Proceedings of CONF-CDS 2026 Symposium: Data-Centric AI Security: Securing Models, Learning Agents, and Autonomous Systems
DOI: 10.54254/2755-2721/2026.CH32664

PSYNAV: Exploring User Needs and Expectation and Designing AI Psychological Assistants

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Abstract. Mental health concerns have surged, highlighting the need for innovative solutions to enhance accessibility and effectiveness of support. This study investigates user expectations of AI-driven therapists and iteratively develops AI-based psychological assistants to cater to the growing demand for accessible mental health support. The researchers develop the PSYNAV system, an AI-driven web-based intervention, and comprises three distinct iterations, which include (i) a survey and interviews on users' demand for psychological intervention and support; (ii) a low-fi prototype codesigned with psychology students and computer science students; (iii) a high-fi prototype which can be accessed through the webpage to gain feedback and provide further improvement ideas. Each iteration contributes to a comprehensive understanding and refinement of the AI-driven intervention.

Keywords: AI-powered mental health assistant, mental health, artificial intelligence, natural language processing, user feedback, human computer interaction.

1. Introduction

Artificial Intelligence (AI) has progressively permeated daily existence, facilitating the creation and assessment of intelligent software and hardware entities known as intelligent agents. These agents perform tasks ranging from simple labor to highly complex operations. Within Human-Computer Interaction (HCI), chatbots represent a quintessential AI application, widely utilized and fundamental [1]. Defined formally as "A computer program designed to simulate conversation with human users, especially over the Internet" [2], chatbots—also termed smart bots, interactive agents, digital assistants, or artificial discourse entities—employ Natural Language Processing techniques to comprehend and engage in human languages [3]. Research by Abd-alrazaq et al. [4] indicates that despite the web-based deployment advantages, most chatbots (70%) remain implemented as stand-alone software. Web-based chatbots are advantageous for two primary reasons: they eliminate the need for users to install specific applications, thus preserving user privacy, and inherently offer superior cross-platform accessibility, unlike stand-alone applications requiring multiple iterations for different operating systems.

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Further analysis of chatbot architectures shows a significant reliance on decision trees (92.5%) for response generation, with only 7.5% utilizing machine learning approaches. This preference suggests a slower adoption of advanced AI methods in mental health applications compared to other sectors, such as customer services, where AI-driven chatbots are extensively employed [5,6]. Moreover, 87% of studies reviewed indicate that chatbots, employing predominantly rule-based methodologies, tend to initiate and control conversations, inherently limiting user interactions to predefined responses [7]. In addition, the shortage of mental healthcare providers exacerbates these technological limitations. Approximately 18% of U.S. counties report insufficient healthcare services, particularly for psychologists, therapists, and counselors, with rural and low-income areas facing the greatest deficits [8]. Globally, stark disparities exist: developed nations average 6.6 psychiatrists per 100,000 people, whereas low-income countries average only 0.1 psychiatrists per 100,000, underscoring the urgent need for approximately 1.18 million additional mental health professionals worldwide [9].

To address these challenges, we aim to develop and test a web-based therapist chatbot named PSYNAV using the OpenAI API and gpt-3.5-turbo model. OpenAI, an AI research organization committed to beneficial artificial general intelligence, provides GPT models noted for breakthroughs in natural language processing, facilitating input via complete sentences rather than limited keywords [10,11]. We selected the gpt-3.5-turbo model for its large training corpus, contextual coherence, smoother responses, and adaptability in tone and style through prompt adjustments, ideal for fine-tuning within the PSYNAV system [12]. The model effectively analyzes subtle emotional contexts and processes extensive literature efficiently, significantly reducing traditional training time, effort, and resource demands [12,13]. By integrating advanced natural language processing technology with practical applications, the chosen OpenAI model enables PSYNAV to deliver a smarter, more personalized, and accessible user interaction experience. This report outlines our development process, structured into iterations 1, 2, and 3, concluding with a feedback summary from user testing.

2. Iteration #1: learning about users' needs and experctations of AI psychological assistants

Knowing the fact that most countries have a high level of need concerning mental healthcare access, we conducted a survey to find out people's opinions on AI psychological assistance. Specifically, we investigated the extent to which people know about AI, the demand for AI psychological assistants, the expectations of AI psychological assistants, and the concerns of AI psychological assistants.

2.1. Survey design

The researchers all have computer science backgrounds, and all have high-intensity use of AI. In order to understand the focus and drawbacks of this AI project research, we sent out questionnaires to the public.

The questionnaire is divided into four parts: Basic questions, which surveyed people's knowledge of AI techniques. This set of questions showed us the requirements for such an AI psychological assistant; Functionality questions, surveyed people's expectations of AI psychological assistants. It helped us to design prototypes that meet users' demands; Privacy related questions, which investigated where people's bottom line is, providing certain restrictions on AI development; Other questions, which are about participants' age, gender, and some basic personal information.

Further, we asked participants for more ideas or opinions on AI psychological assistant.

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2.2. Participants

Participants in this survey included people aged 15 to 60+. They covered different genders and different occupations. At the same time, they have different levels of AI understanding and use backgrounds.

2.3. Findings

2.3.1. Wide acceptance and satisfaction - user adoption of AI an acceptance situation of AI psychological assistant:

Generally speaking, a significant number of people have already used AI technology, and most people expressed a willingness to try using an AI psychotherapist for counselling or therapy. According to our survey, more than 60% of participants have experiences of using AI technique before. Also, around 58% [14] of companies globally have adopted AI technology and they are using more advanced tools to improve efficiency. AI has become a central driver for innovation and effectiveness. This trend is also evident in the field of counselling and therapy. In that case, using AI to support can be an acceptable and popular way for the general public.

About three-quarters of participants (74.01%) said they would be willing to try counselling or therapy for AI mental health support. There is another survey from the World Economic Forum shows that about 74% [15] of participants would like to try artificial intelligence mental health assistants. With those acceptance data, we can have learned that AI psychological assistant has a high level of acceptance among the general public and that people are happy to try this relatively new way of solving some of their psychological problems.

2.3.2. Expectations and willingness - exploring functional expectations and self-exploration willingness

In the survey, our participants showed their expectations in different fields and their willingness of self-exploration by using the AI-supported mental health assistant. Figure 1 visualizes participants' functional expectations of the AI mental assistant were mood management and regulation, stress relief and coping, anxiety and fear management, emotional and relationship counselling and psychological crisis intervention and emergency support. The main focus was on stress relief and coping (76.27%), emotion management and regulation (72.88%), and depression and low mood coping (61.24%), and these results can provide guidance for developing the functions and services of the AI mental assistant.

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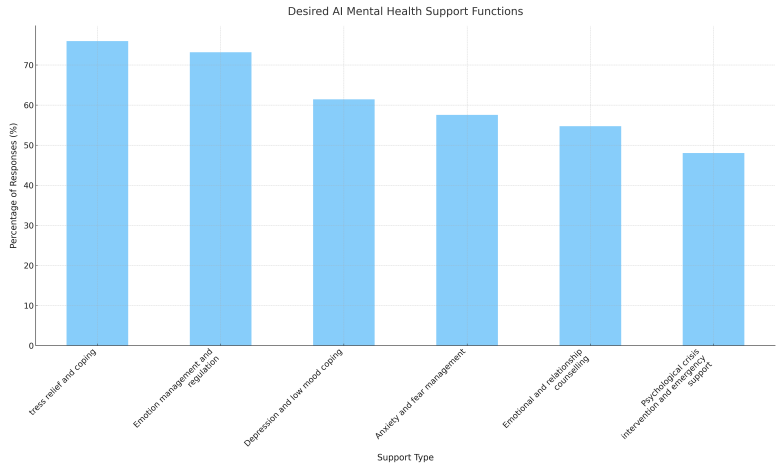

Figure 1. Desired AI mental health support functions

Also, an AI assistant should be both specialized and humane. For the professional part, participants are expected to have rich psychological knowledge and professional backgrounds, so that accurate and professional counselling and advice can be provided. As for the humanized part, 69.49% of participants believed that a certain degree of humanization can make communication more comfortable and intimate, which also shows that most people have a positive attitude towards AI psychological assistants showing certain human qualities. These perceptions need to be taken into account when designing and developing AI psychological assistants in order to balance the relationship between humanity and professionalism to provide a better service.

The majority of people chose yes to the question of whether they would be willing to explore their self-perception and identify potential psychological problems through communication with an AI psychological assistant. This indicates that most people believe that communicating with an AI mental health assistant can help them understand themselves better. 32.54% said they were uncertain about the effect and impact of such communication and needed to learn more. Only 8.88% chose to prefer leaving these issues to professionals. To sum up, most people believe that communication with AI psychological assistants can help them understand themselves better, but some have reservations about the effectiveness and impact of such communication, and a few prefer to seek professional help. So, in the future, more relevant information needs to be given to.

2.3.3. Reliability and privacy considerations - user trust and privacy concerns regarding AI psychological assistants

Trust and privacy are always important topics in technology, so in the data we collected, we learned that users want reliable and privacy-secure AI mental health assistants. About sixty percent of the participants expected that the AI psychological assistant would be based on sound psychological knowledge and practice and thus provide effective support. A quarter wanted to understand the algorithms and data sources behind them to determine their reliability.

In terms of user concerns about privacy, 55.93% of participants expressed concern about the leakage and misuse of their personal psychological information. Also, respondents wanted security measures to be in place to protect personal data and privacy and needed to have a clear understanding of how the data would be used and stored, as well as a credible mechanism for deleting or destroying personal information. For this issue, OpenAI promises not to train on any user data or metadata submitted through its API unless the user has given explicit consent. OpenAI also

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promises to adhere to the strict data security and privacy standards expected by the organization, as well as relevant laws and regulations [16]. Apart from that, privacy protections are considered as a more important part in the more personal issues (e.g., sexual health, family issue) and the "boundaries" of the AI psychological assistant (in what situations would the user like it to tell that "You need to consult a professional rather than continue to provide support"?). Therefore, at the level of trust and privacy, more attention and efforts are needed so as to address users' concerns and better guarantee the reasonableness and security of the system's privacy protection.

3. Iteration #2 low-fi prototype

After going through the survey, we built the first demo prototype. It is basically a Chatbot using OpenAI API with gpt-3.5-turbo model. In this section, we describe the co-design process with serval participants during the interviews.

3.1. GPT-3.5-turbo model overview

GPT-3.5-turbo is part of the Generative Pre-trained Transformer (GPT) family developed by OpenAI, built upon the Transformer architecture. The Transformer architecture leverages the self-attention mechanism, which can be formally represented as:

$$\text{Attention}\left(Q,K,V\right)=\text{softmax}\left(\frac{QK^T}{\sqrt{d_k}}\right)V$$

where Q, K and V represent the query, key, and value matrices derived from input embeddings, respectively, and d_k denotes the dimension of keys and queries. Self-attention allows the model to dynamically weigh the significance of different words based on context, enhancing its ability to generate coherent and contextually relevant responses.

The GPT-3.5-turbo model undergoes two main training phases: pre-training and fine-tuning. During pre-training, it learns from a vast corpus of unlabeled text by optimizing a language modeling objective, typically defined as:

$$L\left(\theta\right)=-\sum_t \log P(x_t|x_{t-1},\ x_{t-2},\ \ldots,\ x_1;\theta)$$

where x_t represents the current token, and θ denotes the model parameters. This allows the model to capture diverse syntactic and semantic nuances of human language. Subsequent fine-tuning adapts the model to specific tasks or domains, further refining its ability to generate precise and context-sensitive outputs. Additionally, GPT-3.5-turbo incorporates reinforcement learning from human feedback (RLHF), where human annotators evaluate and rank model-generated responses, guiding the model towards generating more human-aligned text.

Through its advanced training methods, extensive linguistic knowledge, and adaptive response capabilities, GPT-3.5-turbo excels in natural language understanding and generation, making it particularly suited for applications like psychological counseling chatbots. Its sophisticated contextual understanding, smooth conversational flow, and adaptability in tone and style contribute

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significantly to creating an empathetic, personalized, and effective user interaction experience in systems like PSYNAV.

3.2. Participants

During the interviews, we invited 5 different participants including a psychology student from the University of Toronto. The survey was done by face-to-face communication or online platform depending on the participants' preferences. The participants' occupation (as shown in Table 1) covers different fields. All of them gave contributive suggestions and play an important role in low-if design.

Table 1. Five participants cover different fields, ages. Some of them have experience of using AI. All the participants contributed to the low-fi prototype to varying degrees.

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Participants	Occupation	Experience of AI
P1	Student (psychology field)	Yes
P2	Student	Yes
P3	Designer	No
P4	R&D Engineer	Yes
P5	Teacher	No

3.3. Apparatus & procedure

The process started with a small demo with Chatbot, which can use OpenAI API (3.5 version) to achieve simple Q&A process. Due to the some of the participants had no AI-using experience before. We provide guidance and introduction about AI-based Chat functionality. We recorded the participants' reactions including feedback, discussions, and suggestions.

3.4. Result & findings

By conforming all feedback and suggestions from participants, two main improvements were implemented on the PSYNAV low-fi prototype. Individually, the Chatbot improvements and web page promotion were added.

3.4.1. Chatbot improvements

The chatbot functionality started with a simple version (shown in Figure 2). This chatbot had no initial settings, and no prompt from humans. All the responses are automatically generated by gpt-3.5-turbo model. As an AI-based system, it should be understandable and trustable [17]. However, this simple chatbot can only respond with something like " I understand your feelings, it is normal to be upset". The participants gave suggestions on the humanization and unprofessional problems of AI, which we summarized into the following three aspects and followed up the design.

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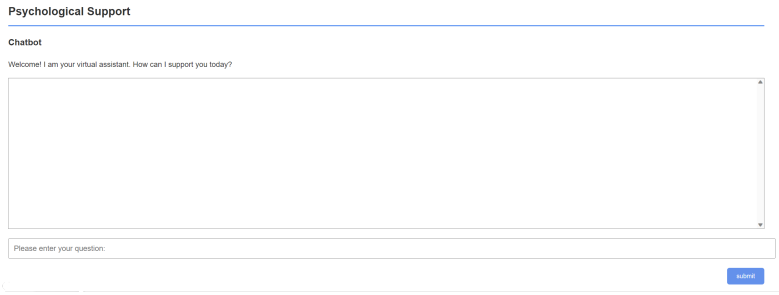

Figure 2. The simple version of chatbot. It can only respond with simple answer generated by AI

3.4.2. Webpage improvements

When it comes to improvements to our web pages, we have introduced two brand new features to further enhance the user experience and usefulness of the site.

First, we have added a new resource page dedicated to providing users with rich and diverse educational content. This feature is not AI-specific, but rather designed for users. On the resources page, users can enjoy a series of selected educational videos covering a wide range of fields of knowledge. In addition, we provide recommended reading material designed to stimulate users' minds and encourage them to actively participate in the self-healing process. Through these educational resources, users can independently choose what they want to learn, which can help alleviate psychological problems and achieve personal growth.

Second, we are committed to providing users with more access to professional help. We realize that sometimes psychological problems require more targeted guidance and support. Therefore, we have created multiple channels that allow users to access expert guidance from different universities. These channels can include online communities that allow users to connect with people who are going through similar experiences, as well as one-on-one consultations with professional psychologists via email. Through these professional support channels, users can choose the most suitable way to get substantial help and advice according to their needs.

The introduction of these two features significantly enhances the usefulness and user value of our web pages. The Resources page not only satisfies users' desire for knowledge but also provides them with opportunities for self-growth and healing. The Professional Help support provides a reliable support system for those who need more in-depth guidance. These improvements have enriched our website and created a more positive and healthier online environment for our users.

3.5. Design

3.5.1. Stress assessment

In our continuous efforts to enhance the human-like qualities of the chatbot and to establish a deeper understanding of each user's unique circumstances, we have incorporated an innovative stress assessment feature, following valuable suggestions from our participants. This feature serves as a dedicated space for users to engage in introspection and self-improvement, fostering a sense of self-awareness while also offering the benefit of allowing our AI to gain a comprehensive overview of the user's stress landscape.

By engaging with the stress assessment, users are encouraged to embark on a journey of personal reflection, enabling them to closely examine their stressors and emotions. This not only contributes to their own self-growth [18] but also equips our AI with invaluable insights into their stress-related

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experiences. The aggregated data from these self-assessments is then utilized as a foundational element in calibrating the chatbot's initial responses, thereby empowering the AI to engage with users on a more profound level.

Users can expect conversations that are not only more attentive and empathic but also deeply attuned to their personal narratives. Our ultimate goal is to provide a holistic platform that not only addresses immediate concerns but also nurtures lasting well-being through personalized, thoughtful, and caring exchanges.

3.5.2. Talkative and informative

When it comes to improving AI Chatbot's talkativeness and richness of responses, we adopted a series of strategies to achieve significant improvements by assigning virtual identities to AI Chatbot and setting limits [19]. In constructing a virtual identity for AI Chatbot, we enabled it to have a psychological assistant with specific personality traits to better interact with users. This not only makes the AI Chatbot's responses more personalized, but also enables users to establish an emotional connection and enhance the communication experience more easily. However, it also requires care in that we must ensure that the identity of the AI Chatbot is consistent with the content of its replies to avoid confusion [20].

In terms of design restrictions, we recognize the critical importance of ensuring that AI Chatbot replies are appropriate and ethical [21]. By setting clear rules and restrictions, we are able to prevent AI Chatbot from covering inappropriate or offensive content in its replies. This not only helps ensure the user experience, but also helps maintain the reputation and credibility of AI Chatbot. However, we also need to be careful not to make the restrictions so strict that they limit the AI Chatbot's ability to be creative and expressive in certain contexts.

Language enhancement is crucial to improving AI Chatbot's talkativeness. We took various approaches such as introducing more contextual information, varied sentence patterns and expressions, and a certain degree of randomness. This makes AI Chatbot's responses more diverse and creative, thus enhancing the richness of communication. However, we note that there is a trade-off in introducing randomness to avoid excessive randomness leading to incoherent responses [22]. Therefore, we need to find the right balance in the model generation process. To this end, we conducted several experimental tests to obtain a more reasonable linguistic randomness.

In summary, by giving virtual identities to AI Chatbots, setting explicit restrictions and enhancing the language, we achieved significant communication quality improvement. These strategies not only make AI Chatbot more talkative but also provide users with a richer and more personalized communication experience. However, this area remains challenging and requires further research and exploration to continuously improve the communication capabilities of AI chatbots.

3.5.3. Professional and reliable resource

In enhancing the professionalism and reliability of AI Chatbot, we not only relied on database support but also added more resources of expertise [23]. In the testing phase, we chose data from https://online.arizona.edu/news/10-mental-health-tips-online-students as a case study for testing. By introducing data from these specialized fields, the AI Chatbot was able to be more accurate and professional in answering user questions, especially in the context of the mental health field.

The advantage of this strategy is that by integrating resources from specialized and reliable sources, the AI Chatbot is able to answer users' questions from an authoritative and credible perspective, providing more in-depth and accurate answers. In addition, this helps to build AI

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Chatbot's credibility so that users are willing to rely more on the information it provides. However, when using external resources, we must ensure that the information cited is highly reliable and follows proper citation and usage norms so as not to introduce errors or infringe on intellectual property rights [24].

By combining expertise resources with AI Chatbot's language generation capabilities, we provide users with a richer and higher quality interactive experience. This approach not only makes the answers more compelling but also enables us to satisfy users with in-depth questions in specific areas.

4. Iteration #3 high-fi prototype

We summarized the three key functional features, two webpage improvements as well as a few expectations raised during the interview and PD part into a high-fidelity prototype of PSYNAV. We made it into an interactable webpage and invited participants to test it. The prototype integrates advanced technologies, including the GPT-3.5 model, to deliver personalized self-assessment analysis and real-time interactive chat functionalities. This part outlines the key features and design considerations of the PSYNAV high-fi prototype, emphasizing its role in facilitating user engagement, self-awareness, and meaningful AI-powered interactions.

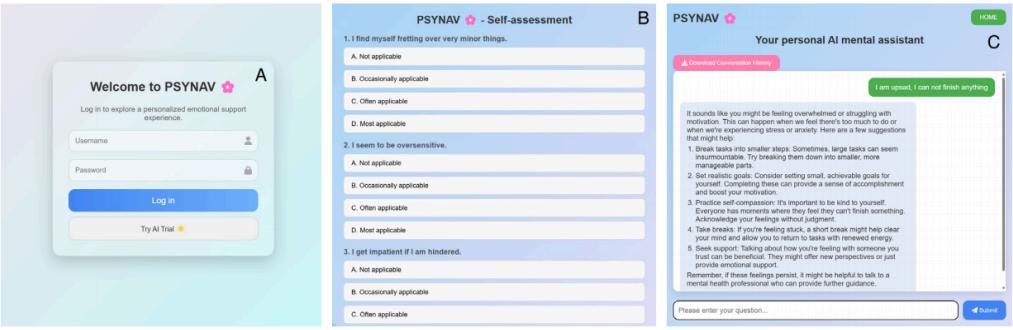

Figure 3. High-fi prototype. (A) a log-in page that identifies the user. (B) self-assessments that provide AI with a comprehensive overview of the user's stress landscape. (C) the AI chatpage of PSYNAV

4.1. Apparatus

Figure 3 shows the AI mental therapist system. We implemented the system as a set of webpages, which provides conveniences for further user testing. All inputs are given by the users directly, while all the responses and diagnoses are generated by the gpt3.5 model.

4.2. Tasks & procedure

4.2.1. Personalized and targeted mental health support through a log-in page: leveraging long-term support insights

The log-in page of PSYNAV embodies a pivotal paradigm shift in offering personalized and targeted services to diverse users. This innovative concept has its origins in the feedback and insights garnered during the interview phase, wherein participants expressed a profound need for "long-term support", which those with serious mental illnesses may urgently require [25]. This imperative

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resonates deeply with the prevailing discourse on mental health, which recognizes the efficacy of consistent and sustained interventions in nurturing well-being.

The foundational aspiration of PSYNAV's log-in page is to establish a seamless and responsive ecosystem that caters to the individual requirements and aspirations of users over time. A user's log-in credentials serve as a gateway to a dynamic repository that houses their diagnostic history, self-assessment outcomes, and personalized recommendations. This architecture is meticulously designed to accommodate a longitudinal perspective, ensuring that users' journeys are underpinned by continuity and progression.

At the core of this innovation is the preservation of diagnostic records and assessment results, which stand as compasses guiding PSYNAV's delivery of sustained and evolving support. The recognition that mental health journeys are non-linear and that individuals often traverse varied emotional landscapes underscores the significance of retaining historical data. As users revisit PSYNAV over time, their evolving cognitive and emotional states are juxtaposed against past records, enabling the system to proactively adapt its responses and interventions. This dynamic interaction between historical insights and real-time user inputs not only reflects the iterative nature of mental health but also fortifies the user's perception of PSYNAV as a dedicated and empathetic companion.

Moreover, the longitudinal retention of user data complements the informed analysis delivered by the GPT-3.5 model. As the model's prompts evolve through iterative interactions, the ability to draw from a comprehensive reservoir of prior assessments augments its contextual understanding, thereby enhancing the precision and pertinence of its insights. This amalgamation of AI-driven analysis with a longitudinal perspective is poised to engender a profound synergy, wherein the system's guidance remains rooted in accumulated wisdom while dynamically adapting to the nuanced currents of users' emotional landscapes.

4.2.2. The robust foundation of psynav's self-assessment: a holistic approach to mental health evaluation

The self-assessment component of the AI psychological assistant, PSYNAV, stands as a testament to its commitment to precision, authenticity, and user-centricity in the domain of mental health support. Drawing from authoritative sources and implementing a point-based system, this innovative approach offers users a robust mechanism for introspection and evaluation, while also enabling PSYNAV to deliver targeted and pertinent assistance based on the self-assessment outcomes.

The adoption of a point-based system within the self-assessment process signifies a strategic departure from traditional binary response mechanisms. Each response category is assigned a specific point value, generating a cumulative score that corresponds to distinct ranges denoting varying psychological states. This nuanced categorization introduces an element of granularity that serves to accurately reflect the intricacies of users' emotional landscapes. Unlike conventional linear scales, the point-based approach acknowledges that emotional states exist on a continuum, wherein discrete scores holistically encapsulate the complexity of mental well-being.

Once users complete the self-assessment, the resultant scores serve as a foundational dataset that fuels PSYNAV's subsequent engagement. These scores are seamlessly relayed to the AI system, which capitalizes on its advanced analytical capabilities to derive comprehensive insights from the nuanced responses. The intricate interplay between users' cumulative scores and the AI's analytical prowess ensures that the ensuing support and recommendations are neither generic nor prescriptive. Instead, the AI's responses are meticulously tailored to address users' unique psychological states, cultivating a sense of resonance and relevance that bolsters user engagement and trust.

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5. Ethical considerations

According to UNESCO [26], ethical considerations can help to identify and mitigate the risks and negative impacts of AI applications, such as invading people's privacy, manipulating their behavior, discriminating against certain groups, or making unethical choices. Ethical considerations can also help to promote the positive impacts of AI applications, such as enhancing human well-being, empowerment, and creativity [27]. As researchers, we make sure that all user inputs will be uploaded to the OpenAI API platform only. Please refer to OpenAI's privacy policy.

5.1. Preserving user privacy and accessibility: archiving dialogue histories in PSYNAV

The archival of dialogue histories in PSYNAV serves as a safeguard that echoes the burgeoning discourse on user data ownership and control. By providing users with the ability to download their conversations, PSYNAV effectively extends a level of data sovereignty, granting users tangible agency over their interactions and the information exchanged. This strategic maneuver aligns with emerging global data protection frameworks, which emphasize the need for individuals to have unfettered access to their personal data.

Furthermore, this archival approach aligns inherently with the preservation of user privacy. By facilitating offline access to dialogue histories, PSYNAV circumvents the need for repeated log-ins to revisit prior interactions. This not only streamlines user experience but also mitigates the potential vulnerabilities associated with prolonged online presence. The detachment of dialogue histories from real-time interaction bolsters user confidence, as the information remains accessible only to the user, and not to potential online threats.

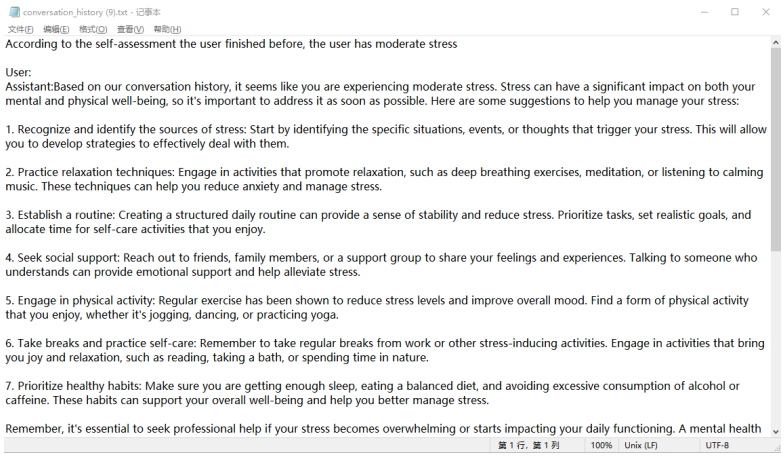

Figure 4. A sample of downloaded user conversation history. It records every input and output of PSYNAV's system

5.2. Enhancing user privacy: ephemeral dialogue histories in the PSYNAV interface

The adoption of the "read-and-destruct" feature within PSYNAV's dialogue interface aligns with contemporary discussions on the principles of data minimization and user-centric privacy. By ensuring that conversation records are expunged upon user disengagement, PSYNAV addresses potential concerns related to inadvertent data retention. This measure, in essence, underscores the commitment to a privacy-by-design ethos, where data retention is solely commensurate with user engagement.

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Integral to this privacy-conscious design is the option for users to actively choose data retention. This manifests through the provision of dialogue record download, local storage, or login alternatives. The interplay between user empowerment and data retention culminates in a harmonious balance that respects individual preferences. The dichotomy between ephemeral messaging and active data preservation acknowledges that the preservation of dialogue histories is an individual prerogative.

6. User testing

After concluding the High-Fi prototype design, we invited users to evaluate the web page. In this test evaluation, we invited users from different fields (including participants who had participated in SURVEY and INTERVIEW). The results of the test demonstrated strengths and weaknesses in the existing design, as well as directions and inspirations for future optimization.

6.1. Advantages

In user testing, the following strengths feedback was collected:

6.1.1. Dealing with basic psychological issues

Some users felt that the webpage excelled in dealing with the underlying psychological issues in their lives. They indicated that by using the resources and tools provided by the webpage, they were able to effectively alleviate the stress and anxiety in their lives.

Many users shared the help they received through the PSYNAV webpage, especially in coping with stress and emotional problems. They felt it was a good way to provide them with a variety of methods and strategies for self-regulation. Users appreciated the resources provided by the webpage, which could help them better manage their emotions and mental states. Not only does this help to improve their mental health, but it can also provide useful support when dealing with life's challenges.

Overall, user feedback emphasizes the effectiveness of the webpage in dealing with underlying psychological issues and providing methods of self-regulation. By providing users with practical tools and resources, the webpages were able to not only help them relieve stress but also promote positive mental health practices.

6.1.2. Adapting to the structure of a fast-paced life

Several users in the test generally agreed that the design of the webpage adapts well to the structure of their fast-paced lives. They indicated that in their busy daily lives, it was important to be able to access psychological support and information through the webpage at any time. The design of the webpage enables them to quickly access the content they need, making it easy for them to participate and benefit from it, both during their busy workdays and leisure time.

Users further noted that this chat is designed to be valuable not only in fast-paced lives but also for a wider range of people. This includes those who may not be able to participate in traditional counseling due to lack of time or other reasons. This flexibility and adaptability allow the webpage to provide useful psychological support to a wider range of people, regardless of how they organize their daily lives.

Overall, users were satisfied with the adaptability and usability of the webpage. Not only does the web page design excel in fast-paced modern life, but it also provides a convenient and flexible way

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for a wider group of users to access psychological support and help. The strength of this design lies in its ability to meet the needs of a diverse range of users, regardless of their lifestyles.

6.2. Shortages

6.2.1. Slow response time

Users mention slow response times to web pages. In the realm of psychological support, timely responses are critical to a user's emotional well-being. Reducing response times can increase user satisfaction and trust. This issue lies mainly in the processing of the user's dialog history. Due to the limitations of the API, we submitted the dialog history repeatedly, resulting in a longer dialog processing time and slower response time.

6.2.2. Quality of AI responses

Users noted that the web page's AI responses were more rigid and could contain grammatical errors. This may affect the user's experience of communicating with the AI and reduces the user's trust in the content of the responses.

We continue to invest in efforts to optimize the AI model to make its responses more natural and fluid and to reduce grammatical errors. The goal of this work is to achieve a more humanized conversational experience so that users feel like they are communicating with the AI as if they were talking to a real human being. By improving language expression, we expect to improve the quality of user interactions with the AI, making it easier for users to get the information and support they need.

6.2.3. Option of self-assessment

Users have expressed a desire to be able to choose whether to self-assess when using the web page. Currently, web pages may not offer this personalization option, which may lead to a lack of autonomy and comfort for the user during the experience. There was also some feedback on the quality of the content of the self-assessment, with better quality and content helping to understand users and serve them better.

7. Conclusion

After summarizing user feedback and comments after three iteration cycles, we successfully designed an AI-based psychological assistant called PSYNAV. Through this series of iterations, we have continued to optimize and improve for a higher level of human-computer interaction, aiming to provide users with more comprehensive and personalized psychological support.

The launch of PSYNAV represents a significant step forward in the field of mental health. We strongly believe that this technology will become a powerful tool for many individuals in need of psychological assistance. With PSYNAV, users will be able to access support tailored to their individual needs anytime, anywhere, whether it is in the process of emotional management, stress coping or psychological growth. This will broaden the accessibility of mental health resources to a great extent and is expected to reduce the strain on traditional counseling resources.

In the future, we will continue to work closely with mental health professionals and constantly learn from user feedback to optimize the performance and functionality of PSYNAV. Our goal is to break new ground and make PSYNAV an indispensable partner for users in the mental health field.

DOI: 10.54254/2755-2721/2026.CH32664

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