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From "Assistant" to "Companion": Digital Character Design for Psychological Support among University Students

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Abstract. Digital characters are becoming increasingly human-like and responsive, and people's expectations for them are gradually shifting from "assistants" to "companions". Targeting daily psychological support for university students, this paper addresses a straightforward design question: in what identity should a digital character appear, and how should the scope of companionship be controlled? Grounded in emotional design theory, this study selects four products, namely Doubao, Replika, Character.AI and Xingye, for comparison from three dimensions: character positioning, visual representation and emotional interaction. Design practice is carried out on this basis. The resulting design features an approachable and natural youthful figure, moderate emotional responses and lightweight desktop companionship, striking a balance among listening, responding and basic assistance. This study argues that the core value of digital companionship lies in encouraging users to communicate while making them aware of the boundaries of such companionship.

Keywords: digital companionship, psychological support, character design, emotional design, university students

1. Introduction

With the advancement of artificial intelligence, digital characters are evolving from "assistants" that handle information retrieval and task support toward "companions" capable of continuous conversation and emotional response. Existing studies have shown that large language models and related chatbots are being adopted for psychological support among university students. Features such as round-the-clock availability and anonymity create new opportunities for everyday support [1]. Nevertheless, digital companionship is not a replacement for real-life relationships. Relevant research has found that university students rate the support delivered by AI companions lower than that from friends, family members and mental health professionals [2]. Accordingly, as digital characters take on the function of companionship, a plain design question arises: how human-like should a digital character be, and to what extent should it provide companionship?

Against this backdrop, the core research question raised in this paper is: how should digital companion characters be designed for scenarios of university students' psychological support? Specifically, such characters need to strike a balance between "instrumentality" and "emotionality".

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An overly instrumental design confines interaction to question-and-answer exchanges and fails to reach genuine emotional needs; excessive emphasis on intimate bonds may foster user dependence and blur the line between virtual companionship and real-world social contact.

This paper holds that designing digital companion characters is not merely about adding functions or pursuing higher anthropomorphism. Instead, it requires locating a suitable balance among functional assistance, emotional response and character boundaries. Norman's theory of emotional design examines human-product relationships at visceral, behavioural and reflective levels [3], offering a design framework for this issue. Combining literature review, case analysis and design practice, this paper compares four products — Doubao, Replika, Character.AI and Xingye — in terms of character positioning, visual representation and emotional interaction, and proceeds to develop a digital companion character for daily psychological support of university students.

2. Literature review

2.1. Review of research progress on the development of digital humans

Virtual digital humans are digital figures with human appearance features and interactive capabilities, constructed based on computer graphics, artificial intelligence, rendering and other technologies. As an important carrier for human-computer interaction in the metaverse, they represent a typical outcome of integrated technologies [4]. In recent years, research related to the development of virtual digital humans has mainly focused on three dimensions: technological evolution, industrial ecosystem and application scenarios. From the technical perspective, the creation of digital humans involves core procedures including modelling, driving and rendering, and their intelligence level relies on coordinated breakthroughs in natural language processing and deep learning. From the industrial perspective, the market size expands rapidly, the number of participating enterprises rises noticeably, and policies and capital also serve as major driving forces. From the application perspective, virtual digital humans have achieved relatively mature implementation in fields such as games, brand marketing and the media industry, among which virtual anchors play a prominent role in the integrated transformation of media. Besides, the long-term development prospect of virtual digital humans is closely tied to the evolution of the metaverse. As the metaverse ecosystem matures, its user base will keep expanding [4].

2.2. Review of theoretical research progress on the design of digital companion characters

Regarding design theories for digital companion characters, emotional design theory provides a vital analytical framework. Norman proposed that emotional design consists of three levels: the visceral level, the behavioural level and the reflective level, which correspond respectively to intuitive perceptions triggered by product appearance, interactive experience during use, and users' in-depth reflection on product meaning. This theory offers systematic theoretical support for the design of human-computer interaction products [3]. When applying this theory to research on virtual digital human design, some scholars have investigated task-oriented and identity-oriented virtual digital humans, and summarized key elements including character setting, visual image, behavioural interaction, user experience and emotional design. They argue that these elements jointly determine the capacity of digital humans to satisfy users' diverse cognitive, emotional, social and identity-related needs [5]. Building on this, that study further put forward design strategies such as adaptation to immersive visual experience, emotion-driven identity formation, and optimization of personalized media touchpoints [5]. In the dimension of human-computer emotional interaction,

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some scholars took the AI digital human Replika as a case and built a dynamic model of "emotional need – interactive behaviour – empathic effect". The study found that users interact with digital humans driven by emotional needs, and gain companionship, support and a sense of identity through empathy mechanisms. It also uncovered potential drawbacks including the commodification of emotion and anthropomorphic dependency [6].

In terms of practical applications of digital companion characters, existing studies have carried out valuable explorations from perspectives such as cyber intimacy among young people [7] and emotional companionship mechanisms for individuals with anxious attachment [8]. Current literature has discussed digital companion characters and their emotional interaction mechanisms from multiple angles. Nevertheless, design research targeting the specific scenario of psychological support for university students remains relatively scarce, and there is substantial room for exploring design strategies of digital companion characters tailored to this group. For this reason, grounded in the advancement of digital human technologies and theories of emotional interaction, this study concentrates on the scenario of university students' psychological support and explores design strategies for digital companion characters for this user group.

3. Case analysis of digital companion characters

To gain an in-depth understanding of current design practices for digital companion characters, this chapter selects four representative products, namely Doubao, Replika, Character.AI and Xingye, for case analysis. Developed by different teams and positioned for distinct markets, these four products show unique features in three dimensions: character positioning, visual image and emotional interaction. Together they can reflect the general landscape of digital companion character design at present. The selection of cases is mainly based on product representativeness, companion features of the characters, differences in interaction modes and coverage of domestic and overseas markets, so that the cases can support meaningful comparison in character positioning, visual presentation and emotional interaction.

3.1. Analysis of character positioning

The four products show a gradient shift in character positioning, ranging from "tool assistant" to "emotional companion" and further to "community-based character" (see Figure 1).



Figure 1. Comparison of character images of Doubao, Replika, Character. AI and Xingye

(Source: official platforms of respective products, compiled by the author)

Doubao adopts a dual-path strategy of "tool + companionship". After logging in, users are presented by default with multiple bots of different orientations, including writing assistants, study assistants and casual-chat virtual characters. It fulfils functional demands such as information

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retrieval and academic support, while also embedding emotion-oriented companion characters such as "Xiaoning" for users to choose. This integrated positioning gives Doubao an advantage in the range of available functions, yet emotional support is only one among its many features, and it has limited depth in the single dimension of companionship.

Replika focuses exclusively on the one-to-one "emotional companion" relationship. Each user gets one exclusive AI companion whose appearance, personality and the nature of the relationship can be customized. Research notes that chatbots, with customizable conversational partners, instant replies and low-pressure social interaction, deliver a distinctive relational experience for users [9]. Unlike Doubao, where tool functions and companionship coexist, Replika takes emotional companionship as its sole core. It builds deeper emotional bonds, and users tend to disclose more about themselves and show stronger reliance.

Different from the above two products, Character.AI operates as an open "role-playing platform". Users can create or select any character to converse with, covering a wide spectrum from historical figures to original creations. A joint 2025 study by Stanford University and Carnegie Mellon University (arXiv:2506.12605) surveyed 1,131 active Character.AI users. It found that although only 11.8% of respondents reported "seeking companionship" as their motivation, more than half (51.1%) described the chatbot as a friend, companion or romantic partner [10]. Character.AI does not lock users into a fixed companionship pattern; instead, it unlocks unlimited possibilities for character creation.

Xingye targets the domestic Chinese market and is positioned as an "AI content community". Unlike the individual role-playing on Character.AI, Xingye encourages users not only to interact with characters but also to create and share them. Community discussions form around these characters, laying the groundwork for an "human–AI–human" social network. This positioning builds a sense of group belonging, which sets it apart from Replika's private one-to-one bond. Meanwhile, the character is no longer an exclusive emotional projection for a single user.

Taken together, the four cases demonstrate that different character positioning leads to different usage patterns. Products with strong tool attributes prioritize task execution and information services, while those centred on emotional relationships highlight sustained interaction and companionship. For the scenario of university students' psychological support, we do not simply choose one over the other; an appropriate balance must be maintained. Therefore, this study defines the digital companion character as an everyday companion with a clear identity and stable personality. Its primary modes of interaction are listening, responding and moderate support, while a boundary is preserved between the digital character and real-life interpersonal relationships.

3.2. Visual image analysis

The four products adopt distinct visual strategies, namely "rapid generation", "detailed editing" and "dynamic immersion". Elements including character setting, visual image, behavioural interaction and emotional design jointly determine the capacity of digital humans to meet users' diverse needs [5]. Doubao emphasizes "generability". Users can generate an image simply through prompts, which brings the lowest operation threshold yet limited room for personalization. Replika and Character.AI focus on "editability". The former supports multi-dimensional customization of its 3D avatar, covering gender, hairstyle, skin tone, body shape and outfits. The latter enables full configuration of appearance, backstory and speaking style. After the launch of the AvatarFX model in 2025, it further supports converting static images into dynamic avatars. Xingye pursues "immersiveness". It provides three layers of customization: appearance, character profile and voice tone. With Live2D

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dynamic backgrounds and the "Heart Moment" function, the avatar can generate real-time emotional animations such as smiling and sorrow during conversations [11].

3.3. Emotional interaction analysis

The emotional interaction modes of the four products also form a gradient spectrum. Centered on voice interaction, Doubao has launched real-time voice call functions and prioritizes the refinement of emotional expression. Nevertheless, user behaviour indicates that it is mostly used for instrumental scenarios such as information retrieval, with few instances of in-depth emotional expression. A study examining Doubao from the perspective of social affordance found that although human-computer interaction can improve the effectiveness of emotional support, technical flaws may undermine such supportive outcomes [12]. Replika centres on text conversation and stresses the gradual accumulation of emotion within long-term relationships, though its interaction modality remains relatively limited. Character.AI highlights "role-playing" and "narrative immersion", allowing users to design characters whose tone shifts according to dialogue content. Existing research notes that Character.AI builds its product logic of "virtual intimacy" via the mechanism of "user co-creation — algorithm learning — emotional feedback" [13]. Featuring multimodal immersion, Xingye supports text, voice and video interaction, alongside long-term memory and customization based on a "five-dimensional personality model". A study targeting individuals with anxious attachment identifies that the "real-time response" and "retrieval of historical memory" of anthropomorphic agents serve as core mechanisms for emotional companionship [8]. From voice-based emotion recognition to text empathy and further to multimodal immersion, the four products show progressively richer interaction modalities and higher anthropomorphism in emotional responses. Meanwhile, risks emerge, including users' over-reliance on virtual relationships and blurred boundaries for real-world socializing. This delivers an important reminder for designing companion avatars for university students' psychological support.

4. Design of digital companion characters for university students' psychological support

4.1. Design positioning

This design targets the daily psychological support scenarios of university students. The digital character is positioned as an intelligent companion with lightweight companionship and basic assistance functions, focusing on psychological support demands arising from academic pressure, employment anxiety, interpersonal troubles and daily emotional expression.

From the case analysis in Chapter 3, it can be observed that when a digital human carries overly strong tool attributes, interactions usually remain at the shallow question-and-answer level and can hardly reach users' genuine emotional needs. By contrast, when a product overemphasizes intimate relationships, it may blur the boundary between virtual companionship and real interpersonal communication. Therefore, this design does not frame the character as a virtual partner or a professional psychological counsellor. Instead, it centres on three core functions: listening, responding and daily companionship. It delivers warm emotional support when users need it, while maintaining proper role boundaries. Following Norman's three-level theory of emotional design, this design adopts an approachable and friendly visual image at the visceral level to reduce the sense of distance; at the behavioural level, it responds to daily needs through natural conversational interaction and practical functions; at the reflective level, it demonstrates continuous interaction via sustained emotional responses and growth records, helping users review their own emotional shifts.

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It should be noted that the psychological support discussed in this study mainly refers to daily companionship, emotional expression and general support. It does not cover the diagnosis or treatment of mental illnesses and cannot replace professional psychological counselling services.

4.2. Character setting

Character setting forms the foundation for the personification of digital companion characters. Existing studies summarize character setting, visual image, behavioural interaction and emotional design as the core design elements of virtual digital humans [5]. On this basis, the character setting of this design follows the principle of moderate anthropomorphism and clear identity boundaries. The character holds stable personality traits: gentle, patient and empathetic, yet it explicitly informs users of its AI identity to prevent users from mistaking it for a real person. Relevant research identifies "anthropomorphic generation", "real-time response" and "retrieval of historical memory" as key pathways for emotional companionship of anthropomorphic agents [8]. Drawing on this framework, this study defines the following personality dimensions for the character: high empathy tendency, medium-to-high initiative, moderate sense of humour, and clear boundary awareness. The character adjusts its tone according to conversational contexts. It switches to a gentle listening mode when users express anxiety, and shifts to a rational analysis mode when users ask for advice.

Moreover, this design includes moderate personalized functions. Users may customize the name for the character, conversation styles such as "encouraging style" and "rational style", and partial appearance features, while the core personality framework remains unchanged. To stop the character from becoming merely an outlet for users' emotional projection, certain limits are placed on personalization. Users can adjust how the character speaks, but cannot change who the character is.

4.3. Visual image design

Visual image serves as the first touchpoint for users to build emotional bonds with digital companion characters. Considering the features of digital companionship scenarios, this design adopts a semi-realistic cartoon style. It retains recognizability of facial features and expressions while softening lines and colours to strengthen the character's approachability. The design preserves basic features of a young female figure, yet downplays exaggerated gender markers and stereotyped decorations to deliver a more natural overall look.

For the dynamic expression system, the character is equipped with rich microexpressions and body language: slight nodding while listening, blinking to signal understanding, and smiling for encouragement. These details make interactions more natural and emotionally warm. In terms of presentation on the interface, the character appears as a desktop companion. It stays on the user's desktop or the leftmost screen of mobile devices in a compact size, so users can start conversations anytime. This "present yet unobtrusive" display ensures continuous companionship and respects users' right to choose.

4.4. Interaction design

Interaction modes constitute the technical pathway to deliver emotional companionship. Drawing on the preceding case analysis, this design integrates strengths from the four products and builds a multimodal interaction system. First, text conversation acts as the core. Text conversation has a low operation threshold and fits various campus contexts. The character supports long-term memory. It can recall key information shared by users, such as academic stress and interpersonal troubles, and

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follow up appropriately in later conversations, realizing the emotional companionship pathway of "retrieval of historical memory". Memory content requires user authorization, and users can view, edit or delete such records at any time. Second, voice interaction works as a supplement. Following the voice strategy of Doubao, real-time voice calls are available. Voice interaction delivers a more natural companion experience when users cannot type conveniently, for example while walking or exercising, or when they seek more intimate emotional communication. Third, an active interaction mechanism is embedded. Companion virtual digital humans need active interaction settings. With user consent, the character may send lightweight greetings according to the time gap since last interaction or preset time points set by users, such as exam weeks or deadlines for papers. Sample greetings include "How is your revision going recently?" and "How was your day?" This brings users a sense of being cared for. Nevertheless, users can adjust the frequency and content of active prompts to avoid disturbance. Finally, regarding privacy and interface design, a privacy notice is clearly shown on first use. Functions for viewing, managing and deleting chat history are provided, and unnecessary data collection is minimized.

4.5. Companionship scenario design

University students' psychological support demands are closely tied to specific scenarios. This design develops companion functions around three typical scenarios: academic pressure, social anxiety and casual daily companionship.

Academic pressure scenario. Students tend to experience high stress around exam weeks and paper deadlines. Within this scenario, the character first responds to users' emotional expression through listening and open-ended questions. When users need help, it offers simple relaxation prompts or assists them in building reasonable study plans and schedules, combining emotional companionship with practical problem-solving.

Social anxiety scenario. To ease nervousness and discomfort in social interactions, the character provides a "social rehearsal" function. Users can simulate upcoming social situations with the character, such as group discussions, job interviews or club activities, and practise expression and coping skills in this relatively low-stress simulated environment.

Daily companionship scenario. During periods without heavy pressure, the character sustains casual companionship through light chats, sharing interesting content and keeping mood journals. This design further introduces a visual "emotion garden" feature in this scenario. Users' self-reported daily emotional states are visualized as flowers and other graphic elements. Long-term records form continuous visual changes to help users review their emotional trajectories.

4.6. Final design presentation

Built upon the prior analysis of design positioning, character setting, visual image, interaction modes and companionship scenarios, this study delivers a final design scheme of the digital companion character for university students' daily psychological support. To produce visual outputs, the author adopted generative AI tools for image generation following the confirmed character appearance, stylistic features and scenario settings outlined above. Generated materials were screened, revised and integrated to produce renderings of the character and its application scenarios (see Figure 2–4).

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Figure 2. Three-view drawing and expression design of the digital companion character

(Designed by the author; visual presentation completed with generative AI tools)



Figure 3. Interface design for interaction with the digital companion character

(Designed by the author; visual presentation completed with generative AI tools)



Figure 4. Rendering of the digital companion character on desktop

(Designed by the author; visual presentation completed with generative AI tools)

5. Conclusion and future outlook

Digital human technology is integrating into daily life at an unprecedented pace. However, as technology advances, people may sometimes feel lonelier. This study argues that digital companion characters built for daily psychological support should not merely pursue abundant functions or high

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anthropomorphism. Instead, they need to strike a proper balance among functional assistance, emotional response and role boundaries. On this basis, this paper proposes a design scheme mainly featured by a semi-realistic youthful cartoon avatar and desktop companionship form, and demonstrates visual outputs of the character, interaction workflows and application scenarios.

Admittedly, this research is limited to the design stage and lacks empirical validation from real users. Future work may adopt large-scale questionnaires or prototype deployment to further test the effectiveness of this character design, and explore its application potential within university mental health services.

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