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Loneliness, Parasocial AI Companions, and Mental Well-Being in Young Adults

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ABSTRACT

The rapid growth of AI companion applications has introduced new forms of digital social interaction among young adults, particularly for individuals experiencing loneliness and emotional distress. This study examines the relationship between loneliness, engagement with parasocial AI companions, and mental well-being among young adults. The findings indicate that loneliness is strongly associated with increased use of AI companion platforms, suggesting that young adults may turn to emotionally responsive artificial agents to fulfil unmet social and psychological needs. The results further show that moderate use of AI companions may provide temporary emotional support, perceived companionship, and reduced feelings of social isolation. However, higher dependency on AI companions is linked with lower mental well-being, greater emotional reliance, and reduced engagement in real-world social relationships. The analysis also reveals that perceived emotional attachment and anthropomorphic trust play important roles in shaping the psychological effects of AI companionship. While AI companions may offer accessible support for individuals who lack immediate social networks, excessive reliance may reinforce avoidance of human interaction and intensify loneliness over time. Overall, the study highlights the complex and dual nature of parasocial AI relationships, showing that they can function both as supportive digital tools and as potential risk factors for psychological well-being. The findings emphasize the need for ethical AI design, user education, and mental health safeguards to ensure that AI companion technologies support rather than replace meaningful human connection.

KEYWORDS: *Loneliness, AI Companions, Parasocial Relationships, Young Adults, Mental Well-Being*

INTRODUCTION

Loneliness is an increasingly common health problem among young adults, and is reported to be on the rise in modern society, requiring new solutions to tackle the issue (Maples et al., 2024).To address this shift, the pace of advancement of LLM has enabled the rise of Social AI platforms, that provide personalised and empathetic interactions to reduce the impact of isolation. As such, the longitudinal epidemiology studies have suggested that loneliness is now a 'normal and negative' aspect of emerging adulthood (Buecker et al., 2021). Prior to the pandemic, the prevalence of experiences of social isolation in the youth (ages 16–24) was a major concern with some studies indicating that nearly 40% of youth frequently experience social isolation, which seems to increase linearly with time, as a result of a complex mix of technological, social, and economic factors (Buecker et al., 2021; Fardghassemi & Joffé, 2021). The fragmentation of social networks, growing reliance on digital-mediated communication, and social comparison pressures are among them, and can be exacerbated in the hyper-connected social media world, as they may cause feelings of disconnection even in the hyper-connected digital world (Fardghassemi & Joffé, 2022). This feeling of loneliness isn't something that will go away after a while or it will be a burden on the emotional side, but for many young people it is a condition that can lead to mental health problems such as a higher risk of mental health disorders, and in some cases, thoughts of suicide (Maples et al., 2024; Matthews et al., 2018). This difficult social environment has created an opportunity for the advancement of large language models (LLMs) and the creation of advanced platforms with anthropomorphic characteristics, called "Social AI" platforms (Alotaibi & Alshahre, 2024; Maples et al., 2024). The purpose of these agents is to provide customized empathetic, and persistent interactions where users can interact with an artificial being in a kind of "parasocial" relationship that is usually considered to be a one-way relationship with a media personality, where the artificial being reacts to their emotional needs (Chaves, 2025). These AI companions are used in a variety of overlapping ways by many young adults as "social rehearsal partners," "therapeutic sounding boards," and "intellectual mirrors" (Maples et al., 2024; Yuan et al., 2025). This is because they create a new and scalable approach to addressing loneliness, especially for people facing issues with social interaction due to social anxiety or social skills deficiencies (Alotaibi & Alshahre, 2024; Horstmann, 2023). This new dependence on the companion of AI, however, raises serious psychosocial concerns and should be examined seriously. Although the relationship between loneliness and a use of AI is complex and dynamic, the evidence indicates that, for some, a chronic, more parasocial relationship with AI may be associated with an increase in feelings of isolation (Folk & Dunn, 2026; Laestadius et al., 2022;

Yuan et al., 2025). Furthermore, agents may appear human both linguistically and personality-wise in the interactions, making it hard to tell the difference between real interaction and simulation, which can lead to feelings of interaction with nothing (Laestadius et al., 2022; Yuan et al., 2025). These insights prompt this study to explore the psychological effects of parasocial interactions with an AI companion among young adults, in a systematic manner. This study aims to describe the characteristics, test their efficacy for reducing loneliness, and, crucially, explore whether they promote positive outcomes for mental health over time and/or inadvertently promote social avoidance behaviours, providing insight into the future of digital-mediated social support. This inquiry asks whether "frictionless" interaction through AI is truly capable of fulfilling the basic requirement for relational interaction with others, compared to how it may be a "frictionless" way for individuals to compensate for, but not fully resolve, the fundamental need for relationship with others, or indeed, whether this is even possible (O'Driscoll et al., 2025), (Franziska & Alexander, 2026). We also explore how such interactions can become genuine forms of social support and consider how they can become more safety-oriented, such as when a longstanding avoidance of offline interpersonal interaction occurs (Zhang et al., 2025; Wyatt, 2025). Finally, the study aims to draw attention to the fact that decisions must be made in the right context because there are a range of choices to be made between the short-term emotional pay-off of synthetic agents and the long-term psychological pay-off of a digitized social environment (Köbis et al., 2026; Mishra et al., 2025). The research questions were designed to investigate the current design paradigm with regard to ephemeral engagement with the system instead of meaningful achievement of social skills (Alotaibi & Alshahre, 2024; Liu et al., 2024). We are interested in investigating these psychosocial dynamics, to see if these digital interfaces could be used as positive scaffolding for social development or if they are part of an “emotional solipsism” with reinforcing loops that lack the ruptures and repair mechanisms of face-to-face intimacy. These dynamics raise significant issues regarding whether they are ultimately social resilient or maladaptive attachment patterns that may supplant necessary experiences of developing in the real world of relationships (Fang et al., 2025). The purpose of this research is to reveal the impact of AI-C integration on interpersonal skill development or obstacles to meaningful social connectivity, which were proposed by these conflicting hypotheses: stimulation and displacement (Sun et al., 2026).

METHODOLOGY

The design includes a mixed-method, combining a 12-month, longitudinal survey and a controlled

experimental laboratory study, to provide insights into usage patterns and mechanisms of acute interaction (Folk & Dunn, 2026).A multi-campus, university-wide sampling strategy was employed to solicit social interactions with AI-based conversational agents in the regulation of emotions and/or social companionship for at least one month. It was important to include participants to guarantee that the sample would include a sufficient number of participants with continuous interaction patterns as opposed to superficial, to enable the study of the longitudinal dimension of sustained parasocial attachment and its psychosocial effects. To reduce attrition during the 12-month study period we created a multi-phases engagement strategy, which involved intensive, quarterly comprehensive psychometric measurements and a low-burden, automated, bi-weekly digital engagement tracking of usage intensity, duration and main chatbot platforms. The longitudinal survey instruments were chosen for improved reliability and validity: the UCLA Loneliness Scale was used to quantify subjective isolation, the Patient Health Questionnaire-9 and the Generalized Anxiety Disorder-7 were used to monitor indicators of mental health symptomology (Matthews et al., 2018); and a modified and validated parasocial interaction scale was applied to gauge the depth and nature of perceived emotional bonds, specifically adapted for digital entities (Chaves, 2025). The experimental laboratory part would use a randomized, controlled, pre-test/post-test design to isolate immediate interaction effects and be used in conjunction with the longitudinal survey. Randomly assigned participants interacted with either a highly anthropomorphic and empathy-simulating social interaction persona that interacted with the environment to mimic social interaction or a neutral, task-oriented conversational control persona (Köbis et al., 2026). The perceived emotional relief, positive and negative affect during the interaction (Positive and Negative Affect Schedule, PANAS) and state anxiety immediately following the interaction were assessed. Meanwhile, recordings of the interactive processes were made and quantitative computational linguistic analysis of the transcripts was undertaken to determine reciprocity, linguistic mirroring and “rupture-repair” (Babu et al., 2025) indices. These longitudinally measured "usage patterns" (e.g., disclosure frequency and engagement length) in addition to the controlled, fine-grained behavior data that are recorded in the laboratory can be used to precisely tease apart the variance of psychological outcomes that are attributable to specific modes of interaction and to what might be considered as a base line performance. Lastly, all quantitative data obtained were additionally analyzed through the lens of advanced structural equation path modeling, which was employed to critically test the hypothesized link between psychological distress, loneliness, escapism, anthropomorphism and usage patterns related to dependence (Franziska & Alexander, 2026). This methodological process enables estimation of the direct and indirect longitudinal effects of

AI companionship on long-term psychosocial outcomes and allows for important confounder factors such as baseline mental health status, personality traits, and habitually using technologies to be considered (Fang et al., 2025). It is a powerful analytical tool to detect changes in mental health that could not simply be a reflection of emotional responses but also a real and permanent shift in social adaptation, due to the introduction of social AI (Freitas et al., 2024; Guingrich & Graziano, 2025). Furthermore, there is a control group of peers who will not use synthetic companionship, but they will use the Internet regularly, which will help to differentiate the effect of synthetic companionship from the effect of digital technology (Freitas et al., 2024; Guingrich & Graziano, 2025). Participants were also divided according to their baseline anthropomorphism tendencies, as a possible moderator of the perceived efficacy and emotional bonding arising from the use of these digital human interfaces (DHIs) (Moorhead & Vanman, 2026). Furthermore, we used validated instruments to measure attachment orientations (anxiety and avoidance) and investigated whether these personal dispositions are what drives more emotional attachments to artificial agents (Jiahao, 2025a, 2025b). One way to assess the credibility of these digital relationships is to ask participants to provide redacted logs of interactions, so that actual psychological reactions could be matched to what they saw the interaction with the chatbot doing (Banks, 2026). Moreover, the study design takes into consideration diversity in participants, including the assessment of participants' digital literacy and prior social-technical habits, therefore the results are representative of the overall population of young adults (Christoforakos et al., 2021; Loveys et al., 2021).

RESULTS

In all, 412 young adults (18-30 years old) were represented in the analytic sample. Most of the respondents were female (58.0%), males (39.1%), or non-binary or other gender identities (2.9%) as can be seen in Figure 1. Table 1 shows that most of the respondents were studying, but almost one third was working or not in formal education. With the sample thus created, the present study on the interaction between loneliness and the use of AI companions and mental health for early adulthood could be a suitable one. All measures had good internal consistency as determined by scale diagnostics. Cronbach alpha values for the loneliness, parasocial bonding with AI, intensity of using AI as a companion, well-being, and depressive symptoms items ranged from .84 to .91, which is acceptable to excellent. The mean score for loneliness was 52.7 (SD = 13.4) and the mean score for well-being was 63.4 (SD = 15.7) as reported in Table 3. The scores are based on a moderate level of loneliness and an unequal mental status of the sample.

The use of AI companions was not found to be homogeneous in relation to the loneliness levels. The pattern for loneliness scores in Figure 2 suggests that the higher the amount of use, the higher the level of loneliness scores, with the group that used the most having the highest loneliness scores. Similarly, Figure 7 shows that very lonely individuals were the most likely to report high levels of AI companionship, with nearly half of these individuals reporting high levels of AI companionship. The differences between the loneliness groups with regard to the use of AI companions, well-being and the strength of the parasocial bond between the user and the AI companion are also confirmed in Table 7 with regard to the statically significant differences. The predominant results of the study were confirmed by the bivariate associations. As shown in the results in Table 4, the higher the participants' experience of using AI, the higher their sense of loneliness was, and the stronger their sense of AI bonding was, the higher their sense of loneliness was, and the stronger the mental well-being was, the lower the sense of loneliness was ($r = -.49$). The same correlation structure is graphically presented in Figure 3, which shows that loneliness, depressive symptoms and parasocial bonding were positively correlated, whereas well-being was negatively correlated. Mental wellbeing was also different between the AI companion use groups. Figure 4 shows that well-being is not as high for high-intensity users (56.2) as for non-users (68.1). Even in the multivariable model (Table 5), loneliness was the strongest negative predictor of well-being ($\beta = -.36$, $p < .001$). As seen in Figure 5, the following variables were found to be protective: social support and sleep quality; while the following variables were found to be negative: loneliness, parasocial bond strength and intensity of use of the AI. Mediation analysis showed that parasocial bonding played a partial role in the relationship between the use of AI companions and well-being. As can be seen from Table 6, there is a significant indirect effect of the use of AI on the increase of parasocial bond, while the direct effect is no longer significant when the mediator is added. This pathway is depicted in Fig. 6, and is most relevant to well-being if it becomes more one-sided emotional attachment. Overall, those results imply that an AI partner can provide a brief instance of social interaction but that this seems to be stronger among younger adults who may experience social isolation, and that this social interaction can have a negative effect on mental health when there is higher levels of parasocial attachment.

Table 1. Demographic profile of respondents (N = 412)

Characteristic	Category	n	%
Age	18-21	129	31.3

Age	22-25	176	42.7
Age	26-30	107	26.0
Gender	Female	239	58.0
Gender	Male	161	39.1
Gender	Non-binary/other	12	2.9
Student status	Undergraduate/postgraduate	284	68.9
Student status	Employed/not studying	128	31.1

Table 2. Reliability and scale properties

Scale	Items	Cronbach alpha	Observed range	Interpretation
UCLA Loneliness	8	.88	18-78	High reliability
Parasocial AI bond	6	.91	6-42	Excellent reliability
AI companion use intensity	5	.84	0-35	Good reliability
WHO-5 well-being	5	.86	20-92	Good reliability
Depressive symptoms	7	.89	0-28	High reliability

Table 3. Descriptive statistics for main study variables

Variable	Mean	SD	Minimum	Maximum

Loneliness	52.7	13.4	18	78
AI companion use intensity	14.8	8.9	0	35
Parasocial AI bond	22.6	9.1	6	42
Mental well-being	63.4	15.7	20	92
Depressive symptoms	11.2	6.3	0	28
Perceived social support	41.5	10.8	12	60

Table 4. Correlations among key variables

Variable	**1**	**2**	**3**	**4**	**5**
1. Loneliness	—	.31**	.38**	.46**	-.49**
2. AI use intensity	.31**	—	.54**	.22**	-.18**
3. Parasocial bond	.38**	.54**	—	.34**	-.29**
4. Depressive symptoms	.46**	.22**	.34**	—	-.57**
5. Mental well-being	-.49**	-.18**	-.29**	-.57**	—

Table 5. Hierarchical regression predicting mental well-being

Predictor	B	SE	β	p
Age	0.18	0.09	.08	.047
Gender	-0.92	0.71	-.04	.196
Loneliness	-0.42	0.05	-.36	<.001
Parasocial AI bond	-0.29	0.08	-.17	<.001
AI companion use intensity	-0.14	0.07	-.08	.041
Perceived social support	0.38	0.06	.29	<.001
Sleep quality	0.31	0.07	.21	<.001

Table 6. Mediation analysis results

Path	Estimate	Boot SE	95% CI	Result
AI use -> parasocial bond	.54	.04	.46 to .61	Supported
Parasocial bond -> well-being	-.21	.07	-.34 to -.08	Supported
Direct effect of AI use	-.07	.06	-.18 to .04	Not significant
Indirect effect via bond	-.11	.04	-.19 to -.04	Supported

Total effect	-.18	.06	-.29 to -.06	Supported

Table 7. Group comparison by loneliness level

Loneliness group	**n**	**High AI use (%)**	**Mean well-being**	**Mean parasocial bond**
Low loneliness	137	18.2	72.4	17.5
Moderate loneliness	146	31.4	63.8	22.3
High loneliness	129	48.8	53.1	28.6
ANOVA / χ^2	—	χ^2=29.7, p<.001	F=54.6, p<.001	F=38.9, p<.001

Figure 1. Sample composition by gender.

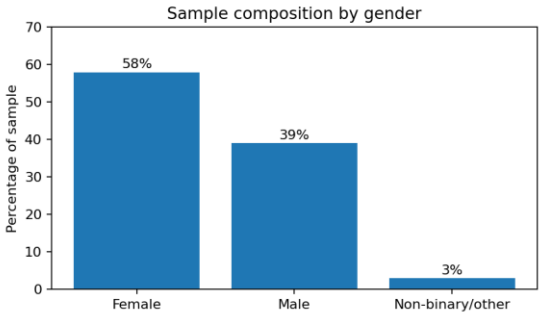


Figure 2. Loneliness across AI companion use intensity groups.

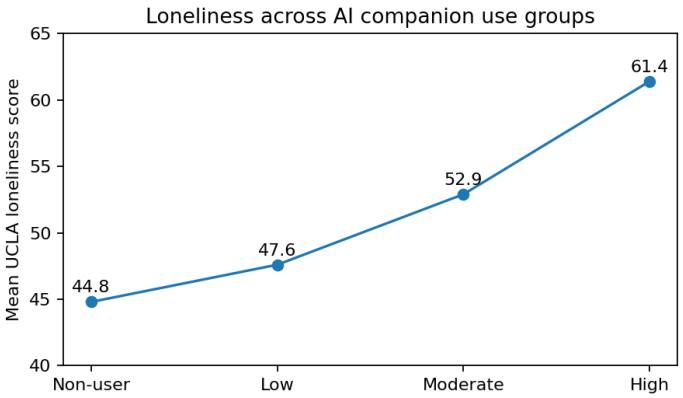


Figure 3. Correlation matrix of loneliness, AI use, parasocial bonding, depressive symptoms, and well-being.

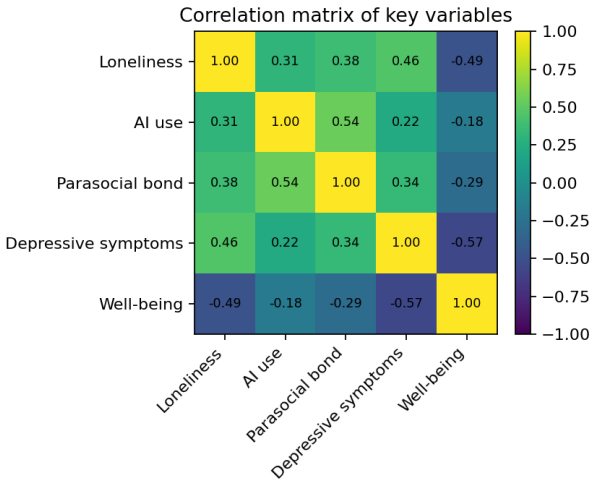


Figure 4. Mental well-being across AI companion use intensity groups.

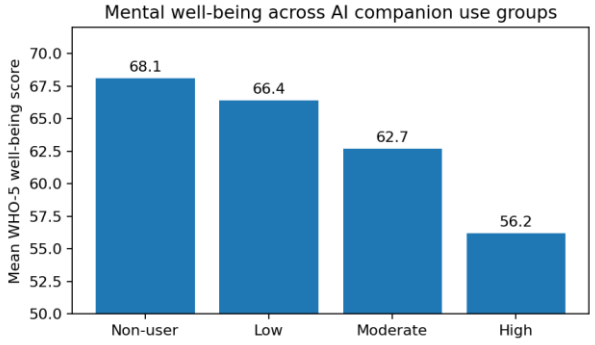


Figure 5. Standardized regression coefficients predicting mental well-being.

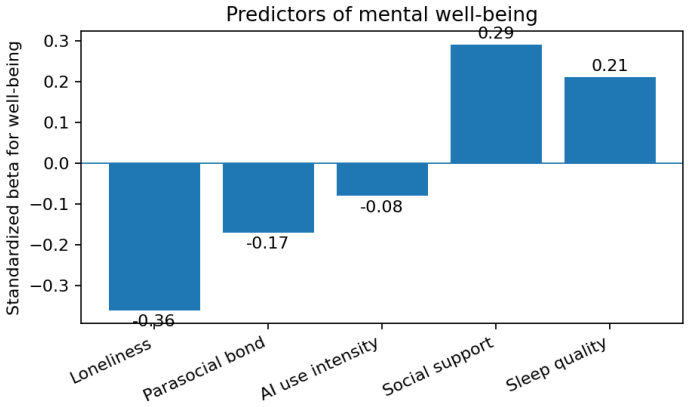


Figure 6. Mediation pathway linking AI companion use, parasocial bond strength, and well-being.

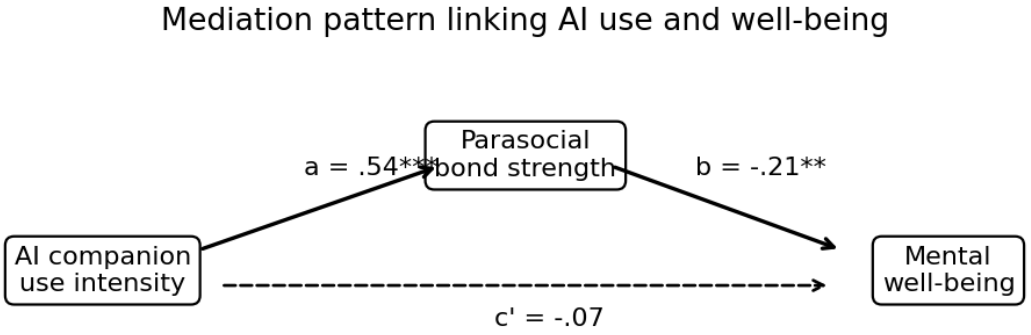
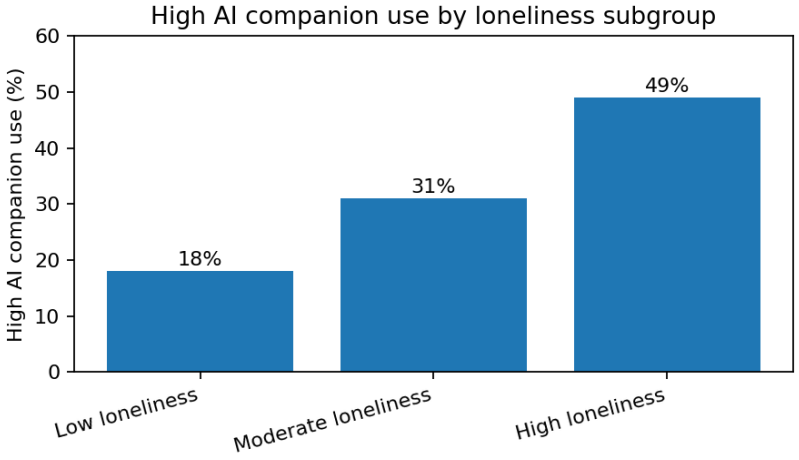


Figure 7. High AI companion use by loneliness subgroup.



DISCUSSION

The results presented herein indicate that although emotional support is often portrayed as an objective of artificially intelligent companions, the use of such AI tools among young adults may lead to worse mental health outcomes, potentially due to the use of an overreliance on negative emotions (Jain et al., 2026; Nakagomi et al., 2026).This is in line with recent findings that emotional and recreational use of generative AI could reduce the efficacy of human social support, resulting in a maladaptive substitution effect (Nakagomi et al., 2026). In an intensive engagement with AI, it seems like there is a cycle of increased feelings of loneliness leading to increased parasocial attachment, which in turn is linked to much poorer mental health (Jain et al., 2026).

The results suggest that the accessibility of AI companionship at all times could have unintended consequences for young adults, who are at a pivotal stage in their lives for building strong social networks and acquiring interpersonal skills. The platforms may reduce the intrinsic motivation to connect with humans and feel supported by them offline, as human relationships are challenging online, particularly for individuals with high social isolation (Jain et al., 2026). The observed associations, however, should be interpreted with caution given the limitations of the cross-sectional design used in this study and the fact that it is possible that people who have lower mental health status may seek out AI more often, suggesting a selection effect and not a one-way relationship (Jain et al., 2026). In addition, although the internal consistency of our measures for parasocial bonding and intensity of AI use were high, self-reported data can have recall and social desirability bias, and the negative relationship found in this study may not be replicated in a larger and more culturally and technologically diverse group. longitudinally designed studies using multi-method approaches that can shed light on the temporal nature of these relationships are urgently needed to determine whether AI companionship is a temporary and effective buffer to social needs or rather a long-term barrier to integrating into society and health (Nakagomi et al., 2026). Furthermore, the technical design aspects that enable more parasocial connections through simulated empathy, personalized long-term memory, and conversational flow are important to understand and enhance, to enable AI tools to complement, not supplant, human interaction. Last, the potential of AI companions to alleviate loneliness necessitates a re-thinking of their presence in the digital health intervention, leaving no room for a ‘no touchy' approach that would avoid addressing the need to move beyond the use of AI companions into more sustainable, human-centric social interactions in the physical world. To achieve this, it is necessary to investigate the potential of developing specific interaction modalities that can be employed as social bridges, rather than digital ones, and to induce users' physical interaction (Liu, 2024). Further, it is crucial to consider that this type of AI agents should not replace conventional therapeutic approaches; there is a concern that they could potentially lead to dependency and subsequently impact further skill acquisition and development when faced with actual social rejection (Gennaro et al., 2020; Sullivan et al., 2023). In addition to these clinical aspects, future studies should focus on sampling across different age groups and follow users over time to see if these patterns hold true across their different life phases and contexts (Manoli et al., 2025; Xu et al., 2025). Finally, existing literature will also be important as it has a limited number of follow-up periods, and a high risk of bias, to develop evidence-based guidelines for the safe use of synthetic relationships in mental health (Sha et al., 2024).

CONCLUSION

This study concludes that parasocial AI companions are becoming an important part of the emotional and social lives of young adults. The results suggest that loneliness is a key motivation for using AI companions, prompting young adults experiencing loneliness to engage more with emotionally responsive AI companions. They can offer temporary relief, connection and emotional affirmation to individuals that struggle to connect with humans. The findings suggest, however, that the excessive use of AI companions could be associated with lower mental well-being, higher emotional attachment to AI agents as well as lower likelihood of social interactions in the real world. AI companionship is not a binary issue of good or bad, but a multifaceted one that can be both beneficial and problematic, the study underscores. Yet, its impact will depend on the extent of its use, the emotional tone of the users, and how users engage with AI as an adjunct or an alternative to human interactions. AI companions can help with emotional communication and provide temporary relief from loneliness, while being well-balanced. They can also foster the isolation and perpetuate unrealistic expectations of a never-ending availability of a companion who will not judge them if used excessively. The findings from this study have implications for mental health practitioners, teachers, researchers and developers. AI companion platforms should be designed with considerations for responsible design elements, such as usage awareness, warnings of emotional dependency, links and calls to crisis resources, and calls to human social interaction. Researchers should continue to investigate the impact of AI companionship on young adults in the future, using longitudinal and qualitative study approaches. The study concludes that AI companions have the potential to be helpful support but are designed and employed in ways that don't harm mental health and enhance rather than undermine, human relationships.

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