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Research Paper

The Role of Artificial Intelligence in Psychological Intervention for Depression in Adults

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ABSTRACT

While depression is one of the most prevalent causes of disability globally, conventional psychotherapy is limited by factors including its cost, stigma, and shortage of trained therapists (Bagheri Sheykhangafshe et al., 2025; Joshi et al., 2025). Artificial Intelligence (AI) has proven itself to be a scalable supplement to in-person care, providing cognitive-behavioral material via chatbots, mobile apps, and web platforms (Zhou et al., 2022; Ni & Jia, 2025). This paper presents empirical findings from a four-to-six-week quasi-experimental, correlational study of the impact of an AI-based psychological intervention on the symptoms of depression in 80 adults (25–45 years) who had mild to moderate depression. The severity of depression was assessed with the Beck Depression Inventory-II (BDI-II) before the intervention and after the intervention, and engagement was assessed using an AI-engagement scale and a log of usage. The paired t-test revealed a statistically significant decrease in depression scores (mean difference = 7.6, $t(79) = 14.32$, $p < .001$), and Pearson correlation indicated that there was a significant relationship between a reduction in symptoms and level of engagement ($r = -0.62$, $p < .01$). These results validate the potential of AI-powered tools as an additional, cost-effective and accessible component of mental health care (Boucher et al., 2021).

Keywords: *Artificial Intelligence (AI), Depression, Digital Mental Health, AI Chatbots, Cognitive Behavioral Therapy (CBT), Adults*

Depression has become a growing problem worldwide, because of urbanization, work-related stress, and the psychological toll of living in the digital age (Lau et al., 2025). However, while these interventions are effective, many who could benefit from them are unable to access them due to stigma surrounding psychiatric care, geographical location, and cost (Balcombe, 2023). Given this treatment gap, digital and artificial intelligence (AI) delivered interventions have been suggested as a scalable alternative that can provide structured and evidence-based psychological support beyond the clinic (Ebert et al., 2019; Boucher et al., 2021).

AI-powered mental health resources, such as conversational chatbots, mobile self-help apps, and adaptive online therapy platforms, aim to replicate aspects of therapeutic engagement, direct the user through CBT exercises, and track users' moods over time (Bickman, 2020;

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Farzan et al., 2025). As these systems can be customized to an individual's behavioral patterns and symptom trajectory, they are being increasingly seen not just as resources of information but as active therapeutic agents that can modify content as feedback is provided in real-time (Spytska, 2025).

Previous feasibility studies have reported good acceptance and engagement of adult users with these tools (Alnajjar & Alaleeli, 2025), and systematic reviews have indicated that AI-based interventions may yield short-term benefits in mood and anxiety, similar to some traditional digital interventions (Li et al., 2023; Ni & Jia, 2025). Much of the literature that focuses on usability and acceptability, however, does not explicitly measure clinical outcomes, and, comparatively, fewer studies have directly correlated measures of intensity or consistency of the use of AI with the actual reduction of depressive symptoms on the basis of standardized instruments (Jahedi et al., 2024). Data privacy concerns, the scope of AI compared to licensed clinical care, and ethical issues further cloud the pathways to translating the positive impressions garnered from the pilots to routine care delivery (Fiske et al., 2019). The present paper fills this gap by reporting the empirical findings of a controlled pre/post intervention study specifically regarding changes in symptoms and the role of user engagement.

Objectives of the Study:

1. To determine the degree of depression among adults prior to and following the involvement in an AI-based psychological intervention.
2. To investigate the efficacy of AI-based psychological intervention in the depressive symptom reduction of adults.
3. To examine the correlation between the degree of interaction with AI-based psychological intervention and the level of depression in adults.
4. To determine the possibility of AI-based psychological tools as either supportive or complementary interventions to standard mental health interventions.

Need for the Study:

Depression continues to increase, and the drawbacks of conventional mental health have resulted in the fact that there is an acute necessity for new and accessible psychological services. Though there are treatment approaches that are effective, very many people have not received treatment because of the barriers that exist, including the cost and the limited number of mental health professionals as well as the societal stigmatization linked with seeking psychological assistance. Over the past several years, there have been changes in technology, which have brought digital mental health solutions that strive to enhance access to psychological care. The applications of the Mental Health industry are artificial intelligence-powered mental health platforms that offer psychological support via the Internet, such as chatbots, automated therapy platforms, and cognitive behavioral tools. Such interventions have several benefits including full accessibility, affordability, anonymity, and tailored feedback, which makes them an appealing substitute or addition to conventional therapy. This study is relevant to clinical psychologists, counselors, mental health practitioners, and healthcare policymakers because it helps build the expanding sphere of digital mental health and enable the creation of affordable and scalable psychological interventions. The results of the current research can be used to enhance the quality of mental health services delivery by incorporating AI-related technologies into the traditional therapeutic treatment and increasing access to psychological assistance to people with a depressive condition.

REVIEW OF LITERATURE

The Rise of AI in Mental Health Care.

As AI and natural language processing along with mobile technology have progressed, so has its use in psychological well-being. Bickman (2020) attributes this trend to a bigger fifty-year trend in mental health services, which has been promoting precision, data-driven methods, in which AI-based tools are a natural evolution of the mental health services' long-standing quest to individualize treatment. Ebert et al. (2019) also place digital interventions as a solution to recognized barriers with access, citing the addition of adaptivity and personalization with AI applications. This collection of work suggests the possibility of using AI interventions as supplementary tools to clinical mental health support, not as a substitute for it.Collectively, this collection of work makes the case for AI interventions as an extension of the current digital mental health frameworks and systems, rather than a complete replacement for clinical care.

The effectiveness of AI-Based Interventions for Depression

There are a growing number of empirical and review studies that have looked at whether AI tools result in symptom reduction. Some early evidence of symptom-level change was reported by Alnajjar and Alaleeli (2025) with an AI-based self-insight tool that saw significant improvements in depression, anxiety, PTSD, and OCD symptom scores pre-to-post. There is some of the strongest experimental evidence to date that a generative AI chatbot can reduce depressive symptoms, compared to a control condition, in a large randomized controlled trial (Heinz et al., 2025). Likewise, Xu and Ma (2025) showed that by using social cues, chatbots can have a positive impact on depression in a randomized study, and Yeh et al. (2025) used Woebot to show that chatbots can be effective in reducing anxiety and depression in student users in group counseling contexts.

In the review stage, Farzan et al., 2025 performed a systematic review of CBT-based chatbots and found that these consistently report short to moderate term benefit regarding mood -related symptoms, with some studies having poor quality and/or few follow-up days. These results align with those of small-to-moderate pooled effect sizes found in the meta-analyses conducted by Li et al. (2023) and Lau et al. (2025) with mixed populations. Bagheri Sheykhangafshe et al. (2025) and Joshi et al. (2025) further build on this evidence base by conducting multiple systematic reviews across various psychological disorders, with both findings AI interventions to be a promising but to be fully substantiated form of supplemental psychotherapy to traditional treatments. Im and Woo (2025) also outline the underlying mechanisms of these impacts, highlighting the importance of structured content delivery and regular engagement with chatbot in the therapeutic benefits of chatbot-based tools.

The importance of engagement and personalization

A consistent use of the AI-based tools has been shown to be directly connected to the benefits and advantages that AI will provide. A number of studies point out that the benefits of AI-based tools are directly related to the frequency of their use, not just to those who use them. Zhou et al. (2022) state that continuing interactions is one of the most important factors for therapeutic success in AI psychological applications, which can be facilitated through a variety of features including reminders and adaptive content. Gual-Montolio et al. (2022) make a similar point in their review of real-time AI-enhanced interventions, highlighting that the responsiveness to users' input boosts the therapeutic alliance perceived by the users. According to Jahedi et al. (2024), personalization is especially significant for

younger and digitally-savvy users, who have high expectations for customized content that resonate with them, influencing their satisfaction and usage. The results of these studies do suggest a dose–response relationship between engagement and outcome, a question that is directly addressed in this study.

Ethical, Clinical and Practical considerations

In addition to being effective, researchers are wary of over-claiming clinical equivalence between AI tools and licensed. The use of embodied AI for therapeutic purposes raises ethical issues such as accountability, emotional authenticity, and the limits of the clinical use of AI (Fiske et al., 2019). Balcombe (2023) also notes that AI chatbots can offer greater convenience and accessibility for access to mental health evaluation and care, due to its ability to overcome stigma, cost and geography, but is limited as a replacement for professional mental health care, especially in more severe or complex cases. Spytska (2025) talks about the design of intelligent therapeutic systems, which is in line with this and notes that AI systems perform best when used as another element of the mental health care system rather than as standalone therapy.

Summary and Research Gap

Combined, this literature suggests that AI-powered psychological interventions are effective in decreasing depression symptoms, with emerging evidence that intervention intensity (as opposed to just access) is a predictor of effectiveness. Yet, as Jahedi et al. (2024) and Joshi et al. (2025) point out, most of this evidence is based on feasibility and acceptability studies, and few studies make an explicit measurement of engagement and symptom change through validated instruments. This discrepancy is what led to the design of the present study combining a standardized clinical assessment (BDI-II) with a validated engagement scale to directly test the efficacy of the AI-based intervention and how engagement contributes to the results.

Method Overview

Adults aged 25-45 who reported to have mild to moderate depression were purposively recruited (80). Participants filled out the BDI-II at baseline and after 4-6 weeks of interacting with a psychological AI-based intervention (AI chatbot, mobile app, or an online therapy platform). A validated AI-engagement scale was used for the purpose of quantifying engagement, which was also supported by usage logs. Data were analyzed with a paired-samples t-test to assess pre–post change and Pearson's correlation coefficient to look at the correlation between engagement intensity and post-intervention scores on the depression scale.

RESULTS

Sample Characteristics

The sample was split evenly between male (50%) and female (50%) and included a range of adult age groups with the largest group (31.3%) between 25 and 30 years. Most participants had an undergraduate (43.8%) or a post-graduate (41.2%) degree, and three quarters (75%) said they had previous experience with digital mental health tools. This profile is like the profile of the populations in other digital-intervention studies that have found that increased digital literacy is correlated with increased comfort with engaging AI-based platforms (Ni & Jia, 2025).

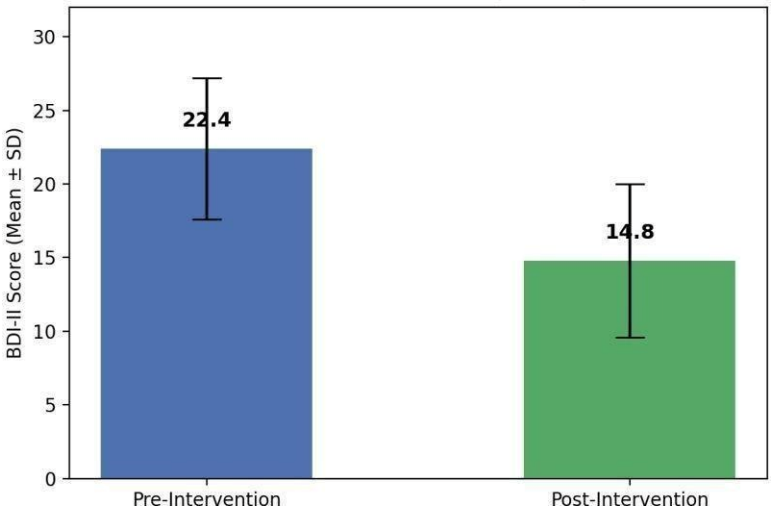
Pre-Intervention Depression Levels

The mean BDI-II score was 22.4 (SD = 4.8, range = 13–34) at baseline, which reflects a moderate average level of depressive symptoms, based on the study's inclusion criteria. The moderate variability of the scores indicated that there was a heterogeneous symptom profile within the sample, which further highlighted the need for individualized, adaptive intervention design (Farzan et al., 2025).

Post-Intervention Depression Levels

After 4 to 6 weeks of engagement, the mean BDI-II score was reduced to 14.8 (SD = 5.2, range = 6–28). This is a significant overall reduction in depressive symptoms in this sample. In figure 1, the mean depression scores for pre- and post-intervention are shown. Although most participants had significant improvement, the maximum score in the post-test of 28 suggests that a subset had moderate levels of depression, and that AI-based tools are insufficient to completely alleviate depression for all users (Boucher et al., 2021).

Figure 1. Mean Depression Scores Before and After AI-Based Intervention (N = 80)



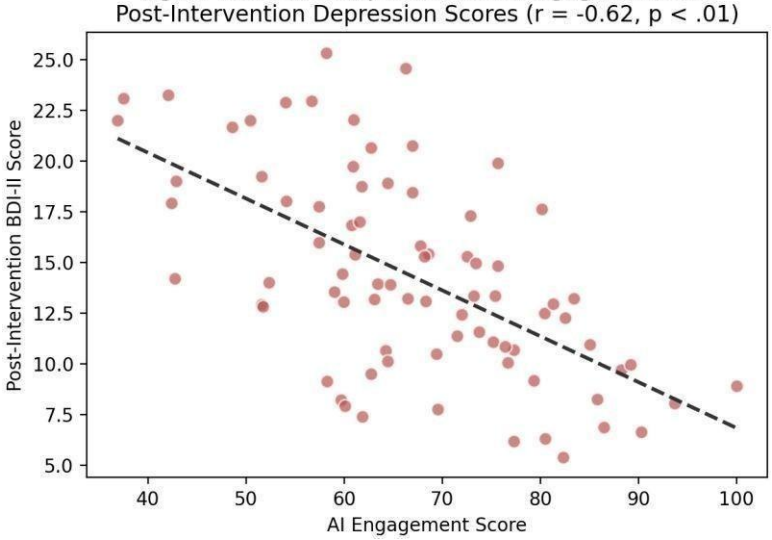
The statistical significance of change

A difference of 7.6 points emerged for the pre- and post-tests within a paired t-test, $t(79) = 14.32$, $p < .001$. This finding suggests that the decrease in depressive symptoms is not a chance occurrence, further supporting the effectiveness of the AI-based intervention in this sample (Yeh et al., 2025). The relationship between engagement and outcomes.

Engagement and Outcomes

There was a moderate and statistically significant negative correlation between AI engagement and the post-test depression scores ($r = -0.62$, $p < .01$) at the end of the intervention. As illustrated in Figure 2, participants who had more frequent and regular contact with the AI tool tended to have lower scores on the depression scale after the intervention. This dose–response relationship is consistent with the results from previous digital mental health research where duration of engagement (not just access) was a more powerful predictor of clinical improvements (Li et al., 2023; Xu & Ma, 2025).

Figure 2. Relationship Between AI Engagement and Post-Intervention Depression Scores (r = -0.62, p < .01)



DISCUSSION

The findings suggest that AI-driven psychological interventions were statistically and clinically significant in reducing the symptoms of depression in adults with mild to moderate depression over a relatively short intervention period. This finding is consistent with a growing literature that shows that structured, CBT-based digital tools can offer aspects of benefit that are otherwise considered to be a hallmark of face-to-face treatment (Im & Woo, 2025). There are a number of possible explanations for this effect. AI platforms can provide individualized, personalized content and exercises for users to practice as needed to reinforce adaptive coping strategies between formal therapeutic sessions (Spytska, 2025). Second, these tools were accessible 24/7, without travel constraints and mostly anonymous, which would diminish common features of non-participation and stigma and facilitate continued participation (Balcombe, 2023).

The negative relationship between engagement and depression scores is of special interest. This implies that being provided with such an intervention is not sufficient to yield therapeutic benefits, but that the active use of the tool is crucial, as confirmed by earlier studies focusing on interactivity and adherence as therapeutic mechanisms of digital therapeutic effect (Fiske et al. 2019). Such direct implications would apply to the design of interventions, for example, the integration of features like reminders, progress dashboards, and adaptive content sequencing could be essential for sustaining the engagement needed for the best results (Zhou et al., 2022).

It is noteworthy that, simultaneously, the moderate symptom scores of some participants at the end of the intervention period remind us that AI tools are not always a substitute and an adequate measure for professional care. Responsiveness may vary based on individual differences in baseline severity of depression, motivation, and previous experience with digital tools, and more severe and complicated presentations may need clinician-led treatment and not AI intervention alone (Heinz et al., 2025). The implications of these findings are thus not about replacing mental health practitioners, but about augmenting services to reach more people, with complex cases and/or high-risk cases being managed by mental health practitioners (Balcombe, 2023).

Furthermore, the size of the observed effect is comparable to the median of the pooled effects found in previous meta-analyses of AI-assisted psychotherapy, which have tended to be small to moderate (Lau et al., 2025; Gual-Montolio et al., 2022) for a variety of heterogeneous interventions and populations. The relative effectiveness of the current sample may be due to the sample homogeneity (working age adults who were mildly to moderately affected and had above average digital literacy) rather than the effectiveness of AI intervention per se. However, combined with the findings from similar age groups with CBT-informed AI tools during chatbot based trials (Xu & Ma, 2025; Bagheri Sheykhangafshe et al., 2025), the current findings suggest that there is a consistent trend of measurable symptom reduction for engagement-focused, CBT-informed AI tools used consistently over a few weeks.

CONCLUSION

This study demonstrates empirical evidence that AI-based psychological interventions are indeed effective in meaningfully decreasing depressive symptoms in adults who suffer from mild -to-moderate depression, with a mean BDI-II decrease of 7.6 points over 4-6 weeks ($p < .001$), and a moderate negative correlation between engagement and post-intervention scores ($r = -0.62$, $p < .01$). These findings collectively indicate that AI-based mental health interventions have the potential to be a practical, scalable addition to traditional mental health treatment, especially for communities that have access issues, cost barriers, and stigma. Combined, these findings suggest that AI interventions for mental health can be a practical and scalable solution for those who have access barriers, cost barriers, and stigma.

Research with larger and more diverse samples and extended follow-up periods are needed to establish the durability of these improvements and ways to enhance engagement to achieve optimal therapeutic outcomes (Joshi et al., 2025).

REFERENCES

Alnajjar, A. A., & Alaleeli, S. (2025). AI-based Self-Insight Treatment Tool (SITT): pre- and post-effectiveness testing on adult patients with depression, anxiety, PTSD, and OCD. *Clinical Psychologist*, 1–10.

Bagheri Sheykhangafshe, F., Tajbakhsh, K., Pour Saeid, V., Gharibi Loroun, S., & Shah Hosseini, M. (2025). The effectiveness of artificial intelligence interventions in the treatment of psychological disorders: A systematic review. *Journal of Research and Health*, 15(6), 6.

Balcombe, L. (2023). AI chatbots in digital mental health. *Informatics*, 10(4), 82.

Bickman, L. (2020). Improving mental health services: A 50-year journey from randomized experiments to artificial intelligence and precision mental health. *Administration and Policy in Mental Health and Mental Health Services Research*, 47(5), 795–843.

Boucher, E. M., Harake, N. R., Ward, H. E., Stoeckl, S. E., Vargas, J., Minkel, J., … & Zilca, R. (2021). Artificially intelligent chatbots in digital mental health interventions: a review. *Expert Review of Medical Devices*, 18(sup1), 37–49.

Ebert, D. D., Harrer, M., Apolinário-Hagen, J., & Baumeister, H. (2019). Digital interventions for mental disorders: key features, efficacy, and potential for artificial intelligence applications. In *Frontiers in Psychiatry: Artificial Intelligence, Precision Medicine, and Other Paradigm Shifts* (pp. 583–627). Springer Singapore.

Farzan, M., Ebrahimi, H., Pourali, M., & Sabeti, F. (2025). Artificial intelligence-powered cognitive behavioral therapy chatbots, a systematic review. *Iranian Journal of Psychiatry*, 20(1), 102.

Fiske, A., Henningsen, P., & Buyx, A. (2019). Your robot therapist will see you now: ethical implications of embodied artificial intelligence in psychiatry, psychology, and psychotherapy. *Journal of Medical Internet Research*, 21(5), e13216.

Gual-Montolio, P., Jaén, I., Martínez-Borba, V., Castilla, D., & Suso-Ribera, C. (2022). Using artificial intelligence to enhance ongoing psychological interventions for emotional problems in real- or close to real-time: a systematic review. *International Journal of Environmental Research and Public Health*, 19(13), 7737.

Heinz, M. V., Mackin, D. M., Trudeau, B. M., Bhattacharya, S., Wang, Y., Banta, H. A., … & Jacobson, N. C. (2025). Randomized trial of a generative AI chatbot for mental health treatment. *NEJM AI*, 2(4), AIoa2400802.

Im, C. H., & Woo, M. (2025). Clinical efficacy, therapeutic mechanisms, and implementation feature of cognitive behavioral therapy-based chatbots for depression and anxiety: narrative review. *JMIR Mental Health*, 12(1), e78340.

Jahedi, F., Fay Henman, P. W., & Ryan, J. C. (2024). Personalization in digital psychological interventions for young adults. *International Journal of Human–Computer Interaction*, 40(9), 2254–2264.

Joshi, A. C., Ghogare, A. S., & Madavi, P. B. (2025). Systematic review of artificial intelligence enabled psychological interventions for depression and anxiety: A comprehensive analysis. *Industrial Psychiatry Journal*, 34(2), 158–166.

Lau, Y., Ang, W. H. D., Ang, W. W., Pang, P. C. I., Wong, S. H., & Chan, K. S. (2025). Artificial intelligence-based psychotherapeutic intervention on psychological outcomes: meta-analysis and meta-regression. *Depression and Anxiety*, 2025(1), 8930012.

Li, H., Zhang, R., Lee, Y. C., Kraut, R. E., & Mohr, D. C. (2023). Systematic review and meta-analysis of AI-based conversational agents for promoting mental health and well-being. *NPJ Digital Medicine*, 6(1), 236.

Ni, Y., & Jia, F. (2025, May). A scoping review of AI-driven digital interventions in mental health care: mapping applications across screening, support, monitoring, prevention, and clinical education. *Healthcare*, 13(10), 1205.

Spytska, L. (2025). The use of artificial intelligence in psychotherapy: development of intelligent therapeutic systems. *BMC Psychology*, 13(1), 175.

Xu, S., & Ma, T. (2025). Depression intervention using AI chatbots with social cues: a randomized trial of effectiveness. *Journal of Affective Disorders*, 389, 119760.

Yeh, P. L., Kuo, W. C., Tseng, B. L., & Sung, Y. H. (2025). Does the AI-driven chatbot work? Effectiveness of the Woebot app in reducing anxiety and depression in group counseling courses and student acceptance of technological aids. *Current Psychology*, 44(9), 8133–8145.

Zhou, S., Zhao, J., & Zhang, L. (2022). Application of artificial intelligence on psychological interventions and diagnosis: An overview. *Frontiers in Psychiatry*, 13, 811665.

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Conflict of Interest

The author(s) declared no conflict of interest.

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