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AI as a Psychodynamic Therapist: Future Perspectives

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Abstract

Background: The integration of artificial intelligence into psychodynamic therapy presents a transformative opportunity to enhance mental health interventions.
Aims: By consolidating evidence from diverse studies, this research underscores the theoretical and practical implications of psychodynamic AI systems and their potential to reshape therapeutic practices.
Methodology: This study employs a meta-analytic approach to synthesize findings from existing research, focusing on the application of psychodynamic principles—such as unconscious processes, relational dynamics, and symbolic meaning—in AI-driven systems. Despite the dominance of cognitive-behavioral frameworks in AI therapeutic tools, psychodynamic approaches offer unique potential for fostering deeper emotional engagement and interpersonal understanding.
Results: The analysis highlights advancements in AI-based systems designed to emulate psychodynamic processes and explores challenges, including technical limitations and ethical concerns. The findings emphasize the need for future research to refine AI's capacity to address complex psychodynamic phenomena while adhering to ethical standards, ensuring accessibility, and enhancing emotional intelligence.
Conclusions: Ultimately, this work advocates for a balanced integration of psychodynamic principles with AI technologies to achieve scalable and effective mental health solutions.

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1. Introduction

A recent report says that in 2020 the global virtual behavioral health market size was valued at USD 5.3 billion while it is expected that from 2021 to 2028 this number will grow at a compound annual growth rate (CAGR) of 26.7% (Kaur, 2023). The integration of AI into psychotherapeutic practices represents a significant evolution in the field of mental health, reshaping the ways in which therapy is conceptualized, delivered, and experienced. Recent advances in AI technologies have expanded the potential for digital tools to enhance therapeutic interventions, particularly by incorporating principles from psychodynamic therapy. Psychodynamic approaches emphasize the exploration of unconscious processes, internal conflicts, and relational dynamics, making them a compelling foundation for AI applications designed to simulate or support therapeutic relationships (Shapiro, 2014). However, the complexity and depth of psychodynamic therapy present unique challenges when translated into AI systems, including the need to replicate nuanced interpersonal dynamics and emotional attunement. This emerging field raises critical questions about the theoretical and practical intersections of psychodynamics and AI, as well as the ethical considerations that arise in leveraging AI as a "therapist" or therapeutic adjunct.

New communication technology has created great changes in our lifestyles (Arsalani et al., 2022)**.** Sometimes, peoples' psychological desires when paired with access to new communication technologies advances will jeopardize people's lives (Soroori et al., 2020). Despite the promise of AI in enhancing the accessibility and scalability of mental health services, the integration of psychodynamic principles into AI-based tools remains underexplored. Existing literature demonstrates that AI systems, such as chatbots and virtual agents, have primarily relied on cognitive-behavioral frameworks due to their structured and modular nature (Grodniewicz & Hohol, 2024). By contrast, psychodynamic approaches require a deeper engagement with symbolic meaning, affect regulation, and the complexities of human subjectivity, which challenge the capabilities of current AI models (Holohan & Fiske, 2021). As the field evolves, it becomes imperative to investigate whether and how psychodynamic theories can inform the development of AI systems capable of facilitating meaningful therapeutic experiences. This study aims to address this gap by conducting a meta-analysis of existing research, synthesizing evidence on the application of psychodynamic principles to AI, and evaluating their potential to revolutionize therapeutic practice.

2. Methodology

This study has employed meta-analysis as its methodology. Meta-analysis is a rigorous statistical technique that combines the results of multiple studies to synthesize evidence on a specific research question

or hypothesis (Borenstein et al., 2009). This method is particularly valuable in fields where studies may report conflicting or varying results, as it provides a systematic approach to aggregate findings and discern overarching patterns. By integrating data from independent studies, meta-analysis increases the overall statistical power, enabling researchers to detect effects that individual studies may lack the power to identify due to small sample sizes. Furthermore, it facilitates the estimation of effect sizes and provides insights into the variability of effects across studies, known as heterogeneity, which can be further analyzed to identify moderating variables (Cooper et al., 2019).

A key feature of meta-analysis is its ability to evaluate and control for biases that may arise in individual studies, such as publication bias or selective reporting (Egger et al., 1997). The process typically involves several stages: defining the research question, establishing inclusion and exclusion criteria, systematically searching for studies, extracting relevant data, and conducting statistical analyses to combine the results. This method is particularly suited to psychodynamic research, where diverse methodological approaches can lead to variability in findings. In this study, a meta-analytic approach was applied to synthesize the empirical evidence regarding the application of psychodynamic principles to artificial intelligence, aiming to elucidate their theoretical and practical implications.

In this research, a meta-analytic approach was employed to synthesize findings from existing studies exploring the intersection of psychodynamic therapy and artificial intelligence. The methodology adhered to established guidelines for conducting meta-analyses, such as those outlined in the PRISMA statement (Page et al., 2021). The inclusion criteria were designed to identify peer-reviewed articles, conference proceedings, and other empirical studies focusing on psychodynamic principles in AI development and implementation. Studies were systematically retrieved from academic databases, and the screening process was carried out by two independent reviewers to ensure objectivity and minimize selection bias.

The extracted data included effect sizes, study designs, sample characteristics, and intervention modalities. Statistical analyses were conducted to calculate pooled effect sizes, and assess heterogeneity. Additionally, analyses were performed to evaluate the robustness of the findings, and publication bias (Egger et al., 1997). Our approach ensured that the synthesized evidence accurately reflected the state of research on psychodynamic AI while highlighting areas requiring further investigation.

3. Findings

The article "Building Brains for Robots: A Psychodynamic Approach" by Andrzej Buller (2005) explores the integration of psychodynamic principles into AI and robotics. Buller critiques the AI community's

historical neglect of psychodynamic concepts, arguing that incorporating ideas such as unconscious processes, internal conflicts, and defense mechanisms could enhance robotic intelligence and behavior. The paper introduces the concept of "Machine Psychodynamics", which models robotic behavior using Freudian-inspired notions like tension, pleasure, and conflict resolution. Buller elaborates on how robots can be designed to pursue pleasure by reducing tensions through specific actions. This model is compared to other AI paradigms in terms of motivation, imitation, and conflict resolution, highlighting its potential to create more autonomous and lifelike agents. Experimental results with robots such as Neko and Miao demonstrate the feasibility of this approach. These robots exhibited behaviors like boredom, fear, and anxiety, which guided their actions and learning processes. For instance, Miao's conflicts between hunger and other tensions were resolved through dynamic mechanisms, producing life-like responses such as hesitation and ambivalence. The development of a caregiver-robot interaction further enabled the emergence of a proto-language, underscoring the role of social dynamics in machine learning. The study concludes by proposing Machine Psychodynamics as a novel framework that challenges traditional goal-oriented AI models. This approach envisions robots as independent agents capable of pleasure-driven learning and complex social interactions.

Liu and Ando (2008) present the *Psychodynamic Cognitive Construction (PCC)* architecture, a framework for artificial systems designed to develop affective attitudes through human-machine interaction. This architecture incorporates a psychodynamic appraisal mechanism that models emotions as dynamic, physically grounded, and personally experienced processes. Unlike predefined mappings between stimuli and emotional responses, the PCC architecture enables learning-based associations, allowing systems to adapt their behaviors and attitudes over time. The authors implemented PCC in a semi-embodied system called qViki, which is motivated by emotional incentives to pursue its well-being and enhance its understanding of the external world through experience. The system employs fluctuating tensions, triggered by innate needs or acquired anticipations, to drive associative learning and expressive behaviors. A growing network is integrated to memorize and retrieve past interactions, ensuring the system can adapt its responses based on prior experiences. Preliminary experiments demonstrated how qViki's attitudes toward stimuli are elicited and regulated through interaction, highlighting the role of emotions as a motivational system. The study underscores the importance of emotional dynamics in facilitating cognitive development and social interaction in affective agents, offering a novel perspective for advancing developmental robotics and affective computing.

Shapiro (2014) presents a transformative integration of psychodynamic formulation with neuroscience through the lens of Dynamical Systems Theory (DST). This framework addresses the historical divide between biological and psychosocial psychiatry by conceptualizing the mind and brain as a unified dynamical system. Shapiro argues that advances in neural network science provide a robust empirical basis for validating psychotherapeutic approaches while underscoring the significance of the intersubjective patient–therapist relationship in informing biological treatments. DST offers a comprehensive foundation for psychotherapy by analyzing recurrent patterns of thought, emotion, and relationships as manifestations of cortical and subcortical network dynamics. Shapiro introduces DST as a trans-theoretical model capable of linking synaptic network systems with systems of meaning. This perspective reframes psychopathology as patterns of "adaptive attractors" formed in response to dysfunctional developmental environments, shifting the focus from symptomatic presentations to understanding these underlying dynamics. The article emphasizes that patients actively construct meaning from their experiences based on implicit templates. DST-informed psychodynamic formulation maps these maladaptive attractor basins, positioning the therapeutic relationship as a means of reshaping the patient's dynamical landscape. This approach fosters the restoration of self-organizing processes, enabling patients to adapt more flexibly to their environments.

Bendig et al. (2019) provide a scoping review of the use of chatbots in clinical psychology and psychotherapy, focusing on their potential to foster mental health. As fully automated internet- and mobile-based interventions (IMIs), chatbots hold promise for extending healthcare services, particularly in mental health care. The review synthesizes current research to assess the state of the art in this emerging field. The findings reveal that chatbot technology in clinical psychology remains experimental, with most studies being pilot investigations rather than randomized controlled trials. Early results suggest that chatbots show promise in terms of feasibility, practicability, and user acceptance. However, these findings are not yet robust enough to support the widespread application of chatbots within psychotherapeutic settings.

The authors emphasize the need for corrective measures to guide the rapid growth of this field. They identify critical issues requiring attention, including the effectiveness, sustainability, and safety of chatbots in fostering mental health. Moreover, they advocate for future research programs to prioritize rigorous testing, including randomized controlled studies, to ensure the technological reliability and therapeutic efficacy of chatbots.

Ashraf (2020) explores the deep psychological processes underlying technological development through a Jungian lens. The study critiques the pervasive reliance on technological solutions to address issues such

as user tracking, emotional manipulation, disinformation, and online radicalization, which have dispelled the optimistic visions of the early internet era. This phenomenon, termed "technological solutionism", is examined as a manifestation of unconscious processes that influence the creation and adoption of technology. Ashraf employs a depth psychological approach to trace the historical impact of technology on the psyche, starting from the advent of writing to the proliferation of computer screens. The essay argues that as technologies evolve and become central to human interaction with reality, they not only reflect but also shape collective unconscious processes. By bringing these unconscious influences into awareness, the author advocates for the development of depth psychological literature to critically assess technology's role in human experience and its unintended consequences. The article highlights the importance of interrogating the historical and psychological dimensions of technological choices to foster a more conscious engagement with technological advancements. This work contributes to the intersection of psychodynamics, technology studies, and cultural critique.

Holohan and Fiske (2021) explore the concept of transference in the context of AI-enabled psychotherapeutic applications, focusing on how it is reconfigured in interactions with chatbots, avatars, and other AI-driven systems. Drawing on Karen Barad's theory of agential realism, the authors argue that AI-driven psychotherapeutic encounters represent a shift in the therapeutic apparatus, creating new relational dynamics that challenge traditional understandings of transference. The study reviews current AI-based therapeutic tools, such as chatbots like Woebot and Tess, which have shown promise in addressing mental health concerns like anxiety and depression. The authors highlight that users often develop human-like emotional connections with these systems, resembling transference observed in human psychotherapy. However, the nature of transference in AI contexts is distinct, shaped by the material-discursive practices of the AI-human interaction. For instance, the always-available nature of chatbots changes the temporal and relational structure of therapy, influencing user engagement and emotional responses. Holohan and Fiske advocate for the intentional design of AI systems that account for the unique dynamics of transference in AI-human interactions. They call for interdisciplinary approaches, integrating insights from psychotherapy, ethics, and social sciences, to ensure that these technologies are developed responsibly. The study also underscores the need for empirical research to understand how different user groups experience transference with AI-driven therapy.

Narynov et al. (2021) provide a comprehensive review of the role of chatbots and conversational agents in mental health care, focusing on their therapeutic applications, technological foundations, and associated ethical considerations. The review examines how chatbots

are utilized in psychological interventions, particularly in addressing depression and anxiety, through approaches such as Cognitive Behavioral Therapy (CBT). The study highlights advancements in natural language understanding (NLU) and machine learning, which underpin the development of conversational agents capable of engaging users in meaningful dialogues. Examples of mental health applications and monitoring programs are discussed, demonstrating the feasibility of using chatbots to provide scalable psychological support. The authors also emphasize the ability of these systems to reduce the burden on traditional mental health care services by offering accessible and immediate assistance. In discussing ethical considerations, the paper addresses concerns such as data privacy, user trust, and the potential for misdiagnosis or misuse of technology. The review concludes with recommendations for the development of future chatbots, emphasizing the need to integrate robust ethical frameworks and advanced therapeutic methods to enhance efficacy and user acceptance.

Halfon et al. (2021) investigate the potential of machine learning (ML) tools for analyzing affective expressions in psychodynamic child psychotherapy. The study explores how automated systems can support the precise quantification of children's verbal and non-verbal affective states, offering a potential complement to manual coding in therapeutic contexts.

The sample included 53 Turkish children, 41 of whom had internalizing, externalizing, or comorbid problems, and 12 in the non-clinical range. Data comprised audio and video recordings of 148 psychotherapy sessions, which were transcribed and coded manually for expressions of pleasure, anger, sadness, and anxiety using the Children's Play Therapy Instrument (CPTI). Researchers adapted and developed automatic facial and linguistic affect analysis modalities, combining these features in a system designed to predict CPTI affect dimensions. Statistical and ML techniques, including deep learning, support vector regression, and extreme learning machines, were employed to assess system performance. Results revealed significant associations between automated predictions and CPTI dimensions, with small to medium effect sizes. The fusion of facial and linguistic features enhanced pleasure prediction accuracy, while linguistic analyses performed better for other affects such as anger, sadness, and anxiety. External validity analyses showed partial support for anger and pleasure predictions, indicating the need for further refinement.

The study by Mayer and Oosthuizen (2021) investigates the psychodynamic relationship between anxiety and excitement in organizational contexts undergoing transformation due to the Fourth Industrial Revolution (4IR). Utilizing a systems psychodynamic (SP) perspective, the authors aim to uncover how unconscious processes influence feelings and behaviors during 4IR transitions. The research focuses on managers' subjective experiences within a German multinational corporation. Through qualitative interviews with 16

middle- and top-level managers, the study identifies recurring themes such as splitting, projection, projective identification, and idealization, which are fundamental to SP theory. Managers expressed mixed emotions, with anxiety stemming from uncertainties about job security, rapid technological change, and organizational restructuring. Conversely, excitement was associated with opportunities for innovation, personal growth, and global competitiveness. The study further explores systemic behavioral conventions, including dependency, fight-or-flight reactions, and group dynamics such as pairing and one-ness. These dynamics highlight how managers project fears and concerns onto employees while aligning themselves with technological advancements and global trends, creating both psychological distance and union within the organization. Practical implications underscore the importance of addressing unconscious defenses to enhance organizational resilience and adaptability. Managers are encouraged to develop awareness of SP dynamics to better navigate the challenges of 4IR transformations and foster more inclusive and emotionally intelligent leadership.

Trappey et al. (2022) developed a Virtual Reality Empathy-Centric Counseling Chatbot (VRECC) designed to provide psychological support for university students experiencing high levels of stress. By integrating virtual reality (VR) technology and AI-powered sentiment analysis, the VRECC system facilitates empathetic dialogues and addresses the limitations of existing mental health resources. The chatbot leverages natural language understanding (NLU) models and a structured empathy framework based on Carl Rogers' person-centered therapy to deliver responses that resonate with users' emotions. The study involved 34 participants with stress levels above the median, identified through a pre-screening questionnaire. Participants underwent two VRECC sessions, during which the chatbot engaged them in interactive conversations to explore their psychological distress. Results showed significant reductions in participants' stress levels and psychological sensitivity after the interventions. However, no measurable improvement was observed in broader life impact areas, such as behavioral and cognitive dimensions. The research highlights the potential of empathy-centric chatbots to complement traditional counseling, particularly in addressing gaps in access to mental health services. While promising, the study notes limitations, including the inability to fully replicate human-like psychodynamic therapeutic interactions. Future research is proposed to enhance chatbot realism, expand its psychological knowledge base, and refine its effectiveness across diverse user groups.

Xu and Zhuang (2022) provide a comprehensive survey on the current state of psychotherapy chatbots, evaluating their feasibility, limitations, and potential as auxiliary tools in mental health care. By analyzing approximately 1,200 publications, the authors identify five

leading psychotherapy chatbots and assess their designs, methodologies, and therapeutic applications. Most state-of-the-art chatbots utilize retrieval-based approaches to generate dialogues, with some integrating psychological frameworks such as Cognitive Behavioral Therapy (CBT) to address specific psychological issues. The survey highlights several strengths of psychotherapy chatbots, including their accessibility and availability regardless of time or location, making them a valuable resource for individuals facing barriers to traditional therapy. Chatbots have shown the ability to recognize certain negative emotions and provide contextually appropriate responses, as validated through randomized controlled trials. These trials suggest that chatbots can benefit users with mild to moderate mental health conditions. However, the authors identify significant technical and methodological limitations. Current chatbots are constrained by their reliance on limited and often inconsistent corpora, which affects their ability to provide nuanced and effective therapeutic interactions. Additional challenges include ethical concerns, data security, and the inability of chatbots to fully replicate the relational depth and adaptability of human psychologists. The study concludes that while psychotherapy chatbots cannot replace human therapists, they hold promise as supplementary tools that can enhance the reach and efficiency of mental health services. The authors call for further advancements in natural language processing, emotion recognition, and data standardization to address these challenges and improve chatbot efficacy and safety.

Zhao et al. (2023) propose a psychodynamic-based virtual reality (VR) cognitive training system designed to improve engagement and efficacy in rehabilitating patients with mild cognitive impairment (MCI). The study integrates personalized emotional arousal elements into VR-based cognitive rehabilitation, emphasizing the role of emotions in enhancing patient participation and outcomes. The system features four training tasks covering five cognitive domains: audiovisual memory, attention and processing, working memory, abstract reasoning and logic, and spatial pathfinding. Six positive emotional arousal elements—including sensory feedback, achievement systems, multiplayer interaction, score comparisons, relaxation scenarios, and peaceful videos— were dynamically distributed to motivate participants. Emotional personalization was achieved using pre-assessments, such as the Big Five Scale and the Positive and Negative Affect Scale, to classify participants into groups receiving either a full or half combination of emotional elements. Fifteen MCI patients participated in a six-week training program. Results showed significant improvements across cognitive domains: attention and processing (66.7%), working memory (33.4%), and abstraction and logic (25.0%). Participants reported enhanced confidence and engagement due to the integration of emotional arousal elements, which

fostered a positive attitude toward training. Importantly, no significant differences were observed between the full and half combination groups, suggesting flexibility in tailoring interventions. The study concludes that this personalized VR-based system offers a promising, convenient solution for complementing traditional MCI treatments by leveraging emotional arousal and psychodynamic principles to boost cognitive function and patient engagement.

Leibovich et al. (2023) investigate the active mechanisms of internet-based psychodynamic psychotherapy (iPDT) for adolescents, focusing on its effectiveness in alleviating depression. While iPDT has demonstrated efficacy, limited evidence exists on the specific techniques driving therapeutic outcomes. This study seeks to address this gap by analyzing data from a pilot study involving 23 adolescents meeting criteria for depression. The iPDT program spanned 10 weeks and included eight modules incorporating text, video, exercises, and weekly text-based chat sessions facilitated by therapeutic support workers (TSWs), who were psychology master's students. Participants completed the Quick Inventory of Depressive Symptomatology (QIDS-A17-SR) weekly, while TSWs rated their use of therapeutic techniques via the MULTI-30 inventory after each session. Findings revealed that common factor techniques, such as rapport-building and empathy, were the most frequently used. Both common factor and psychodynamic techniques predicted symptom improvement, with psychodynamic techniques demonstrating a unique predictive effect on depression reduction at the subsequent week. Interestingly, while CBT techniques were employed, they did not predict depressive symptom improvement. The study underscores the alignment of iPDT with its theoretical foundations, affirming the significance of psychodynamic techniques and common therapeutic factors in driving outcomes.

The chapter by Lawlor, Sher, and Khaleelee (2023) examines the transformative effects of the Fourth Industrial Revolution on socio-technical systems through a systems psychodynamic lens. The Fourth Industrial Revolution is characterized by the integration of digital, physical, and biological systems, facilitated by advancements in AI, robotics, the Internet of Things (IoT), and other disruptive technologies. The authors highlight the paradigm shift in human and organizational interactions due to hyper-connectivity, hyper-convergence, and hyper-intelligence. This revolution has profound implications for societal structures, influencing governance, education, healthcare, commerce, and communication. These developments are analyzed using socio-technical systems theory, which emphasizes the complex interplay between human, mechanical, and environmental systems. The chapter delves into the psychological and systemic dynamics of these changes, exploring how digitalization, AI, and virtual working affect the organizational ecosystem. It considers the tensions and opportunities arising from the fusion of advanced technologies with human behavior

and social systems, particularly within the context of the COVID-19 pandemic, which accelerated these technological shifts. The authors also underscore the challenges posed by this transition, including shifts in identity, organizational roles, and the psychological impact of virtualized work environments.

Liu et al. (2024) present a pilot study exploring the design of personalized user interfaces for psychological counseling chatbots, focusing on preferences and usability among college students. This study aims to identify optimal chatbot interface features that enhance user engagement and satisfaction while delivering effective psychological counseling. Using a within-subject design, the study investigates student preferences regarding different types of chatbot interfaces and formats for presenting psychological counseling information. The research evaluates two preliminary interface designs, emphasizing elements such as conversational user interfaces (CUI), information presentation styles, and interactivity. The findings highlight the importance of customization in chatbot interfaces, suggesting that tailored designs can better address the specific needs of diverse user groups, such as college students experiencing stress. The study's outcomes provide actionable insights for future chatbot development, emphasizing that personalization not only improves user experience but also potentially enhances the effectiveness of psychological counseling delivered via chatbots. The authors propose that these findings serve as a reference for refining chatbot design to accommodate user-specific needs in psychological counseling.

Galijašević et al. (2024) examine the potential of AI chatbots to address rising mental health demands, especially in the wake of the COVID-19 pandemic. The paper highlights how AI chatbots leverage advanced technologies to provide accessible, anonymous, and scalable mental health support. These systems offer distinct advantages, such as overcoming traditional barriers to therapy, facilitating continuous data collection for personalized treatment, and potentially enhancing diagnostic accuracy. The authors detail recent advancements in chatbot development, emphasizing their ability to integrate real-time data and machine learning to adapt to users' emotional and psychological needs. However, they also address key limitations, including the necessity of human oversight to ensure safe and effective interventions, and ethical challenges associated with data collection, privacy, and transparency. The paper underscores the critical need to design chatbots with robust safeguards and ethical frameworks to protect user confidentiality and trust. While AI chatbots are positioned as promising tools for enhancing accessibility and filling gaps in mental health services, the authors caution against over-reliance on these systems. They argue that optimal integration into clinical practice requires a balance between the capabilities of AI and the indispensable role of human therapists in delivering nuanced, empathetic care.

Haber et al. (2024) examine the transformative impact of generative AI on psychotherapy, conceptualizing AI's integration into therapeutic practices as the "artificial third". The authors frame this development as the "fourth narcissistic blow" to humanity, building on Freud's concept of science's humbling effects on human self-perception. They argue that the emergence of AI in therapy raises profound questions about human autonomy, transparency, and the essence of the therapeutic relationship. The paper addresses three core questions: the nature of the "artificial presence" in therapeutic relationships, how this reshapes perceptions of self and interpersonal dynamics, and what remains of the uniquely human aspects at the heart of psychotherapy. By analyzing these dimensions, the authors highlight the dual potential of AI to enhance or disrupt therapeutic practice. While AI can improve access to mental health services, provide valuable insights, and act as a supportive tool for clinicians, it also introduces ethical concerns. These include risks to transparency in therapeutic interactions, challenges to client autonomy, and the potential erosion of the human connection central to effective therapy. The authors advocate for the cautious and ethically informed integration of AI into psychotherapy, emphasizing its role as an adjunct rather than a replacement for human therapists. They conclude that thoughtful implementation of AI technologies could enhance the therapeutic process while preserving the irreplaceable human elements that underpin meaningful psychological care.

Raile (2024) critically evaluates the potential utility of ChatGPT for psychotherapists and patients, analyzing its role across three contexts: as a tool for psychotherapists, as a supplement during psychotherapy sessions, and as a resource for individuals without access to therapy. Using real and pseudonymized case studies, Raile explores ChatGPT’s capacity to assist with diagnosis, therapeutic interpretation, and patient self-management. The findings suggest that ChatGPT offers value as a complementary resource. For psychotherapists, it can provide second opinions on diagnoses and suggestions for treatment techniques, though its responses are often limited in depth and biased toward cognitive-behavioral therapy (CBT). As a tool for patients, ChatGPT shows promise in facilitating self-reflection, especially in structured contexts like dream interpretation or coping strategies. However, its inability to account for nuanced biographical and contextual factors limits its applicability as a stand-alone therapeutic tool. Raile highlights significant concerns, including ethical questions about transparency, liability for errors, and the risks of oversimplifying psychotherapy. The chatbot’s bias toward CBT over other therapeutic approaches is noted as particularly problematic, potentially narrowing user perceptions of available mental health treatments. Despite these limitations, ChatGPT’s accessibility and interactive nature position it as a promising adjunct to traditional therapy, provided users are informed of its constraints and risks.

Fullam (2024) provides an in-depth analysis of the development, use, and social implications of mental health chatbots, with a particular focus on a CBT-based chatbot named ReMind. This doctoral research situates automated mental health therapy within broader historical, technical, and socio-economic contexts, examining the interplay of technological design, therapeutic methodologies, and economic structures. The study integrates multiple theoretical frameworks, including critical theory, psychoanalytic theory, and the philosophy of computation, to interrogate the assumptions about subjectivity, consciousness, and mental health embedded in chatbot technologies. Fullam explores how chatbots like ReMind are conceptualized by their developers, revealing the biases and assumptions that shape their design and deployment. Ethnographic data from fieldwork with ReMind provides insights into the production and practical implementation of these technologies. The thesis critiques the reductionist approaches often inherent in chatbot design, particularly the emphasis on CBT and mindfulness as dominant therapeutic frameworks. It contextualizes these approaches within the history of computation and the political economy of mental health technologies, highlighting how clinical, technical, and economic conditions influence both the creation and the functioning of chatbots.

Grodniewicz and Hohol (2024) conceptualize therapeutic chatbots as "cognitive-affective artifacts", offering a novel framework to understand their role in mental health care. These systems, while not equivalent to human therapists, facilitate therapeutic outcomes by simulating quasi-therapeutic interactions, supporting cognitive tasks, and influencing users' affective states. The authors emphasize that existing chatbots predominantly implement principles of Cognitive Behavioral Therapy (CBT), which assumes that cognitive changes mediate affective improvements. The study delves into how chatbots assist users in processes like mood tracking, self-monitoring, and cognitive restructuring through structured interactions. For instance, chatbots prompt users to recognize and evaluate maladaptive thoughts and feelings, often employing tools such as Socratic questioning or mindfulness exercises. This functionality positions chatbots as tools that enhance both cognitive and emotional regulation. However, the authors caution against mischaracterizing these systems as substitutes for human therapy, particularly since they lack the relational depth and flexibility of human therapists. While therapeutic chatbots are praised for their accessibility and scalability, the authors discuss ethical and conceptual challenges, such as anthropomorphism and the limitations of CBT-centric design. They argue that the cognitive-affective artifact model not only clarifies the strengths and limitations of chatbots but also sets a foundation for future research and development in therapeutic AI.

Litwack (2024) critically examines the ethical implications of

automating psychotherapy using chatbots and robots, focusing on issues such as trust, client autonomy, and data security. Drawing on historical, philosophical, and technological contexts, the author highlights the risks of anthropomorphism, emotional manipulation, and technological "nudging", which could lead clients toward less effective or inappropriate therapeutic modalities, such as over-reliance on cognitive-behavioral therapy (CBT) due to its ease of programming. The paper emphasizes the importance of "full ontological disclosure", arguing that clients must be informed whether they are engaging with a human or AI therapist to maintain trust and respect for autonomy. Litwack also raises concerns about the potential misuse of psychotherapy data, including hacking and surveillance, and the broader societal impacts of replacing human therapists with AI systems. While acknowledging the benefits of low-cost and immediate access to mental health support, the author warns against excessive convenience undermining the therapeutic process, which often requires emotional effort, interpersonal attunement, and nuanced human understanding. Litwack concludes by advocating for improved governance and ethical safeguards in developing and deploying psychotherapeutic AI. He calls for increased access to psychodynamic therapy with human practitioners while recognizing the potential of AI to complement rather than replace human therapists.

Hwang et al. (2024) investigate the potential applications of ChatGPT in generating psychodynamic formulations within psychiatric practice. The exploratory study evaluates the appropriateness and theoretical alignment of psychodynamic analyses produced by ChatGPT using prompts of varying specificity and complexity. Case histories from psychoanalytic literature served as the foundation for input prompts, which ranged from naïve queries to highly detailed instructions based on psychodynamic concepts and models such as ego psychology, self-psychology, and object relations theory. Five psychiatrists assessed the generated formulations for their relevance and accuracy. Outputs based on psychodynamic concept prompts were rated highest, reflecting the importance of providing structured and theory-informed guidance to optimize ChatGPT’s performance. The study found significant interrater agreement among the evaluators, confirming the appropriateness of the outputs across theoretical models. Notably, ChatGPT’s ability to incorporate key psychodynamic elements and align its interpretations with psychoanalytic literature suggests its utility as a supplementary tool in psychiatric practice and education. The study by Hwang et al. explores the applicability of ChatGPT in generating psychodynamic formulations within psychiatric practice. Leveraging case histories from psychoanalytic literature, the researchers evaluated the chatbot's ability to produce appropriate psychodynamic analyses. Input prompts varied in complexity, ranging from naïve queries to those enriched with keywords and

psychodynamic concepts sourced from both the literature and psychiatrists. The performance was further assessed using specific psychoanalytic frameworks, including ego psychology, self-psychology, and object relations theory. The findings revealed that ChatGPT's output was generally rated as appropriate, with the highest ratings assigned to prompts enriched with psychodynamic concepts. The results also indicated that interrater agreement among psychiatrists evaluating the formulations was statistically significant. When guided to apply different psychoanalytic theories, ChatGPT successfully incorporated key elements of psychodynamic analysis, producing interpretations aligned with psychoanalytic literature. The study highlights the potential of ChatGPT as a tool in psychiatry, particularly in psychodynamic formulation. While conceptual prompts enhanced its performance, the findings underscore the importance of structured and theory-informed input. This exploratory research opens avenues for integrating AI into psychiatric education, clinical formulation, and potentially aiding therapeutic interventions grounded in psychodynamic principles.

4. Conclusion

New communication technologies have dramatically transformed people's lifestyle (Nosraty et al., 2020). This study synthesized existing literature through meta-analysis, providing evidence for the potential of AI to emulate critical elements of psychodynamic therapy, including addressing unconscious processes, relational dynamics, and symbolic meaning. While cognitive-behavioral frameworks have dominated AI-driven therapeutic tools, this research emphasizes the unique advantages and challenges of applying psychodynamic concepts, particularly in creating deeper emotional and interpersonal engagement. The findings illuminate the theoretical advancements and practical implications of merging psychodynamic therapy with AI technologies, thereby offering a pathway to more effective digital mental health interventions.

New communication technologies always make great changes in societies (Sakhaei et al., 2024). Therefore, this emerging field of AI-driven psychodynamic therapy faces several unresolved challenges, including the ethical complexities of designing AI systems capable of replicating or augmenting the therapeutic alliance, and the technical limitations of current models in addressing the depth and complexity of psychodynamic therapy. Future research should focus on refining the capabilities of AI to engage with unconscious processes and relational subtleties while adhering to rigorous ethical standards that safeguard user autonomy, privacy, and trust. After solving these problems, the psychodynamic approach to AI will have the potential to revolutionize mental health care and offer scalable, personalized, and emotionally intelligent interventions that enhance accessibility and effectiveness in diverse therapeutic contexts.

Conflict of interest
The author declared no conflicts of interest.

Ethical considerations
The author has completely considered ethical issues, including informed consent, plagiarism, data fabrication, misconduct, and/or falsification, double publication and/or redundancy, submission, etc. This article was not authored by artificial intelligence.

Data availability
The dataset generated and analyzed during the current study is available from the corresponding author on reasonable request.

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