Unveiling User Perspectives: The Role of AI Empathetic Chatbots in Psychotherapeutic Interventions (Emotional Connection)

(Executive Summary)

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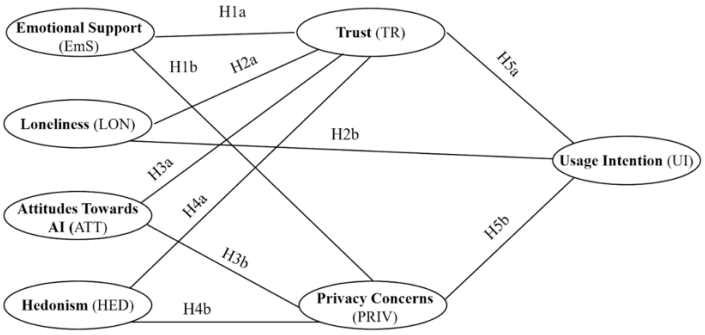
1. Introduction

- Study Background: Chatbots, also known as conversational agents, are transforming how humans engage with artificial intelligence by providing seamless, human-like interactions. Recent advancements in Natural Language Processing (NLP) have significantly enhanced chatbots' ability to understand and respond to human inputs with increased accuracy. Consequently, chatbots are now being integrated across various domains, including healthcare (Jain et al., 2024), education (Kuhail et al., 2023), and customer services (Torres & Delgado, 2022).

- Beyond functional applications, chatbots have evolved to take on more emotionally driven roles, especially as social chatbots (SCs). Unlike traditional chatbots designed for specific tasks, SCs are developed to engage in open-ended conversations, fostering social and emotional connections with users (De Greeff & Belpaeme, 2015; Ho & Miner, 2018). These bots offer empathetic interactions, aiming to become companions or even virtual friends (Zhou et al., 2020). This capability has led to their increased adoption, particularly during periods of social isolation, such as the COVID-19 pandemic (Killgore et al., 2020), where SCs have provided nonjudgmental emotional support to users.
- Social chatbots like Xiaoice and Replika have gained traction among younger generations due to their personalized and engaging interaction styles (Chaves & Gerosa, 2021). In particular, Generation Z (Gen Z), born between 1997 and 2009 (Biloš & Budimir, 2024), demonstrates a strong affinity towards digital experiences that are individualized and meaningful. Gen Z's technological fluency and desire for authentic digital interactions make them a key demographic for adopting AI-powered technology, including SCs (Mangla et al., 2023; Saklani & Kala, 2024).
- However, while prior research has explored chatbot usage in areas such as business (Saklani & Kala, 2024), mental health (Li et al., 2024), and education (Ayanwale & Molefi, 2024), there remains a significant gap in understanding the specific factors that drive Gen Z's adoption of social chatbots for emotional and social support. Identifying these factors is essential not only for optimizing chatbot design but also for informing AI strategies that resonate with the values and preferences of Gen Z users.
- Research Objective: This study aims to investigate the factors influencing Generation Z's usage of AI social chatbots. Drawing from the existing literature on user behavior with SCs, we focus on how emotional support, attitudes towards AI, loneliness, and hedonic motivation impact Gen Z's engagement with social chatbots. By understanding these factors, we seek to provide insights that can guide the development of more effective and appealing chatbot designs, tailored to meet the unique needs of this demographic.

2. Hypotheses:



(A) H1: Emotional Support (EmS)

H1a: Perceived emotional support from a chatbot positively influences user trust (TRT) in the chatbot.

H1b: Perceived emotional support from a chatbot reduces privacy concerns (PRIV) regarding the chatbot.

(B) H2: Loneliness (LON)

H2a: Loneliness is positively associated with users' intention to use social chatbots (UI).

H2b: Loneliness is positively associated with users' trust in social chatbots (TRT).

(C) H3: Attitudes towards AI (ATT)

H3a: Positive attitudes towards AI improve users' trust in social chatbots (TRT).

H3b: Positive attitudes towards AI reduce privacy concerns with social chatbots (PRIV).

(D) H4: Hedonism (HED)

H4a: Hedonic motivation to use social chatbots improves users' trust in the chatbots (TRT).

H4b: Hedonic motivation to use social chatbots reduces users' privacy concerns with the chatbots (PRIV).

(E) H5: Trust (TRT) and Privacy Concerns (PRIV)

H5a: Trust in social chatbots is positively associated with the intention to use them (UI).

H5b: Privacy concerns regarding social chatbots are negatively associated with the intention to use them (UI).

3. Research Methods

- **Approach:** The study employed a mixed-methods approach, incorporating both quantitative and qualitative data collection techniques. This approach allowed for a comprehensive understanding of participants' interactions with social chatbots (SCs) and their perceptions of emotional support, trust, privacy, and usage intention.
- **Data Collection:** Data was collected in two phases. First, participants interacted with a social chatbot named Pi for 10 minutes, during which they were encouraged to vent about a challenging situation (e.g., disagreements with family or colleagues, or dealing with a toxic manager). Following the interaction, participants completed a questionnaire capturing demographics, as well as quantitative and qualitative feedback. The quantitative section evaluated constructs like emotional support, privacy concerns, trust, hedonic motivation, attitudes toward AI, and usage intention using Likert scales. The qualitative

section explored participants' experiences with social chatbots, areas for improvement, and reasons for (or against) using SCs for social and emotional support.

- **Analytical Techniques:** For the quantitative data, exploratory factor analysis (EFA) was conducted to validate the measurement constructs, while Cronbach's alpha and Composite Reliability (CR) scores ensured internal consistency. The validity of the constructs was assessed using Average Variance Extracted (AVE), discriminant validity (Fornell-Larcker criterion), and Heterotrait-Monotrait ratio (HTMT). Collinearity among variables was checked using Variance Inflation Factor (VIF). The model fit was evaluated using Standardized Root Mean Square Residual (SRMR) and Normed Fit Index (NFI). Additionally, R^2 and adjusted R^2 values were calculated to assess the explanatory power of the predictors for privacy concerns, trust, and usage intention.
- The qualitative data was analyzed thematically to extract insights regarding participants' subjective experiences with SCs, including perceived shortcomings and suggestions for improvement.

4. Key Findings

- **Emotional Support and Hedonic Motivation:** Emotional support and hedonic motivation significantly enhance trust in SCs, which, in turn, positively influences users' intention to adopt SCs. However, privacy concerns do not play a significant role in shaping this trust or adoption intention. The study confirms that emotionally supportive interactions increase trust, aligning with prior research that users are likelier to trust chatbots that offer human-like empathy.
- **Loneliness and Chatbot Usage:** Contrary to previous studies, loneliness did not significantly impact trust or the intention to use SCs. This suggests that while Gen Z experiences high levels of dissatisfaction with emotional well-being, they still prioritize in-person communication over digital substitutes, possibly due to their collaborative nature and preference for authentic, human feedback.
- **Attitudes Towards AI and Privacy:** Positive attitudes toward AI correlate with higher trust and reduced privacy concerns. This reflects Gen Z's comfort with technology, driven by their familiarity with digital platforms. Despite implicit privacy concerns, Gen Z users are generally confident in managing their digital presence. However, privacy concerns did not significantly affect their intention to use SCs, suggesting that younger users are less concerned about privacy issues than older generations.

- **Mediation Analysis:** The mediation analysis revealed that trust and privacy concerns do not mediate the effects of emotional support, hedonic motivation, or attitudes toward AI on the intention to use SCs. This suggests that these factors have a direct impact on user behavior rather than an indirect one through trust or privacy concerns.
- **Qualitative Insights:** Users emphasized the need for SCs to demonstrate empathy, personalization, and improved conversational skills to enhance user satisfaction. Participants (58.33%) indicated that SCs should adopt a more informal tone, understand slang, and convey genuine empathy to reduce their robotic demeanor. Enhancing memory retention and conversational capabilities was also highlighted as crucial for fostering more dynamic interactions.

5. Implications

- The findings from this study reveal several implications regarding the factors that influence trust, privacy concerns, and the usage of social chatbots. Perceived emotional support from chatbots significantly improves trust but does not impact privacy concerns. The takeaway from this finding is that developers should prioritize emotional support features to build trust with users. However, the finding that the emotional connection does not influence privacy concerns calls for future researchers to explore this area and provide fresh insights.
- Surprisingly, loneliness does not influence trust or chatbot usage, contradicting prior research. This indicates that SC usage is not necessarily driven by loneliness, so other motivating factors should be emphasized. However, while this finding can be explained by the study sample, which was aimed at Gen Z participants, we call for further investigation into how Gen Z participants cope with loneliness and whether SCs can be a viable option.
- On the other hand, positive attitudes toward AI are associated with greater trust and reduced privacy concerns, showing that promoting AI's benefits can help alleviate fears and increase adoption. Hedonic motivation boosts trust but doesn't reduce privacy concerns, suggesting that users enjoy chatbots but remain cautious. Focusing on pleasurable interactions can enhance trust, but privacy issues must still be addressed. Lastly, trust drives usage, while privacy concerns, particularly among Gen Z users, do not significantly impact SC usage intention. Developers should prioritize trust-building and pleasurable interactions to increase adoption, especially among Gen Z demographics.

6. Conclusion

- In conclusion, this study highlights the key factors influencing Gen Z's use of SCs, particularly the roles of emotional support, attitudes toward AI, and hedonic motivation in shaping user trust and adoption. Emotional support significantly boosts trust in chatbots, highlighting the importance of empathetic interactions for user engagement. While positive attitudes toward AI further enhance trust and reduce privacy concerns, hedonic motivation emerges as a strong driver of usage intention. Surprisingly, loneliness does not significantly influence chatbot adoption, suggesting that other factors beyond social isolation may drive Gen Z's usage. Privacy concerns do not significantly deter chatbot usage among younger users, indicating that trust and enjoyment may outweigh privacy issues in this demographic. The qualitative insights emphasize the need to improve chatbot empathy, personalization, and conversational skills to meet user expectations. Overall, this study suggests that improving trust and offering emotionally satisfying and enjoyable interactions are crucial for SC usage among Gen Z users.
- Future research should further explore the relationship between loneliness and SC usage and address the long-term implications of privacy concerns in AI-driven interactions.

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