effectiveness are recognized as key advantages that enable patients to safely confront their fears and improve their mental health. Nevertheless, the technology is not yet fully developed for widespread use, and further research is needed. In the future, VR could become a standard part of psychological therapies, contributing significantly to improving individuals' quality of life (Emmelkamp & Meyerbröker, 2021).

4 Virtual reality in managing school anxiety

School anxiety is a complex emotional disorder characterized by a pronounced fear of school and related situations. It most commonly manifests itself in the form of school phobia, which includes fears of specific events such as being graded, public speaking, exposure to criticism from teachers or classmates, bullying, and separation from parents upon arrival at school. These fears are often expressed on a physical level, for example, through feelings of nausea, stomach aches, or other somatic symptoms, which cause the child to persistently refuse to attend school. As a result, this can lead to significant social problems and negatively affect the child's academic performance and overall functioning. Anxiety in children often occurs during transitional periods in their educational process, such as when they start kindergarten, primary school, or secondary school. In younger children, symptoms usually appear suddenly, while in older children they develop gradually and become increasingly complex. Traditionally, behavioral and cognitive-behavioral therapeutic techniques, such as gradual exposure or social skills training, are primarily used to treat school anxiety. These approaches have proven effective in the past, but they often require a large number of therapy sessions and the involvement of additional people, such as parents and teachers. With the development of virtual reality technology, however, a new opportunity has opened up for treating anxiety disorders, including school phobia. The use of VR represents an upgrade to traditional exposure techniques, as it allows for a precisely controlled, safe, and repeatable simulation of real-life situations that trigger feelings of anxiety. In addition, the use of VR ensures greater

privacy, reduces organizational complications, and allows for gradual exposure to stimuli without the need for actual presence in the school environment (Gutiérrez-Maldonado et al., 2009).

Adolescence is a developmental period that brings increased vulnerability to mental health problems. In this context, digital mental health support, which includes various technological approaches and tools, is proving to be an important innovation with great potential to help young people and educational institutions. The use of digital technologies among young people is constantly growing and becoming part of their everyday lives, indicating that this trend will continue in the future. Technological approaches are often particularly attractive to young people because they are consistent with their developmental characteristics—curiosity, desire to explore, play, and learn. It is precisely because of these characteristics that digital tools open up opportunities for implementing preventive mental health programs in ways that are developmentally appropriate, interesting, and motivating for young people. However, technological sophistication alone is not enough to ensure the actual effectiveness of such innovations—it is crucial that they are integrated into the everyday environment of young people and are actually accessible to them. This is particularly true in the school context, where young people face various challenges such as stress, peer violence, and interpersonal conflicts. Digital innovations must therefore be designed in such a way that they enable young people to develop effective strategies for coping with stressful situations and strengthen their resilience in real life (Hugh-Jones, Ulor, Nugent, Walshe, & Kirk, 2023).

In addition to common anxiety disorders, school anxiety, which includes fears related to academic or social situations in the school environment, is becoming increasingly common among adolescents. Approximately 25% of adolescents meet the diagnostic criteria for anxiety disorders within a one-year period, with school anxiety being a common form. These problems often lead to school avoidance, poorer grades, and social isolation. In the school environment, the most common problems are fear of failure in tests or schoolwork (test anxiety), fear of social situations such as public speaking and interacting with peers, and resistance to schooling, which can manifest itself as avoidance of school attendance. School anxiety is not formally recognized as a separate diagnosis in manuals, but it is extremely similar to another disorder, social anxiety disorder. Schools often use cognitive-behavioral therapy (CBT), which is the most established approach to treating school anxiety and involves exposure techniques. This means that schoolchildren are directly confronted with situations that trigger anxiety in order to gradually reduce their fear. However, exposure in school settings requires a high level of cooperation from schools and parents, which often presents a barrier to implementing therapy. Here, an innovative solution is now being offered that would improve the current approach to exposure. Using virtual reality, the therapist can tailor the virtual situation to the individual's level of anxiety. In addition, patients who do not want to expose themselves to real-life situations are more likely to agree to participate in VR scenarios. When exposing patients to situations at school, the VR tool does not require the participation of

the school or a similar organization. Theory also provides us with mechanisms that support the effectiveness of VR therapy, namely that repeated exposure to an anxiety-provoking situation reduces emotional and physiological reactions, participants learn that the expected negative events are not so severe or do not happen at all, and that they come to realize that what will happen (expectation) is rarely related to what actually happens. VR thus creates the real experience needed to trigger anxiety. Past research on the use of VR in adults is very well documented, while research in adolescents is less so. Some studies show that VR therapy is acceptable and effective in reducing anxiety, including fear of public speaking and school anxiety. Adolescents who are not ready for live exposure often prefer VR over any other alternative method, such as cognitive-behavioral therapy (Beele et al., 2024).

Anxiety related to academic assessment is an increasingly common challenge in school settings, particularly in East Asian countries where expectations for academic achievement are extremely high. Students in such systems are often exposed to intense academic pressure, making them more vulnerable to developing various forms of anxiety disorders. Assessment anxiety refers to a persistent fear that arises in situations where an individual is subject to judgment or evaluation. It occurs in two interrelated dimensions: cognitive, which involves thought processes such as overthinking and focusing on the possibility of failure, and physiological, which manifests itself in physical responses such as rapid heartbeat, sweating, or muscle tension. Together, these responses affect an individual's emotional balance and ability to function effectively in a school setting. Recent research shows that between 15% and 22% of students experience test anxiety, with an upward trend particularly among younger children, which represents a significant challenge for school psychology and preventive mental health programs (Kwon et al., 2020).

The practical example shown in Figure 1 below illustrates four screenshots (A-D) depicting key scenes from the virtual environment used in virtual reality therapy for adolescents with school anxiety. The virtual environment was designed to gradually expose participants to simulated school situations in which they encounter circumstances that often trigger symptoms of social or school anxiety.

Picture 1: Virtual reality scenario. Panels (A; schoolyard) and (B; school hallway) are examples of the "exploration" phase (Beele et al., 2024).

Part A shows an exterior view of the school building. The participant is first confronted with a view of the school and the paved path leading to the school entrance. This scene represents the initial phase of exposure and symbolizes arrival at school, which often triggers feelings of discomfort and tension in individuals with school anxiety. Part B shows the interior of the school, where you can see a long corridor with a few students talking to each other. For individuals with social anxiety, the mere presence of peers and the possibility of interacting with them is a major challenge. This scene thus serves as the next step in gradually confronting social situations within the school environment. Elements such as the lights, the sense of depth, and the pictures on the walls further enhance the feeling of realism, which is key to the effectiveness of VR therapy. Part C shows a classroom in which several students are sitting at desks. It is designed to be realistic, with large windows, a map on the wall, pictures, and plants on the shelves. In this scene, the participant is placed at the center of attention in the classroom, which is often one of the most stressful situations for people with anxiety, as they are exposed to the gaze of all their peers at that moment. Part D shows direct interaction with the teacher. For many students with severe social anxiety, this situation is also a powerful trigger for

anxiety. This response is often associated with a fear of being evaluated, asked questions, or making a mistake in front of the whole class. The entire set of images from A to D is designed to gradually activate specific anxiety responses in the individual. At the same time, it allows the therapist to monitor emotional and physiological responses in a controlled virtual environment and gradually reduce the intensity of fear through a process of repeated exposure (Beele et al., 2024).

Although studies in the past have highlighted the prevalence of school anxiety, very few have examined the specific situations that cause anxiety and the potential use of technology such as virtual reality (VR) to reduce these problems. School anxiety is a type of anxiety that includes fear of failure, public speaking, new relationships, and unfamiliar situations. Another interesting study was conducted involving 229 fifth graders in two elementary schools. Surveys and interviews were used to identify situations that cause anxiety. The surveys included 19 situations in which students rated their level of anxiety (from "not anxious" to "very anxious"). The 20 students with the highest levels of anxiety were invited to experience VR therapy, where they participated in simulations of specific school situations. The VR situation was arriving at a new school and finding the classroom. The results showed that the most common situations causing anxiety were presenting in front of the class, solving problems at the blackboard, adjusting to new teachers and classmates, arriving at a new school for the first time, and fear of failure in assignments and tests. The effects of VR therapy showed that after the VR experience, 65% of students reported that they were no longer anxious about starting at a new school, whereas before therapy, 100% rated themselves as "very anxious." Anxiety about finding their classroom decreased significantly: 75% of students no longer felt anxious, while the rest reported a reduction in their anxiety levels. Interviews showed that after therapy, students were more confident and willing to use options such as seeking help from teachers or peers. The results thus showed that VR therapy has great potential for reducing school anxiety, especially in young students who are faced with new and stressful situations. VR provides a safe environment for gradually confronting anxiety-provoking situations and builds confidence in overcoming challenges. Although the results are promising, the study highlights the need for greater customization of VR programs and greater diversity in simulated situations. Nevertheless, the study confirms that VR therapy effectively reduces anxiety in elementary school students. Students who experienced VR showed greater willingness to face real school situations (Anh, 2020).

A study designed in two phases confirms that VR has the potential to reduce stress in the school environment. The first phase involved eighteen adolescents who participated in workshops based on the principle of "creative thinking." This approach encourages active user participation in the design of solutions, so the adolescents in the study were involved as co-creators of the therapeutic program. Together with the researchers, they designed scenarios and stories that formed the basis for the virtual experience. They suggested school situations that they found most stressful or burdensome and proposed ways in which these could be presented in a safe virtual environment. Based on these workshops,

a prototype of VRET (Virtual Reality Exposure Therapy) was developed, which means that researchers upgraded the prototype on the fly based on the responses and suggestions of the participants. In the second phase, eighteen adolescents were again included in the study, each completing one full experience in a virtual environment designed based on the previous workshops. After the session, participants completed a structured questionnaire supervised by the research coordinator to ensure uniform data collection conditions and clarify any ambiguities. The questionnaire focused on assessing the virtual experience and evaluating whether this type of therapy could contribute to reducing school anxiety. The results showed that most adolescents rated the virtual experience positively. Exposure therapy is only effective if it triggers an anxiety response, so it is encouraging that as many as 89% of participants experienced a physical response associated with anxiety during simulated school situations. In addition, 93% of participants rated the experience as immersive, meaning that they felt truly present in the virtual environment, while 94% rated the scenarios as very convincing and realistic. However, the most important finding of the study was that all participants (100%) expressed their belief that the use of virtual reality could help them cope with school anxiety, confirming the high level of acceptance and potential effectiveness of this therapeutic method among young people (Boyle et al., 2024).

Hugh-Jones and colleagues (2023) presented their research on the development and testing of a virtual reality tool designed to support the mental health of adolescents in a school setting. In the initial phase, they involved 18 mental health professionals who worked directly with young people. These included teachers, child and family specialists, and school psychologists. Later, three mindfulness experts joined the research team, contributing their experience to the design of the tool's content. Young people with previous experience of mental health problems were also involved in the research. Their role was to participate in the design of exercises whose main goal was to reduce stress by regulating emotions using mindfulness principles. The prototype was tested in two regular and one specialized educational institutions. A total of seventeen young people participated in testing the working prototype of the VR tool at school. Before testing began, mental health professionals participated in a one-day workshop where they had the opportunity to try out VR headsets and learn about the basic functioning of the system. The research was conducted in two consecutive phases. The first phase focused on developing and designing a prototype with the direct involvement of young people, while the second phase focused on field testing in a school environment. Based on feedback from experts and young people, a prototype was developed that consisted of a six-week program with twelve short eight-minute exercises. These exercises included various techniques such as body awareness, breath control, acceptance, and self-compassion, and took place in visually calming VR environments such as a forest, the sea, a park, and waterfalls. The purpose of the tool was to provide adolescents with a peaceful and safe digital space to practice mindfulness and relaxation techniques. Each participating school received one VR kit with preloaded software, which was incorporated into the students' schedule as part of their regular activities. The results of the study showed that the use of

VR in schools is acceptable to both young people and professionals, and is particularly promising for young people with more complex needs, such as difficulties in regulating emotions and attention deficit disorder with or without hyperactivity (ADHD). Participants accepted the tool well, rated it positively, and used it without difficulty, and schools also showed interest. An important finding of the study was that adolescents with more pronounced emotional and behavioral problems benefited more from the use of the VR tool than their peers without mental health problems but exposed to stress.

Picture 2: Prototype of the aforementioned environment (Hugh-Jones, Ulor, Nugent, Walshe, & Kirk, 2023).

Picture 2 shows an example of a prototype virtual environment developed as part of the research. It is an interactive VR tool in which users independently select practices based on their current mood and needs. The virtual world is designed according to the principle of a game, as it includes paths, bridges, information boards, and various points where users can choose a specific exercise. This design encourages a sense of engagement and independent exploration, as young people actively discover the environment and decide for themselves which activities they will perform (Hugh-Jones, Ulor, Nugent, Walshe, & Kirk, 2023).

5 Advantages and challenges of implementing vr in therapeutic work with children

Virtual reality (VR) often has a stronger effect on children and adolescents than on adults, as the virtual environment can draw them in more intensely and "suck" them in. Such experiences often trigger more pronounced emotional and cognitive responses in younger users, which can be therapeutically beneficial but also risky if the therapist does not have complete control over the course of therapy. Therefore, special caution and professional guidance are necessary when planning the content and implementation of VR therapies.

The authors of the article point out that so far, there has not been enough research systematically examining the link between VR use and the developmental characteristics of children and adolescents. As a result, there is still a lack of solid scientific evidence for the widespread and reliable use of VR in the pediatric population (Kim & Kim, 2020). Nevertheless, the use of virtual reality in children with anxiety disorders and social difficulties has proven to be very promising, mainly due to several specific advantages. Children who are already accustomed to interactive digital content easily accept VR as a therapeutic tool, as the experience is similar to video games. This natural affinity for technology increases their motivation and willingness to participate and reduces resistance to the therapeutic process. VR therapy enables safe learning through play—children can gradually confront situations that would cause intense anxiety or discomfort in the real world, but without the risk of actual consequences. Because the therapy takes place in a completely controlled digital environment, children can explore and practice coping with challenges at their own pace without being exposed to real dangers. One of the important advantages of VR therapy is its repeatability and uniformity—the therapist can present the same conditions to each child, from background noise control to detailed scenarios. This allows for more objective monitoring of progress and greater reliability of therapeutic assessment. In addition, the content of the virtual environment is extremely flexible. The therapist can easily adjust the level of difficulty, dynamic elements, or types of stimuli according to the child's needs and progress. Another significant added value of VR technology is the possibility of continuing therapy at home. Using customized VR software, children can independently practice the exposure and coping techniques they have learned, which reinforces the sustainability of the therapeutic effect and enables continuous improvement between therapy sessions. All of the above advantages make virtual reality a safe, flexible, and extremely attractive therapeutic tool for children, combining elements of play, control, and realistic simulation, thereby contributing significantly to the more effective treatment of anxiety and social disorders in young people (Bioulac et al., 2018).

6 Conclusion

The use of virtual reality (VR) technology in the context of mental health is one of the fastest growing areas of modern psychology and psychiatry. It is a technological breakthrough that significantly changes the way people communicate with the digital environment and opens up new possibilities for therapeutic work and learning. Virtual reality allows users to immerse themselves completely in a digitally created three-dimensional world in which they can actively participate, experience realistic stimuli, and develop a sense of authenticity in the "here and now." This type of experience creates conditions for deep emotional and cognitive responses, which is particularly important in therapeutic processes where the goal is to challenge, understand, and gradually mitigate an individual's emotional responses (Grochowska, Wichniak, & Jarema, 2019; Kim & Kim, 2020).

Over the past decade, VR has proven to be an extremely promising tool in the treatment of numerous mental disorders, such as anxiety and depressive disorders, social phobia, post-traumatic stress disorder (PTSD), autism, and impulsive behavior. Its main advantage is that it allows individuals to safely confront their fears in a completely controlled environment. The patient can gradually expose themselves to situations that would cause intense distress in real life, while the therapist closely monitors their responses and adjusts the course of therapy accordingly. This approach enables a holistic experiential treatment that goes beyond traditional verbal methods and encourages the individual's active involvement in the healing process (Maples-Keller, Bunnell, Kim, & Rothbaum, 2017).

The use of VR is particularly interesting in the population of children and adolescents, where technology allows therapeutic content to be combined with interactive elements of play and exploration. Research shows that young people are more receptive to such approaches, as they match their developmental characteristics and natural curiosity (Bioulac et al., 2018; Hugh-Jones, Ulor, Nugent, Walshe, & Kirk, 2023). The use of VR in schools and youth centers has proven to be an effective support in learning emotional regulation, reducing stress, and promoting self-esteem. Programs that incorporate elements of mindfulness and body awareness enable young people to safely recognize and regulate their emotional responses in a virtual environment. Studies show that adolescents with more pronounced problems, such as ADHD or emotional regulation disorders, have benefited particularly greatly from such programs (Hugh-Jones, Ulor, Nugent, Walshe, & Kirk, 2023).

Virtual reality is becoming increasingly prevalent in child and adolescent psychiatry, where its potential is particularly recognized in the areas of cognitive rehabilitation, attention training, social skills development, and as a support for various forms of therapy. Research indicates that VR can make a significant contribution to reducing school anxiety and improving young people's self-esteem. An example of the use of virtual exposure therapy (VRET) shows that adolescents in a safe, controlled virtual environment experienced realistic responses to typical school situations, such as arriving at school, interacting with peers, being present in class, and talking to a teacher. The design of such environments allows the therapist to systematically monitor the individual's reactions and gradually reduce the intensity of fear (Beele et al., 2024; Boyle et al., 2024).

Despite its many advantages, challenges remain. Key limitations include a lack of long-term research on the effectiveness of VR therapies in children, ethical issues regarding the use of technology in younger populations, and the need for adequate training of professionals working with VR tools. Further research is needed to examine more closely the impact of VR on the developmental characteristics of children and adolescents and to examine the extent to which the effects of the virtual environment are transferred to real life (Kim & Kim, 2020).

We can conclude that VR represents an important step forward in the direction of an innovative and experiential approach to mental health. It offers opportunities for a more accessible, safe, and tailored form of assistance that appeals to young people in a way that is closer to them and technologically modern. With proper implementation and professional supervision, VR can become a valuable tool not only in a therapeutic context, but also in a preventive and educational context. Its role is likely to grow in the future, as it combines scientifically based approaches to psychology with the potential of digital technology. It represents a bridge between the real and virtual worlds, opening up new avenues for understanding and strengthening mental health.

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