
Is none treatment for mental health problems better than a controversial one?

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January 2022

Abstract This paper discusses the advantages and obstacles to artificial intelligence-powered and -led psychotherapy. Considering the long waiting session times with human therapists and the lack of therapists worldwide, the digital applications reveal a unique solution. However, there are barriers to integrating such solution to a clinical practice. This paper illustrates the concept of adherence and its importance for (digital) therapeutic rapport before analyzing the current app developmental process.

1 Introduction

Nowadays, artificial intelligence (AI) is being used in healthcare primarily in a complementary role to the superior health expert for diagnosis and treatment (Fiske, Henningsen, & Buyx, 2019; Sebri, Pizolli, Savioni, & Triberti, 2021). However, there is a recent outburst of research aiming to include AI also in mental health. Particularly in the form of mobile therapeutic apps (e.g. chatbots) as a mental health therapeutic tool, which explores patients' symptoms and addresses depression and anxiety over short-message services (Sebri et al., 2021). Importantly, such a device is proposed to be an outstanding tool, changing the mental health field due to its independence from expert human guidance (Fiske et al., 2019). Therefore, these AI chatbots may be superficial to other emerging applications of telemedicine, such as Web-based therapy (Mehrotra et al., 2017).

Given the median of 9 mental health workers (including one psychiatrist) per 100,000 people globally (WHO, 2018), and the up to 2-years long waiting periods before the therapy starts in the UK (BMA, 2018), AI text-based conversational agents represent an optimal solution since they can offer anytime-available support (Inkster, Sarda, & Subramanian, 2018). To illustrate the advantage, the participants have checked in with the conversational chatbot on average 12.14 times, and even more, 17.71 times during the 2-week research period (Fitzpatrick, Darcy, & Vierhile, 2017; Ly, Ly, & Andersson, 2017; respectively). Whereas, if patients get even one appointment with a human therapist in two weeks, they will be considered lucky. Therefore, the internet-based AI-supported interventions seem like an obvious answer to the lack of personnel problem. Nevertheless, whether the AI-led therapies may be of equal quality, especially regarding the level of adherence and therapeutic rapport, require further investigation.

2 Adherence - rapport

There is prevailing evidence suggesting that the patient must adhere to the treatment well for a successful intervention. Specifically, to maintain a sufficient adherence level, the patients have to develop a robust working alliance with their therapist (Darcy et al., 2021). Inkster et al. (2018) reported significantly greater average improvement in high users than in low chatbot users demonstrating the importance of quality rapport. Moreover, self-reported psychological wellbeing and perceived stress differed between high chatbot users and participants without any support (were put on the waiting list to attend a session with a psychotherapist).

2.1 Empathy

Additionally, empathy skills presented in the conversation pre-determines a good-quality rapport (Darcy et al., 2021). Problematically, virtual therapeutic agents have been repetitively criticized for lacking empathy (Torous & Hsin, 2018). On the contrary, there is a recent trend proposing that the digital therapeutic rapport do not differ from the one with human therapists, and participants tend to report "feelings of empathy" while a conversation with their chatbot (D'Alfonso et al., 2017; Darcy et al., 2021; Inkster et al., 2018). Darcy et al. (2021) suggested that the conversational agent Woebot reported better engagement rates than the previous study done by Fitzpatrick et al. (2017) due to the tool's added empathetic and relational nature. Thus, the lack of empathy among virtual therapists seems outdated, and the application of chatbots over the waiting-list treatment could be growing in interest.

However, the assessment of empathy and therapeutic rapport in chatbots is mainly done by thematic analyses of qualitative data submitted by users/participants in the form of open-ended feedback (see Darcy et al., 2017; Fitzpatrick et al., 2017). Despite the priority-setting work by the James Lind Alliance (Hollis et al., 2018) identifying the therapeutic rapport as a top research priority, not a single study included rapport as a primary outcome of their analyses in a recent review of mobile health apps (Henson et al., 2019). Until the conversational rapport in mental health is explicitly analyzed, the research findings are purely estimations with the tendency to keep the AI role in mental health supplementary to human therapists.

3 App development

Furthermore, the digital rapport is not ignored only by academics but also in the apps development process. Torous and Hsin (2018) argue it is due to the app developers' lack of awareness of such needs. Furthermore, researchers criticize that the apps development process only occurs in academic settings, and the scientists involved have limited to no actual patient contact (Arnberg et al., 2014; Torous & Hsin, 2018). Therefore, while the results of the interventions seem impressive on paper, they lack effectiveness in real-world settings. In contrast to Torous and Hsin's (2018) criticism, two recent studies included anonymous active chatbot users as their participants (see Darcy et al., 2021; Inkster et al., 2018). Nevertheless, these studies also face several limitations, including a lack of variation in their sample size.

Moreover, another alarming limitation of these studies cannot go unmentioned; there are financial relations between the researchers conducting the study (see Darcy et al., 2021; Fitzpatrick et al., 2017; Inkster et al., 2018) and the respective chatbot companies (Woebot, Wysa). Notably, Ly's et al. (2017) is the only reviewed study analyzing a therapeutic chatbot, yet not carrying said conflict of interest. Henceforth, further studies with independent investigators are certainly needed.

3.1 Barriers to clinical practice

Additionally, next to the lack of proper interventions development, mental health care providers also lack training and guidance to integrate AI interventions into clinical practice (Fiske et al., 2019). Significantly, AI will not have any powerful effect without a structural change in the health system and the shift in the health care providers' attitude (Dowie & Kaltoft, 2018). However, mental health professionals do not have a very positive tendency towards AI as psychotherapists (Sebri et al., 2021). It has been pointed out that this perceiving gap between the rapid development of AI-supported chatbots and the real-world clinical practice is due to the ethical issues related to the application of said technology (Fiske et al., 2019; McDonnell, Rooney, & Flood, 2013).

To conclude, there is a persistent matter of including trained mental health carers in the app development and the need for interdisciplinary and independent investigation teams (Darcy et al., 2021; Fitzpatrick et al., 2017). While said remark has been highlighted in the recent guideline for clinical app evaluation published by the American Psychiatric Association (APA, 2017), it is not being actively addressed. In addition, appropriate guidelines for care providers are needed to target the clinical practice successful application.

4 Summary

Nowadays, the burden of mental health disorders is even greater due to the Covid-19 pandemic, which presented unintended barriers to seeking treatment and increased the number of people suffering mental-health-related discomfort (Bueno-Notivol et al., 2021). Internet-based interventions provide the apparent solution. While there is still little known regarding the direct long-term effects of AI-supported intervention, it has shown to be a better intervention for treating mild cases of mental health discomfort than not engaging in any treatment. However, there is a unique challenge of assessing the quality of the digital rapport and the ability to perform empathy by the virtual agents. Consequently, the apps' development needs to shift towards these targets to overcome the gap to clinical practice so the AI therapists may fulfill their potential.

References

- American Psychiatric Association [APA] (2017). *App Evaluation Model*. Retrieved from: <https://www.psychiatry.org/psychiatrists/practice/mental-health-apps/app-evaluation-model>
- Arnberg, F.K., Linton, S.J., Hultcrantz, M., Heintz, E., & Jonsson, U. (2014). Internet-delivered psychological treatments for mood and anxiety disorders: A systematic review of their efficacy, safety, and cost-effectiveness. *PLOS One*, *9*(5), e98118. doi: 10.1371/journal.pone.0098118.
- British Medical Association [BMA] (2018). *The impact of COVID-19 on mental health in England; Supporting services to go beyond parity of esteem*. Retrieved from: <https://www.bma.org.uk/media/2750/bma-the-impact-of-covid-19-on-mental-health-in-england.pdf>
- Bueno-Notivol, J., Gracia-García, P., Olaya, B., Lasheras, I., López-Antón, R., & Santabárbara, J. (2021). Prevalence of depression during the COVID-19 outbreak: A meta-analysis of community-based studies. *International Journal of Clinical and Health Psychology*, *21*(1), 100196. doi: 10.1016/j.ijchp.2020.07.007.
- D'alfonso, S., Santesteban-Echarri, O., Rice, S., Wadley, G., Lederman, R., Miles, C., ..., & Alvarez-Jimenez, M. (2017). Artificial Intelligence-assisted online social therapy for youth mental health. *Frontiers Psychology*, *8*, 796. doi: 10.3389/fpsyg.2017.00796.
- Darcy, A., Daniels, J., Salinger, D., Wicks, P., & Robinson, A. (2021). Evidence of human-level bonds established with a digital conversational agent: Cross-sectional, retrospective observational study. *Journal of Medical Internet Research Formative Research*, *5*(5), e27868. doi: 10.2196/27868.
- Dowie, J., & Kaltoft, M.K. (2018). The future of health is self-production and co-creation based on apomediative decision support. *Medical Sciences*, *6*(3), 66. doi: 10.3390/medsci6030066.
- 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. doi: 10.2196/13216.
- Fitzpatrick, K.K., Darcy, A., & Vierhile, M. (2017). Delivering cognitive behavior therapy to young adults with symptoms of depression and anxiety using a fully automated conversational agent (Woebot): A randomized controlled trial. *Journal of Medical Internet Research Mental Health*, *4*(2), e19. doi: 10.2196/mental.7785.
- Henson, P., Wisniewski, H., Hollis, C., Keshavan, M., & Torous, J. (2019). Digital mental health apps and the therapeutic alliance: Initial review. *British Journal of Psychiatry Open*, *5*(1), e15. doi: 10.1192/bjo.2018.86.
- Hollis, C., Sampson, S., Simons, L., Davies, E.B., Churchill, R., Betton, V., ..., & Tomlin, A. (2018). Identifying research priorities for digital technology in mental health care: Results of the James Lind Alliance Priority Setting Partnership. *The Lancet Psychiatry*, *5*(10), 845-854. doi: 10.1016/S2215-0366(18)30296-7.

- Inkster, B., Sarda, S., & Subramanian, V. (2018). An empathy-driven, conversational artificial intelligence agent (Wysa) for digital mental wellbeing: Real-world data evaluation mixed-methods study. *Journal of Medical Internet research mHealth and uHealth*, 6(11), e12106. doi: 10.2196/12106.
- Ly, K.H., Ly, A.-M., & Andersson, G. (2017). A fully automated conversational agent for promoting mental wellbeing: A pilot RCT using mixed methods. *Internet Intervention*, 10, 39-46. doi: 10.1016/j.invent.2017.10.002.
- McDonnell, D., Rooney, B., & Flood, C. (2013). Attitudes to computerized psychotherapy: A survey of psychotherapists In: *Cyberpsychology and New Media*. Psychology Press Taylor & Francis Group, 190–202.
- Mehrotra, S., Kumar, S., Sudhir, P., Rao, G.N., Thirthalli, J., & Gandotra, A. (2017). Unguided mental health self-help apps: Reflections on challenges through a clinician's lens. *Indian Journal of Psychological Medicine*, 39(5), 707-711 doi: 10.4103/IJPSYM.IJPSYM_151_17.q
- Mohr, D.C., Cuijpers, P., & Lehman, K. (2011). Supportive accountability: A model for providing human support to enhance adherence to eHealth interventions. *Journal of Medical Internet Research*, 13(1), e30. doi: 10.2196/jmir.1602.
- Sebri, V., Pizzoli, S.F.M., Savioni, L., & Triberti, S. (2021). Artificial Intelligence in mental health: Professionals; attitudes towards AI as a psychotherapist. *Annual Review of CyberTherapy and Telemedicine*, 18.
- Tantam, D. (2006). The machine as psychotherapist: Impersonal communication with a machine. *Advances in Psychiatric Treatment*, 12(6), 416-426. doi: 10.1192/apt.12.6.416.
- Torous, J., & Hsin, H (2018). Empowering the digital therapeutic relationship: Virtual clinics for digital health interventions. *Nature Partner Journals Digital Medicine*, 1, 16. doi: 10.1038/s41746-018-0028-2.
- World Health Organization [WHO] (2018). *Mental Health Atlas 2017*. Retrieved from: <https://www.who.int/publications/i/item/9789241514019>