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PERCEIVED THERAPEUTIC BOND IN INTERACTIONS WITH MENTAL HEALTH CHATBOTS: A NARRATIVE REVIEW

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ABSTRACT

Background: The rapid development of digital mental health interventions has led to the increasing use of AI-based chatbots as accessible alternatives or complements to traditional psychotherapy. While the therapeutic alliance is a well-established factor influencing treatment outcomes in conventional settings, its applicability to human–chatbot interactions remains unclear.

Objective: This narrative review aims to examine existing evidence regarding the subjective experience of therapeutic bond in interactions with mental health chatbots and to explore its characteristics and potential clinical relevance.

Methods: A narrative review of selected literature was conducted using databases such as PubMed and Google Scholar. Studies focusing on users' subjective experiences and relational aspects of interaction with conversational agents were included.

Results: Available evidence suggests that users can develop a form of therapeutic bond with mental health chatbots, characterized by perceived empathy, support, and emotional engagement. Both quantitative and qualitative studies indicate that users may attribute human-like qualities to chatbots and describe interactions in relational terms. However, the intensity and nature of this bond vary across individuals, with some users perceiving the interaction as purely instrumental. The bond appears to be limited in depth and may lack key features of traditional therapeutic relationships, such as reciprocity and genuine emotional responsiveness.

Conclusions: Therapeutic bond in chatbot-based interventions may represent a distinct and simplified form of relational engagement shaped by the characteristics of human–AI interaction. Further research is needed to assess its long-term development and its relationship to clinical outcomes.

KEYWORDS

Mental Health, Therapeutic Alliance, Therapeutic Bond, Conversational Agents, Digital Mental Health Interventions, Human–AI Interaction

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1. Introduction

In the context of a growing global mental health crisis and limited access to professional psychotherapeutic and psychiatric care, an increasing number of people are turning to digital solutions, including digital mental health interventions (DMHIs) (World Health Organization, 2022; Torous et al., 2021). Among these, therapeutic chatbots have emerged as particularly prominent, offering users experiences resembling traditional psychotherapy without direct involvement of a mental health professional—making them broadly accessible regardless of time or location (Fitzpatrick et al., 2017; Inkster et al., 2018).

Since the introduction of ELIZA in 1966, chatbots have undergone substantial technological evolution, with ongoing improvements aimed at enhancing user experience and achieving meaningful therapeutic outcomes (Weizenbaum, 1966; Bickmore & Picard, 2005). Notably, even ELIZA—which relied on a simple mechanism of pattern matching and rephrasing modelled on Rogerian psychotherapy—elicited from users a sense of bond and understanding, a finding that surprised its creator and prompted early questions about the subjective experience of human–chatbot interaction (Weizenbaum, 1966; Bickmore & Picard, 2005).

In traditional psychotherapy, the therapeutic alliance—and the bond component in particular—is widely recognized as a key determinant of treatment quality and effectiveness (Bordin, 1979; Flückiger et al., 2018). Despite growing evidence of emotional engagement with chatbots, the subjective experience of therapeutic bond in these interactions remains underexplored. The aim of this narrative review is therefore to summarize selected studies regarding users' subjective perception of therapeutic bond in contemporary mental health chatbots and to discuss the specific characteristics and clinical implications of this phenomenon (Xu et al., 2025; Inkster et al., 2018).

2. Methods

This study is a narrative review of selected literature on perceived therapeutic bond in interactions with mental health chatbots. Relevant articles were identified through searches in databases such as PubMed and Google Scholar using keywords including “therapeutic bond,” “therapeutic alliance,” “chatbot,” and “digital mental health.”

The selection focused on original studies examining users’ subjective experiences of interaction with conversational agents. Studies not related to mental health or not addressing relational aspects were excluded. Particular attention was given to recent publications.

3. Perceived Therapeutic Bond in human–chatbot interactions

3.1 Conceptual background

In conventional psychotherapy, the therapeutic bond is understood as the emotional component of the therapeutic relationship, encompassing trust, empathy, acceptance, a sense of safety, and the feeling of being understood (Bordin, 1979). In the context of therapeutic chatbots, it is possible to examine users’ subjective experience of these components and assess how their attitudes toward chatbots may change during interaction.

3.2 Early evidence

Reports of an emotional relationship between users and AI-based chatbots are present in the literature. One of the first studies to demonstrate this phenomenon in the context of mental health interventions was conducted by Fitzpatrick et al. (2017).

The study examined a group of young adults who used Woebot—a CBT-based conversational agent—for two weeks. Participants described their interaction with the chatbot by attributing human-like traits to it, highlighting its empathy, acceptance, and responsiveness, and in some cases referring to it as a “friend.”

The study also demonstrated that interactions with the chatbot were more effective in reducing symptoms of anxiety and depression compared to psychoeducation. These findings indirectly suggest the emergence of a therapeutic bond between users and Woebot.

Similar observations have been reported in other early studies of mental health chatbots. For example, research on the AI-based system Tess showed that users often experienced interactions as supportive and emotionally engaging, and reported feeling understood during conversations (Fulmer et al., 2018). Although the primary aim of the study was to assess symptom reduction, qualitative feedback indicated that users responded to the chatbot in ways resembling interpersonal interaction.

In addition, studies on more socially oriented conversational agents, such as Replika, suggest that users may develop emotionally meaningful connections with chatbots outside a strictly therapeutic context (Pentina et al., 2023). Users frequently describe these interactions in relational terms, including companionship and emotional support, which further supports the idea that conversational agents can evoke responses consistent with early stages of bond formation.

3.3 Quantitative evidence

The therapeutic alliance can be assessed using validated psychometric instruments, such as the Working Alliance Inventory–Short Revised (WAI-SR), which comprises three components: bond, goals, and tasks (Hatcher & Gillaspay, 2006). The bond subscale specifically captures the emotional quality of the relationship, including trust and perceived understanding.

Originally developed for conventional psychotherapy, the WAI-SR has been adapted for use in studies involving mental health chatbots. This approach was applied in a study of the CBT-based conversational agent Wysa, which examined the quality of the therapeutic alliance in user–chatbot interactions (Inkster et al., 2018).

The results indicated relatively high levels of therapeutic alliance, with scores comparable to those reported in some traditional psychotherapy studies (Inkster et al., 2018). Notably, the bond component reached particularly high values, with a mean subscore of 3.98 on a 5-point scale.

In addition, content analysis revealed expressions of perceived empathy, personalization, and emotional engagement. Users frequently described the chatbot as supportive and helpful and expressed gratitude for its assistance, which may reflect the emergence of a measurable therapeutic bond.

Similar quantitative findings have been reported in other studies. For example, research on digital mental health interventions using conversational agents has shown that higher levels of perceived empathy and alliance are associated with increased user engagement and retention (Fulmer et al., 2018). This suggests that components of the therapeutic bond may influence not only subjective experience but also continued use of chatbot-based interventions.

3.4 Qualitative evidence

A key factor in understanding the nature of the bond that forms between users and chatbots is an in-depth qualitative analysis of subjective experiences. This was the focus of a study by Xu et al. (2025), which involved a diary study combined with semi-structured interviews with users of Woebot and Wysa.

The observation period lasted four weeks, allowing for assessment of relationship dynamics over time. Based on the analysis, the researchers identified three levels of relational experience: bond, light bond, and no bond.

The results showed that 18 out of 26 participants experienced a bond or light bond, while 8 reported no bond. Participants often compared chatbots to therapists or friends. For example: “Woebot made me feel like it was a friend who was encouraging you to complete a task...”

Analysis of the participants’ transcripts also allowed the researchers to identify several themes that are key to building a relationship with a chatbot. Empathetic communication, perceived non-judgment, and constant availability appeared to deepen emotional engagement and strengthen the perceived bond. In contrast, repetitiveness of responses and the awareness of interacting with an artificial system hindered the formation of bonds with chatbots. The findings of this study suggest not only the existence of a bond but also variability in its intensity and the factors that influence its development.

Additionally, qualitative analyses of digital mental health interventions suggest that perceived empathy, responsiveness, and personalization are key factors contributing to user engagement and satisfaction (Provoost et al., 2017). However, these studies also highlight recurring limitations, including perceived lack of depth, repetitiveness, and the persistent awareness of interacting with an artificial system, which may constrain the development of a stronger therapeutic bond.

4. Limitations

Evidence regarding therapeutic bond in chatbot-based interventions remains limited and is based on a relatively small number of studies employing diverse methodologies. As this is a relatively new phenomenon, there is currently no standardized framework for measuring digital therapeutic bond. Instruments such as the WAI-SR are often adapted for this purpose; however, it remains unclear whether they fully capture the specific characteristics of human–chatbot relationships, and they may also be subject to self-report bias (Hatcher & Gillaspay, 2006).

An additional challenge limiting comparability across studies is the ongoing evolution of chatbot systems and the emergence of new models with varying conversational styles. Furthermore, the duration of user–chatbot interaction is often relatively short, which may not allow for the development of a long-term therapeutic relationship comparable to that observed in conventional psychotherapy (Xu et al., 2025).

Beyond methodological limitations, qualitative studies suggest that the nature of the therapeutic bond itself may be constrained in the context of human–chatbot interactions. While users often report experiences of empathy, support, and emotional engagement (Fulmer et al., 2018; Provoost et al., 2017), these interactions are frequently described as lacking depth, with responses perceived as repetitive or predictable.

A key limitation is the near absence of non-verbal communication, which plays an important role in human emotional exchange. This may contribute to the fact that some users do not develop any form of bond with the chatbot.

The formation of a bond may also be limited by an inherent ambivalence between the subjective experience of relational engagement and the continuous awareness that the chatbot is, in fact, an artificial system (Xu et al., 2025; Pentina et al., 2023).

5. Discussion

Available studies suggest that a form of therapeutic bond can emerge between users and mental health chatbots. Even within relatively short observation periods, many users develop emotional responses indicative of relational engagement. This is reflected, among other factors, in the frequent anthropomorphization of chatbots observed in user reports (Fitzpatrick et al., 2017; Xu et al., 2025).

The possibility of engaging in intimate conversation, experiencing perceived empathy and interest, and receiving contextually appropriate responses represents a type of interaction traditionally associated with human-to-human relationships. Similar relational patterns have been observed not only in therapeutic chatbots but also in other conversational agents, suggesting that the formation of bond may be a broader feature of human–AI interaction (Fulmer et al., 2018; Pentina et al., 2023).

However, the reviewed studies indicate that both the intensity and the nature of this bond vary considerably across individuals. A significant proportion of users do not develop a subjective sense of bond and instead perceive the interaction in instrumental terms. In others, a form of ambivalence can be observed, characterized by simultaneous emotional engagement and the awareness of interacting with an artificial system (Xu et al., 2025).

The bond experienced in these interactions appears to be limited in depth. While it may be perceived as supportive, it may lack key features of a fully developed therapeutic relationship, such as genuine reciprocity and emotional responsiveness on the part of the interaction partner. This suggests that therapeutic bond in chatbots may represent a simplified, functionally useful form of relational engagement rather than a fully reciprocal therapeutic relationship.

From a clinical perspective, this has important implications. Even a limited form of bond may be sufficient to support user engagement, adherence, and short-term symptom improvement, particularly in low-intensity or preventive interventions. At the same time, the absence of deeper relational features may constrain the applicability of chatbot-based interventions in more complex or relationally intensive forms of therapy.

At the methodological level, appropriate methods for measuring this form of bond are still being developed. The application of instruments originally designed for conventional psychotherapy remains controversial due to the fundamentally different nature of these interactions, although it constitutes an important step toward comparative analysis (Hatcher & Gillaspay, 2006).

Further research is needed to determine whether the level of therapeutic bond translates into clinical outcomes in chatbot-based interventions. It should not be assumed that the role of bond in this context is directly analogous to that observed in conventional psychotherapy, and it remains possible that, due to the distinct nature of digital interventions, a high level of therapeutic bond may not be necessary for achieving therapeutic effects.

An important limitation of the current evidence concerns the lack of long-term data on the development and stability of therapeutic bond in human–chatbot interactions. Most existing studies are based on relatively short observation periods, which do not allow for an assessment of whether the perceived bond can be sustained over time or evolve into a more stable relational pattern (Xu et al., 2025).

In addition, the majority of existing research has focused on chatbots based on cognitive behavioral therapy (CBT), which raises questions about the generalizability of findings to other therapeutic approaches. It remains unclear whether a comparable form of therapeutic bond could emerge in the context of psychodynamic or psychoanalytic models, where the relational component is considered particularly central to the therapeutic process.

6. Conclusions

Available evidence suggests that a form of therapeutic bond can emerge in interactions between users and mental health chatbots, although its nature varies across individuals. While emotional engagement and perceived support are commonly reported, the bond appears to differ from traditional therapeutic relationships in terms of depth, authenticity, and reciprocity.

Current research is limited by short-term designs, methodological heterogeneity, and the lack of standardized measurement approaches. As a result, the clinical significance and long-term stability of therapeutic bond in chatbot-based interventions remain unclear.

Overall, therapeutic bond in this context may represent a distinct form of relational engagement shaped by human–AI interaction, warranting further investigation.

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