
24/7 AI COMPANIONS: THE RISE OF ALWAYS-ON, NEVER-REFUSING DIGITAL SUPPORT

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ABSTRACT

Since 2020, conversational - generative AI systems have transitioned from occasional utilities to persistent, relationship-like presences in everyday life. In parallel, educational and professional environments have increasingly normalized the use of AI for writing, inquiry, planning, tutoring, and self-regulation. This conceptual paper argues that “always-on” AI assistants are increasingly experienced not merely as tools but as digital companions: systems that are continuously available, personalized, and socially legible through natural language interaction. We synthesize interdisciplinary literature across human-computer interaction, cognitive science, educational technology, psychology, and governance to examine implications for (a) cognition and skill development via cognitive offloading, (b) emotional reliance and parasocial attachment, (c) temporal norms and expectations of immediacy, (d) family and developmental contexts, (e) trust, transparency, and epistemic integrity, and (f) institutional responsibility and governance in higher education. We propose a structured research agenda (20 questions) to support longitudinal and cross-sector investigations, emphasizing autonomy-preserving design and governance frameworks that mitigate dependency while enabling beneficial augmentation.

Keywords AI · Generative AI; · AI Companions · Cognitive Offloading · AI Trust · AI Transparency · AI Governance

1 Introduction

AI has rapidly shifted from a task-based tool to an always-available digital companion embedded in everyday cognition and decision-making. Today, when a question or idea arises, users often turn to a language model, enter a few prompts, and receive a response that feels immediate, coherent, and highly usable. This speed and apparent precision reshape how people think, learn, and communicate, normalizing instant support and lowering the friction of inquiry. At the same time, persistent reliance raises questions about cognitive offloading, trust, and autonomy. This paper examines key emerging dynamics and outlines priorities for future research.

During 2020-2025, the diffusion of generative and conversational AI accelerated across consumer, workplace, and educational settings. Rather than remaining task-bound, many systems now operate as ambient cognitive infrastructures, readily available for drafting text, exploring ideas, answering questions, summarizing sources, and maintaining continuity across conversations. Recent scholarship suggests that this shift reshapes not only productivity, but also norms of knowledge work, learning, and decision-making [5].

Simultaneously, research on social chatbots shows that users can form relational interpretations (e.g., “friendship,” “companionship”) even when they intellectually recognize the system as non-human [2];[15]. This paper extends that line of thought, suggesting that an increasing portion of AI applications is best comprehended through the concept of companionship - a socio-technical pattern characterized by constant availability, conversational closeness, personalized signals, and integration into daily routines.

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This paper offers a conceptual synthesis rather than an empirical report. It integrates interdisciplinary perspectives from human–computer interaction, psychology, education, and governance on persistent human–AI interaction. It further identifies the cognitive, emotional, social, and ethical consequences of “always-available” AI systems. It proposes a testable research agenda that focuses on long-term outcomes including skill retention, dependency pathways, family mediation, and institutional governance.

2 From Tool to Companion: Conceptual Foundations

A “tool” framing treats AI as an instrument activated for bounded tasks. A “companion” framing emerges when interaction becomes (a) frequent and conversational, (b) identity-relevant (users disclose personal context), and (c) emotionally or socially meaningful.

2.1 Relational interpretations in social chatbots

Social chatbot users often describe their relationships using interpersonal language [2]. These interpretations can develop even without deception: relational cues emerge from turn-taking, memory-like continuity, personalization, and the appearance of attentiveness. Mixed-method evidence from Replika users shows how engagement can move from novelty to ongoing relationship maintenance, including perceived emotional support [15].

2.2 Human-Like AI Design and the Risk of User Over-Attachment

Anthropomorphic features can increase social presence and engagement, but also intensify attachment and “sticky” usage. A large-scale text-mining study of chatbot communities highlights themes of emotional entanglement and the possibility of “digital entrapment” when systems are designed to sustain engagement [16].

2.3 The “never says no” property

A distinctive property of AI companions is asymmetry: the system is designed to be available, responsive, and nonjudgmental. This can be beneficial (low-stakes rehearsal, reflective dialogue) but it can also reshape user expectations of responsiveness in human relationships and institutional services, where limits and delays are normal. Companion AI therefore influences not only individual behavior, but also interaction norms (Guinrich and Graziano, 2025). Over time, this asymmetry may recalibrate users’ expectations of support, authority, and emotional availability, with implications for both interpersonal and institutional relationships.

3 Adoption Patterns and Institutional Normalization (2020–2025)

The educational domain is particularly sensitive because it shapes cognition, literacy, and epistemic agency. Reviews of AI in education highlight rapid growth, heterogeneous implementations, and a persistent gap between technological innovation and institutional governance [3];[8];[18];[21] [5] frame generative conversational AI as a cross-domain shift with implications for research practice, policy, and education that highlighting both opportunities and risks related to overreliance and integrity. In medical education specifically, [7] discusses how conversational AI changes learning, assessment, and professional development while raising questions about reliability and responsible use.

4 Cognitive Dimensions: Offloading, Skill Retention, and Autonomy

When AI is always there to help, people start relying on it for thinking tasks that they used to do on their own. This section looks at how this habit can both support learning and slowly weaken important cognitive skills.

4.1 Cognitive offloading as a mechanism

Cognitive offloading describes the shifting of cognitive work to external support [17]. While offloading can increase efficiency, it also changes learning conditions: practice, retrieval, and effort allocation may decrease when answers are always available. Risko and Gilbert’s review remains foundational for conceptualizing how tools reallocate cognition, even though it predates 2020; it is included here because later generative AI research often builds on this mechanism.

4.2 The cognitive paradox in education

Recent educational analysis suggests a paradox: AI may enhance lower-order outcomes (recall, synthesis) while undermining higher-order thinking if learners default to AI-generated solutions [11]. This is especially relevant when students habituate to immediate answers rather than engaging in effortful reasoning, revision, and epistemic checking.

4.3 Skill erosion vs. augmentation: a conditional view

The key scientific question is not “AI is good or bad for cognition” but under what conditions it augments versus erodes skills. Skill outcomes appear to depend on task type (routine vs. ill-structured), learner expertise, instructional design (scaffolded prompting vs. answer replacement), metacognitive engagement, and assessment alignment. Systematic reviews of AI in education emphasize variability in outcomes and the importance of pedagogical design rather than tool presence alone [3];[21].

5 Emotional and Social Dimensions: Support, Attachment, and Substitution

Many people are starting to use AI not just for tasks, but also for comfort, reflection, and emotional support. This section looks at how these interactions can feel helpful, but may also change how people relate to others and cope with loneliness.

5.1 Emotional reliance and the simulation of empathy

Users may turn to AI for reflection and emotion regulation because interaction is low-risk and always available. However, empathic communication by AI brings to surface a lot of ethical questions: if empathy is simulated without felt experience, what does “support” mean and what risks arise? [19] argue that empathic AI can produce consequential effects even without genuine empathy, requiring ethical scrutiny of how such systems are deployed and trusted.

5.2 Evidence on loneliness and companionship effects

Evidence is mixed and context-dependent. A large behavioral paper reports that AI companions can reduce loneliness, with mechanisms such as feeling heard mediating effects. Complementary preprint work by the same authors provides additional detail on mechanisms and longitudinal patterns [4].

Conversely, adolescent-focused work finds that a subset of students use chatbots for social-supportive conversations and that these users report higher loneliness and lower perceived social support than peers [9]. This suggests the possibility of selection effects (lonely users seek chatbots) and/or reinforcing loops (chatbot coping displaces other coping strategies), motivating longitudinal causal research.

5.3 Overreliance pathways in adolescence

A recent interesting study on arXiv maps adolescents’ narratives of addiction to AI digital companions into established behavioral addiction frameworks, identifying patterns such as tolerance, withdrawal, conflict, and relapse, as well as strong emotional attachment and difficulties in disengagement [14]. Although the study is based on self-disclosures on Reddit and therefore cannot support causal claims, it offers a first glimpse into how young users describe cycles of escalating addiction, perceived emotional comfort, and repeated failed attempts to reduce use. These findings help identify plausible psychological mechanisms that can guide future longitudinal and experimental research on overreliance and self-regulation in adolescent AI use.

6 Speed, Habit Formation, and Temporal Norms

Always-on AI creates a habit of asking questions and getting answers right away. Over time, this can change:

- Patience and delayed gratification (less tolerance for slow inquiry)
- Communication norms (expectation of immediate replies)
- Learning practices (preference for answers over processes)

This matters because education and research often require productive struggle, sustained reading, and iterative revision. The cognitive paradox literature suggests that immediate AI answers can reduce cognitive engagement if not counter-

balanced by instruction [11]. These shifts suggest that AI is a cognitive aid and also a temporal regulator that quietly restructures how people experience effort, delay, and attention.

7 Family, Childhood, and Intergenerational Mediation

AI is entering family life much faster than schools or parents can fully prepare for. Children encounter AI tools early, often at home, which means that everyday family practices quietly shape how these systems are understood, trusted, and relied upon. It seems that AI influence is a global issue not only in early education but also in higher education [18].

7.1 AI literacy and early education

A scoping review of AI literacy in early childhood education highlights the need for age-appropriate curricula, teacher capacity-building, and guidance on ethical and conceptual understanding (Su et al., 2023). Because AI companions are increasingly accessible on consumer devices, early exposure is plausible; thus, family mediation becomes a key variable affecting outcomes.

7.2 Family communication, privacy, and dependency concerns

Empirical work on AI and family communication identifies both perceived benefits (accessibility, personalization, translation) and concerns related eg. to privacy bias, dependency and bias of course. These findings support a socio-technical view: family context shapes how AI companionship is integrated, bounded, or normalized and how risks (oversharing, habituation, diminished interpersonal interaction) are managed (Alfeir, 2024).

8 Trust, Transparency, and Epistemic Integrity

When AI speaks confidently, it is easy for everyone to forget that it can also be wrong. And this is the point. As people start treating AI as a regular thinking partner, questions about trust, accuracy, and knowing when to doubt an answer become central.

8.1 AI-generated inaccuracies and truth assessment

A major challenge for AI companions is epistemic reliability: fluent outputs can be wrong. AOne of the biggest challenges with AI companions is reliability. Even when responses sound fluent and convincing, they may contain errors. Recent surveys on AI-generated inaccuracies in large language models describe why these mistakes occur and how they might be detected or reduced. In real-world settings, such errors do more than misstate facts: they can shape decisions, influence learning, and even create tension in social interactions when people treat AI output as authoritative [10].

8.2 Trust calibration in conversational agents

Trust is not simply “high” or “low”; it must be calibrated. Experimental HCI work shows that disclaimers and conversational style can affect how users calibrate trust in LLM-based agents [13]. Additional evidence indicates that user trust may not be uniquely inflated for LLM output relative to other AI-sourced snippets, but that accuracy meaningfully affects trust judgments [12].

8.3 Transparency, explainability, and human–AI teaming

In complex tasks, transparency and explainability support mental models and situation awareness. [6] argues that transparency and explainability play distinct roles in human–AI teams and are critical to appropriate trust and performance. For AI companions, the design challenge is to support users’ epistemic agency: prompting verification, exposing uncertainty, and discouraging uncritical acceptance.

9 Governance and Institutional Responsibility in Higher Education

Education is not only an individual practice; it is governed by policies, assessment systems, and institutional accountability. [8] frames AI adoption in education governance, emphasizing tensions between innovation, data practices, and social justice.

In higher education specifically, [18] stress that AI adoption in higher education must be examined alongside broader processes of digital transformation and governance. Variability in institutional strategies and policy maturity, combined with global inequalities in infrastructure, can amplify ethical risks and lead to fragmented practices across regions. This makes AI companionship not only a technological challenge, but a global governance issue.

10 Design and Ethics: Supporting Autonomy Rather Than Dependency

As AI becomes part of everyday life, the way these systems are designed starts to matter more than ever. When people interact with AI all the time, design choices do not just affect how easy a tool is to use—they shape habits, trust, and even dependence. This section looks at how features like interface design, feedback, and transparency can either support users in staying in control or quietly push them to rely too much on AI. The aim is to identify design approaches that sustain reflective thinking, epistemic responsibility, and user autonomy. The design of companion AI systems can either promote user autonomy or encourage dependency. Strategies that preserve autonomy at least should include:

- Friction for reflection: prompts that require users to articulate goals, constraints, and reasoning steps.
- Verification scaffolds: default source checking, uncertainty signals, and contradiction tests [10].
- Transparent limitations: clear disclaimers and memory boundaries; tested approaches to calibrated trust [13].
- Educational alignment: assessment that rewards process, justification, and reflection rather than output fluency alone. Also AI integration in communities must be treated as part of a broader digital transformation and governance process, not as a simple technological add-on [18].
- Age-appropriate protections: family mediation supports and AI literacy curricula [1];[20].

11 Research Agenda: Top-20 Questions for AI Companionship

As AI systems increasingly function as long-term companions rather than short-term tools, there is a need for a coherent research agenda that moves beyond isolated case studies toward systematic investigation. Current studies are fragmented across various domains, including cognition, education, psychology, and governance, often focusing on isolated effects without addressing the broader socio-technical transformation. To facilitate cumulative knowledge building and inform evidence-based policy and design, this section proposes a set of twenty research questions organized into thematic categories that encompass the cognitive, emotional, social, institutional, and ethical dimensions of AI companionship.

Cognitive Impact and Skill Development

1. How does long-term reliance on AI assistants affect retention of critical thinking and problem-solving skills?
2. Under which conditions does AI use shift from augmentation to functional dependency?
3. How does AI-mediated writing influence academic literacy and original knowledge construction?

Emotional Attachment and Psychological Wellbeing

4. Which psychological mechanisms underpin users' emotional attachment to AI companions?
5. How does emotionally responsive AI affect loneliness, anxiety, and self-reflection over time?
6. What long-term effects arise when AI becomes a primary source of emotional support?

Speed, Habit Formation and Temporal Norms

7. How does constant AI immediacy reshape expectations of response time and availability in human relationships and institutions?
8. How does habitual instant querying affect patience, delayed gratification, and tolerance for uncertainty?

Family, Childhood and Intergenerational Dynamics

9. What role does the family environment play in shaping healthy vs. problematic AI use patterns among children and adolescents?
10. How does early AI exposure influence children's understanding of authority, agency, and truth?

Education and Learning Cultures

11. How is the learning process transformed when students become accustomed to immediate AI-generated answers?
12. Which pedagogical models integrate AI while preserving epistemic agency and metacognitive skills?

Trust, Transparency and Epistemic Integrity

13. How do explainability and uncertainty signals affect users' ability to detect misinformation and hallucinations?
14. How does perceived AI accuracy shape users' evaluation of sources and willingness to verify?

Governance, Power and Institutional Responsibility

15. How do institutional governance frameworks mediate autonomy vs. dependency in higher education AI adoption?
16. What power asymmetries emerge between AI providers, institutions, educators, and students?
17. Which governance models best support consistent ethical practice across departments and disciplines?

Design, Ethics and Human Autonomy

18. Which design principles reduce reinforcement loops and behavioral dependence in companion AI?
19. How should responsibility be allocated when AI meaningfully influences learning outcomes or emotionally significant decisions?
20. Which ethical frameworks are most appropriate for regulating emotionally engaging AI systems used in education and daily life?

12 Conclusion

AI's evolution into an always-available conversational presence has shifted human–AI interaction from episodic tool use toward ongoing companionship. The implications extend across cognition (offloading and skill retention), emotion (attachment and simulated empathy), social norms (immediacy expectations), family dynamics (mediation and childhood development), epistemic integrity (hallucinations and trust calibration), and institutional governance (policy consistency and accountability). Current evidence suggests that benefits and harms are conditional—shaped by design, context, pedagogy, and governance. The proposed research agenda prioritizes longitudinal, interdisciplinary inquiry to distinguish augmentation from dependency and to guide autonomy-preserving design and policy.

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