An Empirical Study on Emotional Dependence and the Substitution Effect of Generative AI Chatbots in Mental Health Support in China

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Abstract. While Generative Artificial Intelligence (AI) chatbots are gaining traction in mental health support, their long-term impact on professional help-seeking behavior in China remains unclear. This study investigates whether emotional dependence (DEP) on AI chatbots mediates the relationship between users' perceived usefulness (PU), perceived ease of use (PE), trust of AI chatbots, and their willingness to seek help from human professionals (Help-Seek), as well as the further examination of whether this pathway is moderated by internalized shame (Shame) and prior therapy experience (TxExp). A cross-sectional survey was conducted with 138 participants, and the survey result has been processed through a path analysis approach employing on ordinary least squares (OLS) regression, for direct, indirect and interactive relations, including mediation and moderation paths, while the significance of indirect effects has been assessed by bias-corrected bootstrapping with 5,000 samples. The analysis revealed that PU, PE, and trust all significantly increased DEP on AI chatbots. DEP, in turn, significantly reduced the Help-Seek, and served as a significant mediator for PE and PU, but not for trust. The negative relationship between DEP and Help-Seek was robust and not moderated by the combined influence of Shame and TxExp. The findings indicate that positive perceptions of AI can foster a reliance that potentially displaces traditional help-seeking. Developers, clinicians and policy makers should be aware of this displacement effect and strategize to ensure AI complements, rather than replaces, professional mental health care.

Keywords: AI Chatbots, Help-Seeking Intention, Emotional Dependence, Mental Health Support, Technology Acceptance Model.

1 Introduction

The latest World Health Organization (WHO) data shows that over 1 billion of the population worldwide are suffering the mental health issues, while a hug treatment gap between the psychological therapy demand and the provision has been observed across countries [1, 2]. Under the circumstance, Generative AI chatbots have rapidly emerged as an accessible alternative, evidenced by a burgeoning market projected to reach $2 billion USD [3]. However, serious concerns regarding their clinical safety and ethical

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implications, including the provision of dangerous advice, have been raised with researchs proving potential manipulative behavior of AI towards users [4, 5].

Meanwhile, the context in China presents its particularity. The 2024 statistics shows that around 0.1 billion Chinese suffer from depression disorder, while the depression issue in developed cities is much higher [6]. Concurrently, Chinese citizens report significantly higher trust in AI versus the global and high workplace adoption rates, suggesting a greater possibility and habit to use AI chatbots for counselling [7, 8].

While prior research, grounded in the Technology Acceptance Model (TAM) has established Perceived Usefulness (PU) and Perceived Ease of Use (PE) as key adoption drivers, the literature has predominantly focused on users' willingness to use AI chatbots for emotional or mental health support, which leaves a critical gap in understanding the unintended consequences upon the impact on users' intentions to seek help of qualified human professionals, especially with the high AI acceptance rate in China [9, 10, 11]. Therefore, the focus of this study is to explore the gap within the unique Chinese cultural context.

1.1 Research Significance

This study aims to tackle a pivotal question of whether the very features that make AI chatbots attractive could also create barriers to professional mental health care. As the AI has become deeply integrated into the daily life of Chinese, and potentially the spontaneous healthcare mechanism, it is imperative to move beyond questions of adoption and examine AI's role within the broader help-seeking process. The findings of this study could offer crucial empirical evidence to clinicians, policymakers, and developers, enabling them to craft strategies that ensure AI serves as a supplement instead of a substitute for professional services.

1.2 Research Objective

This study is focused on exploring the pathway from AI chatbot user perceptions (PU , PE, Trust) to the intention to seek professional help (Help-Seek), highlighting emotional dependence (DEP) as a mediator and the Chinese contextual moderating roles of internalized shame (Shame) and therapy experience (TxExp).

1.3 Methodology and Article Structure

To achieve these objectives, a quantitative survey was administered to a sample of 138 participants. Standardized scales measurements were developed for constructs upon PU, PE, Trust, DEP, Help-Seek, Shame, and a nominal item for TxExp.

Data analysis was conducted using a path analytic approach grounded in ordinary least squares (OLS) regression, for direct, indirect and interactive relations, including mediation and moderation paths, while the hypothesis testing for indirect effects was performed through bias-corrected bootstrapping with 5,000 samples, by the mediation and moderated mediation models through Hayes' PROCESS macro (Models 4 and 3) in SPSS.

2 Literature Review

2.1 International Research Status

The Global research on AI chatbots in therapy reveals both the potential and limitation. Landmark studies demonstrate efficacy, such as Therabot, which significantly reduced depression and anxiety symptoms in a randomized controlled trial [2]. However, researchers consistently emphasize AI's current inability to manage high-risk situations and its reliance on standardized, non-personalized advice [4]. These limitations have prompted strict regulatory frameworks in regions like the USA and EU, reinforcing the consensus that AI should remain a supplemental tool under human oversight [12, 13].

2.2 Domestic Research Status and the Cultural Context

In China, the situation is shaped by the rapid technological integration and the unique cultural context. Advanced AI systems are being implemented in educational and community settings [14, 15]. It is common for Chinese users to turn to general AI chatbots for immediate and cost-effective emotional support (e.g. DeepSeek is free for individual users) rather than the specific-purposed chatbot, amplified by the persistent cultural stigma that leads individuals to prefer self-management over professional help, especially with the high trust in AI (72%) compared to Western nations and the widespread adoption of AI (93% in China workplace) [7, 8, 16].

Emotional dependency developed through chatbot use, as observed in other markets where a significant portion of teen users treat AI as a companion may delay the seeking of essential professional help as a result [17]. In response, Chinese scholars advocate for a human-centric model, where AI empowers rather than replaces professional judgment [18].

2.3 Theoretical Framework and Research Gaps

The former review highlights the opportunity regarding AI chatbots' efficacy and accessibility while raising concerns about the risks, limitations and possibility to substitute traditional therapy. Yet a clear research gap exists in understanding the mechanism for AI chatbot users upon the possible reduced intention to seek professional help, particularly in the Chinese context.

Therefore, this research is concentrating on filling the gap mentioned previously through proposing an integrated theoretical model, grounded in the well-established TAM, where PU and PE are the fundamental drivers of technology adoption, extended by incorporating Trust as a critical antecedent, given its unique salience in the AI and mental health context, inspired by McKnight et al. [9, 19]. Furthermore, the Emotional Dependence (DEP), adapted from Bergen Social Media Addiction Scale, being a key mediator will be examined regarding how positive perceptions of the technology lead to a psychological reliance that may impact the help-seeking behaviors [20, 21]. Finally, two moderating variables Internalized Shame (Shame) inspired by Vogel et. al.

and Therapy Experience (TxExp) are considered for the unique cultural and individual differences highlighted in the literature [22].

2.4 Hypothesis Development

Based on the research gap and theoretical frameworks reviewed above, the following hypotheses have been proposed as the focus for this research:

Hypothesis 1: PU, PE, and Trust will positively impact users' DEP on AI chatbots.

Hypothesis 2: DEP will negatively influence users' Help-Seek.

Hypothesis 3: DEP will mediate the relationship between the perceived characteristics (PU, PE, Trust) and the Help-Seek.

Hypothesis 4: The negative relationship between DEP and Help-Seek will be moderated by Shame and TxExp, particularly for people with high level of Shame and no prior therapy experience.

3 Methodology

3.1 Research Design

This study applied a cross-sectional design with online survey approach to test the hypotheses. The Snowball sampling has been chosen, targeting the population of professionals in major cities, such as Shanghai, Beijing, Suzhou in China.

Eligible participants were expected to complete the anonymous online survey via online (WJX) platform. The consent form and a brief introduction with mental health resources were to be provided first, and then the randomized scales with an attention check for data reliability [23, 24], which in total would take 15 minutes approximately.

For Hypothesis 1 to 4, the proposed research model developed based on TAM is shown in Figure 1 as follows:

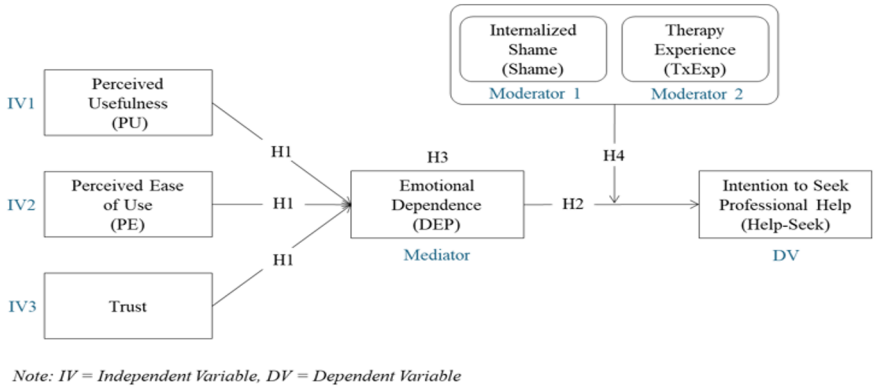

Fig. 1. The Proposed Research Model Hypothesis 1~4 on AI Chatbot Adoption.

3.2 Measures

A 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) were used for the assessment of all multi-item factors, except for one dichotomous question for TxExp, with instruments detailed below.

Independent Variable. PU and PE were measured using sample item: “I find AI chatbots useful in providing me with mental support.”. While Trust was assessed with sample item: "I believe that the AI chatbot provides me with truthful advice.” [9, 19].

Mediating Variable. DEP was measured with sample item: “I find it difficult to stop using the AI chatbot when I feel down.” [20].

Dependent Variable. Help-Seek was assessed with sample item: “If I were facing serious emotional difficulties, I would consult a professional psychologist.” [21].

Moderating Variable. Shame was assessed with the single item “I would feel ashamed if others knew I sought psychological help.” [22]. Whereas TxExp was identified through a dichotomous (Yes/No) screening question.

3.3 Data Analysis

Data screening and cleaning were performed first, and then the data analysis, through statistical software SPSS Version 31.0 with the PROCESS macro Version 5.0 by Hayes, A.F.

Data Cleaning and Screening. Primarily, the collected samples were proceeded with data cleaning, eliminating samples with missing values, outliers, and the ones failed the attention check. Then the data screening proceeded, leaving only the effective samples with participates who have experience with AI chatbots.

Preliminary Processing. Followingly, the internal consistency was measured for all multi-item constructs (PU, PE, Trust, DEP, Help-Seek) by Cronbach’s alpha coefficients.

Hypothesis Testing. The tests for H1, H2 and H3, were run separately, each with PU, PE, or Trust as the independent variable, DEP as the mediator, Help-Seek as the dependent variable, bootstrapping with 5,000 samples generated bias-corrected 95% confidence intervals (BootCI) for the indirect effect.

For H4, the three-way interaction (DEP×Shame×TxExp) was tested with the independent variable of DEP, the dependent variable Help-Seek, and moderators of Shame and TxExp.

4 Results

4.1 Preliminary Analysis

a final sample of 84 out of 138 participants after data cleaning and screening. All multi-item scales demonstrated acceptable to good reliability ($\alpha > 0.6$) , except for Trust ($\alpha = 0.538$), indicating cautious interpretation of its results.

4.2 Testing Result

Result for H1, H2, and H3. The mediation analyses result indicated that DEP mediated the relation between the technology acceptance factors (PU, PE, Trust) and Help-Seek, with the details as follows.

H1 was fully supported, PU ($\beta = 0.778$, $p < 0.001$), PE ($\beta = 0.546$, $p < 0.001$), and Trust ($\beta = 0.578$, $p < 0.001$) all demonstrated a significant positive influence on DEP.

H2 was also supported, DEP showed a significant negative influence on the Help-Seek across all three models, with standardized coefficients ranging from -0.237 to -0.449 and all p-values less than 0.05.

H3 was partially supported. Bootstrap mediation analysis revealed that the indirect effects of both PU and PE on Help-Seek through DEP were significant ($\beta = -0.350$ and -0.232, respectively; BootCI excluded zero). In contrast, the indirect effect for Trust was insignificant ($\beta = -0.137$, BootCI [-0.366, 0.045]), suggesting that DEP does not significantly mediate the relation between Trust and Help-Seek.

Result for H4. H4 was not supported, no significant effect was observed for the three-way interaction ($\beta = -0.174$, $p = 0.335$), nor were the moderators' effect being significant ($\beta = 0.088$, $p = 0.264$ for Moderator Shame; $\beta = 0.227$, $p = 0.720$ for Moderator TxExp), indicating that high shame levels and lack of therapy experience did not significantly influence the negative correlation between DEP and Help-Seek.

4.3 Result Summary

Overall, the analysis result confirmed a nuanced model, where H1 and H2 were supported, suggesting that PU, PE, and Trust effectively and positively impact DEP, which subsequently reduced Help-Seek; H3 was partially supported, as DEP mediated the relationship for PU and PE, but not for Trust; H4 was not supported, the DEP to Help-Seek path was not moderated by Shame and TxExp.

In summary, users' perceptions of AI chatbots facilitated a dependence that generally reduces help-seeking, a substantial pathway that is independent of shame or therapy history in the Chinese cultural context.

5 Discussion

This study examined the psychological mechanisms linking AI chatbot perceptions to professional help-seeking. The findings confirmed a core model but also revealed critical nuances and boundaries.

5.1 Direct, Mediating, and Distinct Pathways

The test result revealed that PU, PE, and Trust all significantly increased users' DEP on AI chatbots, while the high emotional dependence subsequently will affect negatively on the help-seeking intention facing mental support demands. DEP as a mediator yielded a key distinction, the indirect effects of PU and PE on Help-Seek through DEP were significant and negative, while that of Trust was non-significant, indicating that although Trust fostered DEP, the emotional dependence did not translate into reduced help-seeking intentions. The nature of Trust's influence appears distinct from that of PU and PE. However, as the reliability test of the Trust scale indicated possible limitations, this finding may require further validation.

5.2 Unsupported Interaction and Contextual Considerations

The proposed three-way interaction between DEP, internalized shame, and prior therapy experience was not significant, indicating that the strength of the negative relationship between DEP and Help-Seek is not dependent on the specific combination of Shame and TxExp.

5.3 Theoretical and Practical Implications

Theoretically, these findings establish DEP as a critical mediator between key perceptions (PU, PE) and users' help-seeking behavior, while highlighting a boundary for Trust.

Practically, the implication makes it clear that for AI developers, enhancing PU and PE risks exacerbating users' dependence and unintendedly reducing their help-seeking intentions facing mental health issues, which is a consequence requiring mitigation, whereas the distinct role of Trust, if further validated to be true, suggests that fostering trust that does not necessarily encourage over-reliance, and should be cautious when balancing the design.

For clinicians, it is crucial to understand that clients using AI chatbots for issues like social alienation may exhibit diminished help-seeking intent, which is likely to delay the curation of certain clients, especially in the Chinese cultural context.

5.4 Future Research Directions

Firstly, the path from Trust to Help-Seeking mediated by DEP was not captured in this study, which should be further explored. This is particularly important given the prior validation and analysis indicating a low reliability score for the Trust scale.

At the same time, research should examine how AI chatbot design features might mitigate dependency risks while maintaining therapeutic benefits, ultimately informing ethical implementation guidelines that preserve professional care engagement.

Furthermore, it is essential to investigate the perceived competence gap between the AI chatbots and the human clinicians, especially under difference mental issue severity vignettes, as the perception is highly likely to maneuver users' decision to seek professional help, and it is crucial to know users' intention to seek professional help regarding levels of mental issue severity, not only for professional mental health workers, but also for policy makers upon public health consideration.

6 Conclusion

This study establishes a clear psychological pathway wherein positive perceptions of AI chatbots cultivate emotional dependence, potentially displacing traditional help-seeking by reducing the intention to consult human professionals. At the same time, this model reveals critical nuances that while perceived usefulness and ease of use operate through the dependence mechanism, meanwhile, trust may function differently, prompting reliance without significantly diverting users from professional help. Given the widespread adoption of AI chatbots in China, with high rates of mental health issues, low self-awareness of problem severity, and persistent stigma, it is crucial to strategically integrate the benefits of AI chatbots with the directive guidance of professional therapy, which urgently calls for further exploration of users' behavioral mechanisms and the follow-up implementation for the technological development of AI, mental health professionals and the public policy respectively.

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