https://doi.org/10.36315/2025v2end030
Education and New Developments 2025

ARTIFICIAL INTELLIGENCE AND CHILDREN'S MENTAL HEALTH: THE TWO SIDES OF THE COIN

Eva N. Patrikakou
Department of Counseling and Special Education, DePaul University (USA)

Abstract

The World Health Organization estimates that 8% of children and 15% of adolescents worldwide experience a mental issue, with suicide being the third leading cause of death for 15–29-year-olds. Importantly, WHO notes that the majority of children and youth do not seek help or receive care, thus these percentages likely underestimate the extent of these issues. Given that early diagnosis and intervention is key for the prognosis of mental health, utilizing Artificial Intelligence (AI) advances, including Machine Learning and Deep Learning can assist clinicians with the identification and individualization of therapy sessions in order to provide quality mental health services to a wider sector of the population. The use of AI in mental health holds promising applications that can detect mental health issues and neuroatypical signs earlier, provide ongoing monitoring of indicators, offer personalized treatment, and easy, 24-hour support to distressed individuals. At the same time, AI use has raised questions about the ethical use of sensitive patient data, the unpredictability of AI derivation, and algorithmic bias which may produce false positive or false negative results. AI's use especially for the diagnosis and treatment of mental health disorders and other disabilities in children and youth, expands services to areas of the globe with less access to mental health providers, while minimizing the stigma with which such services may be associated in certain social contexts. When referring to AI and the well-being of children and adolescents, one cannot overlook the pervasive and expansive influence that social media have on this part of the population. At the same time, merely being dismissive of AI and its increasing influence, instead of focusing efforts on harnessing AI's power in an ethical manner, is to the detriment of future, beneficial applications that can best serve humanity.

Keywords: *Artificial Intelligence, mental health, children, adolescents, diagnosis, treatment.*

1. Introduction

Childhood and adolescence are critical stages in human development as they represent a time of rapid growth and brain development. Mental health in children encompasses their ability to process and analyze information, cope with emotions, build relationships, and learn. Good mental health in children and teens is essential for their overall well-being, enabling them to develop cognitively, emotionally, socially, and also for building capacity and resilience which will impact their future success and quality of life.

Children can have the same mental health conditions as adults, but they may display different symptoms. Mental health problems in children can manifest as delays or disruptions in thinking, behaviors, social skills, or emotional regulation. These can cause distress and interfere with a child's ability to function at home, school, or in social settings (Mayo Clinic, 2024), with one third of mental health conditions emerging before the age of 14 and half before the age of 18 (United Nations, 2024).

When we consider (a) that 90% of the world's 1.2 billion adolescents live in low- to middle-income countries and are particularly vulnerable to adverse conditions and trauma which can trigger mental health issues ("Closing the Global Gap," 2024), and (b) the dearth of trained mental health care providers worldwide (Moitra, 2023), does taking advantage of various, fast-developing AI technologies offer a solution to address the gap in access to mental health services and become a transformative force in the field of mental health?

2. Statistics on children's and adolescents' mental health

According to the National Survey of Children's Health, about one in five adolescents 12-17 years old have been diagnosed with a mental health or behavioral condition. Between 2016 and 2023 the prevalence of mental and behavioral health, including anxiety, depression, and behavioral issues increased by 35%. It is important to note that this upward trend was observed prior to the COVID pandemic, and has continued since (Maternal and Child Health Bureau, 2024). Anxiety, depression, and behavior disorders were the most commonly-diagnosed mental health disorders. While percentages vary by age group, the prevalence of these three conditions were observed in all three group clusters (i.e., 3–5-year-olds, 6–11-year-olds, and 12–17-year-olds; Centers for Decease Control, 2024a). Additionally, concerning trends indicate that 40% of high school students had pervasive feelings of sadness or hopelessness, and 20% reported having seriously considered attempting suicide (Centers for Decease Control, 2024b).

The World Health Organization (WHO; 2024) estimates that 8% of children and 15% of adolescents worldwide experience a mental issue, with suicide being the third leading cause of death in 15–29-year-olds. Importantly, WHO notes that the majority of children and youth do not seek help or receive care, thus these percentages likely underestimate the extent of these issues. Data from the Global Burden of Disease study indicate the following mental health disorder prevalence percentages per age group: 6.80% for 5–9-year-olds, 12.40% for 10–14-year-olds, and 13.96% for those aged 15-19 years (Kieling et al., 2024).

3. Artificial Intelligence

Artificial Intelligence refers to the ability of machines to perform tasks that typically require human intelligence, such as learning, problem-solving, and decision-making. Current AI applications are designed to perform specific tasks with high efficiency but lack general intelligence or the ability to adapt to new situations outside their training. Applications include voice assistants, facial recognition security systems, virtual chatbots, and self-driving cars (IBM, 2023). There are various AI forms contributing to diagnostics and treatment such as Machine Learning (including generative AI systems), and its subset of Deep Learning, (extracts patterns from data without explicit programming; Natural Language Processing (NLP; understand, interpret, and generate human language); Rule-based Expert Systems (use knowledge and rules to solve specific problems); and Robotics (creating robots that can perform tasks autonomously).

4. AI and mental health

In a policy statement, the American Psychological Association acknowledged that AI technologies are changing clinical and research practices in psychological science (2024). Use of AI applications in the field of mental health has expanded diagnostic and therapy capacities, from early detection to personalized treatment plans. At the same time, concerns over ethical issues and algorithmic bias have also emerged along with these advancements.

5. The promises

Specifically, the role of AI in diagnosis, includes analyzing extensive and expansive patient data to identify patterns of health or mental health conditions. Exploring such vast amounts of information can lead to better overall diagnostics and prevention approaches, with NLP techniques being able to identify early signs of mental and emotional changes. AI has significantly impacted personalized mental health treatment by factoring in multiple sources of information from genetic predispositions, existing conditions, and specific patient characteristics, strengths and challenges. AI applications in treatment extend further than personalized plans, and have the capacity to reach a wider audience with a minimized social stigma which, unfortunately, is associated with mental health services in communities around the world. Specifically, AI-driven therapy includes virtual therapists and chatbots, real-time teletherapy assistance, ongoing monitoring, and evidence-based, progress decision making, (Olawade, et al., 2024). For example, AI-powered chatbots such as *Woebot* and *Wysa* are designed by therapists and AI developers to provide mental health support and therapeutic guidance through conversational interactions. *Woebot* is a chatbot which is available through a free app which prompts users to share their moods and experiences, and then suggests tools, skills, and strategies based on the principles of cognitive-behavioral therapy. It is important to note that such AI tools like chatbots are not designed to address psychiatric crises, but they can provide an alternative, much-needed access to mental health to communities around the world with limited access to traditional psychotherapy (Zhang, 2024).

6. The challenges

While the rapid adoption of AI use in mental health has enhanced mental health services, it has also brought about concerns regarding privacy risks, algorithmic bias, and human isolation. AI tools require access to personal and sensitive patient data. Specifically, safeguarding confidentiality and preventing unauthorized access to such data is of paramount importance, and has posed challenges in medical systems which have been compromised by cyberattacks. In addition, the accuracy of AI algorithms depends on the quantity and quality (including the multidimensionality) of data on which they are trained. If the AI-training data provided are incomplete or lack multidimensionality, then algorithmic bias is introduced, and AI can produce erroneous conclusions leading to false positive or false negative diagnoses. Exacerbating this possibility is the fact that available data may reflect biases for demographic groups that are underrepresented, therefore, overgeneralizing conclusions drawn based on such data. Lastly, several mental health conditions have overlapping symptoms which adds to the complexity of making an accurate diagnosis and suggesting targeted treatment (Thakkar, et al., 2024). Scientists have also raised the "black box" issue for cases where even if the best set of data is provided to an AI system, the AI's process and derivation is unpredictable (Abrams, 2024). While identifying potential sources of AI bias, this should not serve as justification for dismissing AI use. It is important to note that biases are not a new phenomenon introduced by AI; humans have been generating biases for millennia, in many cases without acknowledging or addressing them.

7. AI and the mental health of children and adolescents: An overview of opportunities and challenges

AI already impacts many parts of daily life for both adults and children, and AI technologies exponentially continue to extend to even more aspects of life. In terms of overall technology use, generative AI tools such as ChatGPT are the fasted-growing applications in consumer history, reaching a million users in just five days after its launch. Existing studies indicate that children and youth are using these tools more than adults, and such use poses opportunities and risks for children's development, education, diagnosis, and treatment (UNICEF, 2024).

In recent years, some studies have identified a weak but significant correlation between AI-generated, screen media use and internalizing and externalizing behavioral problems (Eirich et al., 2022). Many flags have been raised regarding the potential risks of social media use by children and adolescents who display a fear of missing out if they don't systematically engage in these online interactions. Cybervictimization, social comparison and exclusion, heightened negative peer influences, and displacement[1] are just a few of the issues associated with the use of social media and youth's mental health (Nesi, 2020). At the same time, the other side of the same coin includes various benefits such as social connection, identity exploration, creative expression and entertainment. One should keep in mind that media-use by children and adolescents does not happen in isolation. Often, parents model behaviors that they then criticize in their kids. If we would like to maximize the benefits of media use while minimizing its risks, we need to realize that it is not just a matter of changing children's online behaviors, but most crucially, parents should be leading the way establishing healthier media-use habits themselves. Studies have underlined this by indicating that if entire families (including both adults and children in the same household) reduce their overall screen time, there is a positive impact on children and adolescents' behavior (Schmidt-Pesson et al., 2024).

The role of AI in diagnosis. Ongoing monitoring of children and adolescents' development is key in early detection and intervention. With varying access to preventative pediatric health services around the world, AI can play a crucial role in providing much needed access. Only few longitudinal studies exist that investigate the outcomes of AI use in diagnostics, and overall, most such AI tools have not been evaluated in clinical practice. Overall, AI has been used to detect delays and disorders in language acquisition, cognitive development and mental health, socioemotional development and disorders, and motor and physical growth (Reinhart et al., 2024). The focus of AI studies in diagnostics has primarily been on diagnosing autism. For example, the role of AI has been crucial in developing shortened assessments which allow clinicians to decrease the age of autism diagnosis, creating earlier interventions and treatment, as well as decreasing the cost of the diagnostic process, and thus have the potential to make such diagnostics more affordable to more people around the world (Patrikakou, 2024).

[1] The issue of displacement encompasses the question of what other activities important to the healthy development of children and adolescents have been replaced by the time spent on social media.

The role of AI in treatment. Various AI-powered applications have been used in mental health treatment and in addressing the needs of neuroatypical children and adolescents. For example, the use of wearable sensors can collect detailed biological and physiological data which are also markers of mental health issues. This information can be used to monitor and customize therapy addressing specific individual needs through virtual reality applications and assistive robots to enhance emotional recognition, regulation, and social skills development (Alt, et al., 2024; Patrikakou, 2024). In addition, studies have indicated that AI can successfully support young people with language and communication skills, literacy, and other subject-areas basic learning skills (Rice & Dunn, 2023). AI applications have been primarily investigated in their use with neuroatypical children such as those diagnosed with Autism Spectrum Disorder, Attention Deficit Hyperactivity Disorder, Learning Disabilities, Cognitive Impairments, and Cerebral Palsy. One example is the use of AI-generated platforms which can detect and analyze errors students with Down Syndrome made in math problems and then provide personalized feedback and practice opportunities (Ojha, 2022). Socially Assistive Robots, are also used to enhance interpersonal interactions for students with autism, applying adapting difficulty of activities based on user needs while encouraging sustained engagement (Scassellati et al., 2018).

8. Conclusion

Advances in the use of AI in daily life and in the diagnosis and treatment of mental health issues have opened up tremendous opportunities but also challenges that need to be addressed. With the rapidly increasing demand for mental health services for younger people, the lack of access around the globe, and the dearth of trained professionals to address these increasing needs, AI can provide much-needed support to clinicians, educators, and parents alike to best support healthy children and adolescent development. AI is a tool and given its exponential permeation in so many facets of our daily lives, it is not good or bad per se, but rather its use by humans can serve "good" or "bad" purposes. Merely being dismissive of it instead of ethically harnessing its power, constitutes ostrichism[2], a cognitive bias in itself.

References

Abrams, Z. (2024, April 1). Addressing equity and ethics in artificial intelligence. *Monitor on Psychology*, *55*(3). Retrieved from https://www.apa.org/monitor/2024/04/addressing-equity-ethics-artificial-intelligence

Alt, A. K, Pascher, A., Seizer, L., von Fraunberg, M., Conzelmann, A., & Renner, T. J. (2024). Psychotherapy 2.0. Application context and effectiveness of sensor technology in psychotherapy with children and adolescents: A systematic review. *Internet Interventions, 38*. doi: 10.1016/j.invent.2024.100785.

American Psychological Association (2024). *Artificial Intelligence and the Field of Psychology* https://www.apa.org/about/policy/statement-artificial-intelligence.pdf

Centers for Decease Control (2024a). *Data and Statistics on Children's Mental Health* (August 2024). Centers for Decease Control. Retrieved from https://www.cdc.gov/children-mental-health/data-research/index.html

Centers for Decease Control (2024b). *Adolescent and School Health* (November, 2024). Centers for Decease Control. Retrieved from https://www.cdc.gov/healthy-youth/mental-health/index.html

Closing the Global Gap in Adolescent Mental Health (2024, February). *Nature Medicine, 30*, 309-310. https://doi.org/10.1038/s41591-024-02846-6

Eirich, R., McArthur, B. A., Anhorn, C., McGuinness, C., Christakis, D. A., & Madigan, S. (2022). Association of screen time with internalizing and externalizing behavior problems in children 12 years or younger: A systematic review and meta-analysis. *JAMA Psychiatry*, *79*(5), 393-405. doi: 10.1001/jamapsychiatry.2022.0155.

IBM (2023, October). *Understanding the different types of artificial intelligence*. IBM. Retrieved from https://www.ibm.com/think/topics/artificial-intelligence-types

Kieling C, Buchweitz C, Caye A., Silvani, J., Ameis, S. H., Brunoni, Cost, K. T., Courtney, D. B., Georgiades, K., Merikangas, K. R., Henderson, J. L., Polanczyk, G. V., Rohde, L. A., Giovanni A. Salum, G. A., & Szatmari, P. (2024). Worldwide prevalence and disability from mental disorders across childhood and adolescence: Evidence from the Global Burden of Disease study. *JAMA Psychiatry, 81*(4), 347-356. https://doi:10.1001/jamapsychiatry.2023.5051

[2] The deliberate avoidance or ignorance of conditions as they exist; self-delusion (Merriam-Webster, nd).

Maternal and Child Health Bureau (2024). *National Survey of Children's Health* (Data Brief October 2024). Health Resources and Services Administration. Retrieved from https://mchb.hrsa.gov/sites/default/files/mchb/data-research/nsch-data-brief-adolescent-mental-behavioral-health-2023.pdf

Mayo Clinic. (2024, January 27). *Mental Illness in Children: Know the Signs.* https://www.mayoclinic.org/healthy-lifestyle/childrens-health/in-depth/mental-illness-in-children/art-20046577

Merriam-Webster. (n.d.). Ostrichism. In *Merriam-Webster.com dictionary*. Retrieved March 29, 2025, from https://www.merriam-webster.com/dictionary/ostrichism

Moitra, M., Owens, S., Hailemariam, M., Wilson, K. S., Mensa-Kwao, A., Gonese, G., Kamamia, C., White, B., Young, D., & Collins, P. Y. (2023). Global mental health: Where we are and where we are going. *Current Psychiatry Reports, 25*(7), 301-311. doi: 10.1007/s11920-023-01426-8.

Nesi, J. (2020). The Impact of social media on youth mental health: Challenges and opportunities. *North Carolina Medical Journal, 81*(2), 116-121. doi: 10.18043/ncm.81.2.116

Ojha, S.T. (2022). Artificial intelligence in special education. *Journal of Positive School Psychology*, *6*(6), 8341-8345. https://journalppw.com/index.php/jpsp/article/view/9109/5928

Olawade, D., Wada, O., Odetayo, A., David-Olawade, A., Asaolu, F., & Eberhardt, J. (2024). Enhancing mental health with Artificial Intelligence: Current trends and future prospects. *Journal of Medicine, Surgery, and Public Health, 3*. https://doi.org/10.1016/j.glmedi.2024.10009

Patrikakou, E. N. (2024). Autism spectrum disorders and AI: Applications and areas of promise. In M. Carmo (Ed.), *Education and New Developments* (Vol. 2, pp. 42-46). Portugal: inScience Press.

Reinhart, L., Biscops, A. C., Kerth, J. L., Hagemeister, M., Heinrichs, B., Eickhoff, S. B., Dukart, J., Konrad, K., Mayatepek, E., & Meisser, T. (2024). Artificial Intelligence in child development monitoring: A systematic review on usage, outcomes and acceptance. *Intelligence-Based Medicine*, *9*. https://doi.org/10.1016/j.ibmed.2024.100134

Rice, M. F., & Dunn, S. (2023). The use of artificial intelligence with students with identified disabilities: A systematic review with critique. *Computers in Schools, 40*(4), 370-390. https://doi.org/10.1080/07380569.2023.2244935

Scassellati. B., Boccanfuso, L., Huang, C. M., Mademtzi, M., Qin, M., Salomons, N., Ventola, P., & Shic, F. (2018). Improving social skills in children with ASD using a long-term, in-home social robot. *Science Robotics, 3*(21). doi: 10.1126/scirobotics.aat7544

Schmidt-Persson, J., Rasmussen, M. G. B., Sørensen, S. O., Mortensen, S., Olesen, L., Brage, S., Kristensen, L., Bilenberg, N., & Grøntved, A. (2024). Screen Media Use and Mental Health of Children and Adolescents: A Secondary Analysis of a Randomized Clinical Trial. *JAMA Network Open, 7*. doi:10.1001/jamanetworkopen.2024.19881

Thakkar, A., Gupta, An, & De Sousa, A. (2024). Artificial intelligence in positive mental health: A narrative review. *Frontiers in Digital Health, 6*. doi: 10.3389/fdgth.2024.1280235.

United Nations. (2024, October 9). *1 in 7 children and teens impacted by mental health conditions*. https://news.un.org/en/story/2024/10/1155536

UNICEF (2024, May 7). *Generative AI: Risks and opportunities for children*. https://www.unicef.org/innocenti/generative-ai-risks-and-opportunities-children

World Health Organization. (2024). *Mental Health of Adolescents* [Fact sheet]. https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health

Zhang, A. (2021). "Hey There, {{YOUR NAME}}": How mental health chatbots can address psychotherapy's current distributive system. *Intersect, 14*(3). https://ojs.stanford.edu/ojs/index.php/intersect/article/view/1926