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Can Artificial Intelligence Be Used As a Stepping-Stone Towards Face-To-Face Therapy?

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by

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Abstract

Artificial Intelligence (AI) has emerged as a transformative tool in various fields, including mental health care and therapy. This study provides a comprehensive review of literature, gathered through Portland State University's Online Library, on the potential of AI as a stepping-stone towards face-to-face therapy. The study examines the historical development of AI in mental health, highlighting its development and advancements that have influenced its current implementations.

In addition to its direct applications in therapy, AI is also examined in the context of its role as a facilitator or "stepping-stone" in the delivery of mental health care. AI-driven platforms and applications have the potential to bridge gaps in access to mental health services, particularly in underserved or remote areas, by providing immediate support and guidance to individuals in need. However, the review also acknowledges that AI is not capable of replacing human to human interaction and should be viewed as a complement rather than a replacement for traditional therapy.

This dissertation revealed that Artificial Intelligence and chatbot applications involved in therapeutic settings can reliably serve as "stepping-stones" towards Face-to-Face therapy. Though there is a need for further research on the long-term impacts of engagement with AI programs as well as liability issues, programs with carefully led supervision and implementation in a patient's process can help to improve mental health and bridging the connection to therapists as well.

Keywords: Artificial Intelligence, Therapy, Tool, Humans, Interaction, Chatbot

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In recent years, the landscape of mental health resources has undergone significant transformation, reflecting a growing awareness of mental well-being. However, alongside these advancements are limitations. Soaring costs of resources limit access for many individuals seeking assistance, the abundance of mental health issues within the global population have strained the small number of services available, and the time it takes to carry out the therapeutic process causes accessibility issues. One promising yet underexplored avenue in this domain is Artificial Intelligence or "AI". AI, although relatively popular today, has a history spanning decades. Its recent relevance in popular culture, evidenced by conversational bots, self-driving vehicles, and educational support programs, underscores its versatile applications across various domains. The evolution and widespread availability of AI indicate its potential to emerge as one of the most efficient and cost-effective tools in the world of mental health (Marriott & Pitardi, 2023). This literature review seeks to investigate AI's capacity to enhance mental well-being and its reliability in guiding users toward more personalized treatments. Through an extensive analysis of 16 scholarly articles and journals gathered via Portland State University's online library pertaining to AI, its developmental trajectory, and its potential to establish connections similar to human interaction, I will analyze its potential as a stepping stone towards Face-to-Face therapy. This literature review will concentrate on several aspects of AI, notably its long history dating back to the mid-20th century, its current applications, the positives and negatives of AI engagement, as well as its overlap and effectiveness in a therapeutic setting.

Literature Review

History of AI

The emergence of Artificial Intelligence pushed forward the evolution of technology and its capabilities in a significant manner. While the term "Artificial Intelligence" was officially created in 1956 by John McCarthy (Anyoha, 2017), the idea of creating machines that can mimic human cognitive functions dates back much further. It was in 1935 that a man named Alan Mathison Turing first proposed the idea that a "computing machine" (Copeland, 2024) could contain a memory with symbols that could develop new steps that act on guidance from the user. Although the idea was popular, computer scientists were unable to develop AI due to its complex algorithms and their limited computing power. However, it has been a concept that has fascinated scientists, researchers, and science fiction enthusiasts alike for decades. Closer to the 1980s and 90s, AI made a strong resurgence as computing power vastly improved and datasets began to increase massively within the field of computer science. Popular culture had a significant impact on the widespread awareness of AI and its existence through films such as Star Wars, Blade Runner, and The Terminator. Within the last two decades, improvements and advancements of AI programs have exponentially increased. The rise of the internet and social media has led to a mass collection of data, which has provided researchers with the material needed to design more intricate AI algorithms. Machine learning, which is AI's use of data and algorithms to imitate human intelligence, though no cognitive functioning, has played an integral part in the software development as well as its popularity. Breakthroughs in algorithms called "Deep Learning" (Ewbank et al., 2019) allow programs to learn from large amounts of data and perform tasks like image recognition and creation, language processing, and more notably autonomous driving. A few car companies have even begun to integrate autonomous driving programs into their

vehicles. Global commercialization of AI technology has resulted in its revival in cultural relevance and companies across various industries are investing an abundance of time and money into AI programs, with the realization that it can upgrade and transform their business'. With this history and accelerated evolution, AI programs have begun to make their way into the world of mental health.

Overlap Between AI and Mental Health Therapy

AI's development, while recent and very quick, has made its presence known in therapeutic settings and already has multiple methods of service. AI-powered tools and applications are now used to offer mental health support to individuals around the world. Apps like Woebot and Wysa are AI-powered programs that offer personalized interventions, can monitor progress, and can provide continuous support at the reach of a user's personal device. Woebot is a free app developed by psychologists that can deliver chatbot conversations that utilize Cognitive Behavioral Therapy (CBT) (woebothealth.com). Within the app, users can learn about coping strategies for anxiety and depression and are offered personalized lessons for their mental health concerns. Wysa is another program that offers chatbot conversations and works with users to provide emotional support through methods like CBT as well, and can even be used to book meetings with human therapists. The "chatbots" are designed to simulate human conversation and provide a sense of companionship for the user (Haque & Rubya, 2023) . The programs are designed to take in the information given by the user and reflect mental health support and coping strategies. ChatGPT is another popular and free AI chatbot program that is free to users and requires no referral from a clinician. With this service, users can ask any and all questions and receive an immediate answer from the chatbot reflecting its accessibility and cost effectiveness. Another element that AI has made a presence in is that of Virtual Reality (VR)

therapy. In this realm, VR environments have the capability to simulate real-life scenarios as a method of exposure therapy (Boeldt et al., 2019). These programs are designed to effectively aid in treating phobias, PTSD, and any other disorders or concerns a patient might have (Boeldt et al., 2019). The current programs and devices in place to aid in therapeutic settings can enhance the treatment of anxiety symptoms as well as the clinical training for providers. With further improvement of resources and devices, clinical training would become much "easier and more accessible" (Boeldt et al., 2019). According to Boeldt et al., (2019), there are a few obstacles that cause misconceptions and concerns with exposure therapy and using virtual reality programs has the possibility to make therapy "easier and more acceptable for therapists and patients". AI programs will personalize environments based on the patient's unique response and are designed explicitly to assist users in fulfilling diverse social and mental needs (Marriott & Pitardi, 2023). A study conducted by Abbas et al., (2018) which observed machine learning and early detection of autism, revealed that AI programs which are easily accessible and affordable, "can play a very important role in improving the effectiveness of behavioral health screeners". Though the study addressed "pitfalls", the researchers concluded their study by emphasizing that systems and algorithms are very much in their early stages and that "significant further improvements may be possible" (Abbas et al., 2018). The functioning programs facilitate interaction with AI-designed systems capable of delivering human-like responses—an essential characteristic when contemplating the potential of AI in therapeutic settings. The chatbot designs may allow for a user's "prompt action in response to new symptoms" (Haque & Rubya, 2023) that would help maintain their progress on improving mental health.

While the world has had an increased awareness and emphasis on maintaining and improving mental health, due to the circumstances the amount of patients has increased with a

limited number of services provided. This dilemma has placed a number of challenges on service users accessibility as well as their willingness to treat their mental health issues due to stigmas around mental health providers. Lagunes-Cordoba et al., (2021) revealed in their study that patients "have also experienced stigmatization for having a mental illness". Haque & Rubya, (2023) argue that AI programs "may encourage interaction with those who have traditionally been reluctant to seek health-related advice because of stigmatization". A separate study revealed that "Artificial intelligence has the potential to reduce both time to treatment initiation and costs" further expanding on the idea that AI can aid in cutting health service costs (Kacew et al,. 2021). Furthermore, recent findings in the field have indicated promising outcomes. For instance, a study designed to predict signs of anxiety with machine learning approach revealed that using clinical and biological markers can moderately improve "performance in predicting recovery from anxiety disorders over a 2-year follow-up for individual patients" (Bokma et al., 2020). Bokma et al., (2020) went deeper into the causes as to why tracking anxiety symptoms is difficult and attributed fault to "complex, multicausal aetiology of anxiety disorders". Using a "Multivariable Machine Learning (ML)" (Bokma et al., 2020) method assisted with the improvement of patients and anxiety over the course of their study. Their research revealed that an ML approach "would pave the way for targeted treatments" aiding in mental health recovery. (Bokma et al., 2020). In a separate study conducted by Ewbank et al., (2019) the research supported the use of AI's deep learning. Ewbank et al., (2019) elaborate in their study that "applying deep learning to large clinical data sets can provide valuable insights into the effectiveness of psychotherapy." AI continues to develop and its capabilities can reinforce the data collected through years of treatment as well as from a plethora of cases. These results highlight the potential of artificial programs that may provide support and monitoring progress

over extended periods. Though person to person therapy may be the ideal approach to treating a patients mental health, AI programs have unleashed a completely new method for users to gain access, maintain progress, and become comfortable when attempting to improve their mental health. Though these programs are cost efficient, accessible, and easy to use they do cause multiple ethical concerns.

As highlighted in a study by Hu et al., (2023), "people are becoming increasingly dependent on digital agents that facilitate human-like conversations". There is a growing dependence on AI-powered chatbots, potentially altering the reliance on human interaction and raising ethical questions about the depth and authenticity of these interactions. While AI offers a potential foundation for mental health support, acknowledging and critically examining its limitations, ethical implications, and impact on interpersonal relationships is crucial when considering its potential for therapeutic use. Research has shown that although the ability to communicate back and forth with artificial programs is possible, AI cannot develop "cognitive abilities comparable to those of humans" (Abbate, 2023). Abbate (2023) defines those abilities as "self-awareness" and "abstract thinking".

While the user may be able to create conversation and bring ideas to the chatbot to expand on, the artificial programs currently available cannot self-govern. This aspect emphasizes the importance of maintaining a balance between the use of artificial chatbots for mental health support and clinician led therapy. Another study conducted by Marriott & Pitardi (2023) expands on this aspect when describing their results. The use of AI chatbots and discussions between the program and user "do not support the positive effects of human-like characteristics (sentience, agreeableness, warmth, and ubiquity)", (Marriott & Pitardi 2023). While AI programs may be sufficient for providing human-like conversation, coping strategies,and non-judgmental support,

the human-like connection to the user is shown to be non-existent. Issues caused by the lack of human interaction can lead the user to spiral even further into their mental health related struggles. The Hu et al., (2023) research found that users of chatbots, or "conversational artificial intelligence", have a positive association with social anxiety due to "problematic use" as described in the study. The researchers went on to describe how elements like "loneliness and rumination" are results of the program's overuse and worsening of social anxiety (Hu et al., 2023). Similarly, Marriott & Pitardi (2023), describe how the non-judgmental chatbot can lead the user to gain a false perception of wellbeing which in turn can cause more overuse of the app (Marriott & Pitardi, 2023). This element must be included in the discussion when considering AI as a "stepping-stone" towards Face-to-Face therapy and its effectiveness.

A research study conducted by Coeckelbergh (2019), brought focus to more ethical implications of who must be attributed fault to in the case of an AI program causing issues to the user or "patient". Coeckelbergh (2019) concluded that any users of an AI program "are justified in demanding AI technology and social arrangements that enable effective attribution and distribution of responsibility" in the case of any form of harm to the user. Previously mentioned was the app "Woebot Health" that offers medical information but specifically states on their website that the company and app will not be held liable for any actions the user may perform that causes themselves legal trouble. Coeckelbergh (2019) elaborates that if there are no consequences for an artificial program's harm, then these programs "will crash". When considering all of these issues surrounding AI limitations, ethical implications, and impact on interpersonal relationships, it is important to focus on obtaining the appropriate patient group as well. In a study conducted by Jefferson (2023), their conclusions showed that "mobile technology could inhibit traditional play and social development" in children that were between

the ages of 4 and 5. The rapid and efficient progress in technology and AI programs has placed a vast array of resources at users fingertips. This prompts concerns regarding the impact of technology on the personal development of children and adults alike. A study published in the "Early Childhood Education Journal" delved into parental preferences regarding their children's play activities. It elaborates on the element that most parents acknowledge the inevitability of technology in their children's lives, believing that "digital play" could equip children with the essential technological skills for the future (Isikoglu Erdogan et al., 2019). This research sheds light on the potentially substantial impact of an AI therapy program on the users mental health and overall social development in both children and adults. Likely the largest concern within this focus is that there is still very limited evidence of artificial intelligence being incorporated into clinical practice. With its rapid development and exponential growth, more research is needed to determine its reliability.

Discussion

When considering if Artificial Intelligence can be a stepping-stone towards Face-to-Face therapy in a clinical setting, it is important to acknowledge concerns with its history, its current state, and its unknown long-term impact on a user. Artificial intelligence has developed exponentially and continues to do so as time goes on. With advanced technology readily available and at the fingertips of a user, its presence stands stronger than ever. Although AI has had exponential growth since its emergence, the idea of human created algorithms that are implemented into the programs must be carefully considered. While AI may appear to be independent in its responses to a user, it is important to include the fact that any and every response currently implemented in a program were designed by humans. Information for a program could contain human biases that impact the way a user interacts with the program and

vice versa (Coeckelbergh, 2019) Along with this idea, the major concerns are misuse and/or overuse of these programs. While AI has a strong cultural presence, its research on its long-term effect on a user are extremely understudied. Chatbots appear to have the ability to obtain a user's addiction to it through isolation and the worsening of a variety of mental health related issues (Hu et al., 2023). It is evident that too much of AI can cause just as much, if not more, harm than not seeking out treatment or receiving unwanted stigmatization around one's own mental health. Though the programs and chatbots can help users feel temporarily healthier, misuse of these programs can lead to false perception of one's current state of mental health (Marriott & Pitardi, 2023). These feelings that the AI is "nonjudgmental" and "supportive" can actually lead to further isolation and withdrawal. It is important to consider the liability that AI programs and their owners have when dealing with the mental health of a user. Seemingly, owners and designers of these programs show an emphasis on removing themselves from any potential liability of the apps misinformation, communication, and unwarranted suggestions (Coeckelbergh, 2019). If a program cannot be held reliable for any harm caused to an individual, then who would be? This issue increases in significance when acknowledging the age groups of the users. Younger kids involved in use of any technology seem to take a significant impact on their social and cognitive development when overusing their electronic devices. This factor becomes more apparent when parents consider devices an integral part of their child's adult life to come. Though these resources are significantly under researched, still very early in their existence, and raise significant ethical concerns, this literature review supports the idea that resources like Artificial Intelligence stand to be a stepping-stone towards Face-to-Face therapy.

Mental health support must be accessible to every individual, however, it is important to responsibly navigate the individual's use of technology regardless of age. It appears based on the

evidence that chatbots and AI interactive programs may be more effective when used with balance and monitoring of a clinical supervisor (Hu et al., 2023). With proper guidance and balanced use, these tools may stand to be very beneficial in a therapeutic setting. The app "Woebot",mentioned in the literature review section, is an app only available to users that are referred to by a clinical therapist. Users can only access this app with a special code and their interactions with the program are monitored closely by their clinician, according to their website (woebothealth.com). Acknowledging that the largest issue appears to be overuse or misuse of programs like these, proper guidance and influence can help users navigate these apps in a way that keeps them beneficial. The focus would be to limit a user's interactions to a responsible amount of time as well as maintaining engagement with human beings around them. Technology like Virtual Reality headsets can be integrated into a users therapy all while supervised by their therapist ensuring that there aren't any elements that would negatively impact their patient. Working with parents to understand these programs and devices as well as assuring them their child's engagement would be closely monitored can enhance trust and collaboration with artificial programs. It is important to emphasize that these programs are still very early in their development, they are progressing very quick and seemingly have updates every few months with details elaborating on their capabilities. Artificial intelligence has the ability to provide support with a safe space for users to engage in. With the proper guidance, observation, and ethical acknowledgments, AI can serve as a stepping-stone towards Face-to-Face therapy.

Conclusion

The literature review has gone into depth on Artificial Intelligence, acknowledging its history, current applications in a mental health setting, as well as its positive and negative aspects. When questioning if AI programs can be used as a stepping-stone towards Face-to-Face

therapy, the research indicates that it may serve as a very useful tool. However, there are a number of concerns to acknowledge and adjust for users to receive the most benefit from these programs.

AI chatbot programs have already been implemented into mental health services and show promising results when it comes to a user's mental health. The affordability and accessibility of programs make it much easier for a larger user base. Programs' abilities to limit judgment as well as stigmatization around mental health can help patients feel more confident in their engagement. Finally, chatbot programs and others alike can help users maintain long-term mental health support and improvement.

Although these positive factors stand to support AI and its use in a mental health setting, there are a number of concerns to address when implementing AI. Its dependency can cause users to worsen their mental health through increased withdrawal and social anxiety. The presence of technology at the fingertips of adults and children alike mark an emphasis on developmental problems and its lack of human cognitive ability can cause issues when communication is established. Its liability concerns and designers' focus to avoid consequences of the app's influence mark its ability to do extreme damage with no reprimand.

It is important to consider the literature reviews limitations. As mentioned before, Artificial Intelligence has existed for decades yet the research on chatbots and their effect on a user has limited research. Programs currently in use for therapeutic purposes are still in the early stages of development. Future studies should focus on data collected through years of users' engagement with chatbot programs and their effectiveness.

Despite these very serious concerns, when addressed, the AI programs can do extremely positive things in a therapeutic setting. With proper guidance and oversight from clinicians, AI

can be infused more effectively in a patient's progress. The emphasis on maintaining a balance

between the program's use and human interaction can combine for a more efficient process when

attempting to improve a user's mental health. Acknowledging that the technology is still early in

development, its limited research on long-term impact, and improving liability concerts,

Artificial Intelligence has the potential to be a stepping-stone towards Face-to-Face therapy.

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