

## PAPER

# Therapy and Emotional Support through a Chatbot

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## ABSTRACT

In the context of advancing technological development, chatbots have emerged as an innovative tool in the field of mental health, offering new possibilities to provide therapy and emotional support in an accessible and convenient manner. The aim of this study was to develop and evaluate a chatbot implemented in a web application designed to provide emotional support to an adult population, specifically targeting young people and adults over the age of 18. The research focused on user satisfaction with the chatbot experience. Using a qualitative approach and non-random convenience sampling, we collected feedback on the chatbot's performance from 15 users through an online questionnaire. The results showed a positive assessment, with an average satisfaction score of 4.09 on a scale of 1 to 5. The participants expressed their approval of the emotional support provided by the chatbot, emphasizing the sense of understanding and trust generated by the therapeutic interventions and emotional support. In conclusion, this study successfully assessed user satisfaction with the emotional support chatbot, emphasizing its significance in the realm of digital mental health. The scope of this study was solely focused on user satisfaction. For future research, it is recommended to expand the scope to investigate the correlation between user satisfaction and therapeutic outcomes. Additionally, there is a need to tailor these systems to meet the specific emotional requirements of diverse user groups and enhance the efficacy of mental health patient care.

## KEYWORDS

chatbot, dialogflow messenger, emotional support, mental health, therapy

## 1 INTRODUCTION

Mental health is a crucial aspect of human well-being [1]. However, access to therapy and emotional support services may be restricted by geographic, financial, and social barriers. Emotional disorders, such as depression, anxiety, and stress [2], affect millions of people worldwide, significantly reducing their quality of life and productivity. A temporary intervention may prevent the progression to a more serious mental disorder [3]. In this sense, self-assessment and self-management tools

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for mental health are readily available to the public as supplementary resources to traditional mental health therapy and treatment approaches [4]. Technology has emerged as a powerful ally in addressing these issues, leading to technological advances that enable chat-bot apps to provide therapy and emotional support, offering effective and accessible solutions.

Mental health challenges are a priority in modern healthcare and particularly impact the working-age population, leading to negative repercussions in various social and economic spheres. Although traditional mental health services are effective, they are unable to meet the increasing demand, as evidenced during the early years of the COVID-19 pandemic [5]. Despite the efforts made in the field of mental health, there are still significant challenges, such as providing timely and adequate care to all those in need. Long waiting lists for consultations with qualified professionals can be discouraging for those seeking immediate help. Furthermore, the stigma surrounding mental disorders continues to be a significant barrier that prevents many people from seeking early and effective emotional support. In this context, conversational technology facilitates human interaction through smart devices, such as mobile phones, using natural language [6]. It has emerged as a solution that offers promising opportunities in the field of mental healthcare by enabling effective therapies [7], as well as providing accessible and personalized therapy and emotional support. Advances in artificial intelligence (AI) and natural language processing (NLP) have enabled the development of chatbots capable of understanding human language and responding empathetically and effectively. Moreover, these virtual assistants can provide guided therapies, offer educational resources, monitor the user's emotional state, and offer real-time support, all from the convenience of a mobile device or computer.

This study aims to develop a chatbot designed to provide therapy and emotional support to adults, with a particular focus on individuals who have reached the age of majority (over 18 years of age) and who face work responsibilities, academics, and other challenges typical of the adult stage of their lives. Furthermore, it assesses user satisfaction with the use of this chatbot to gain a deeper understanding of how this technological tool can impact and benefit this particular population. The use of chatbots in the mental health field, particularly for adults aged 18 and older, is justified by the increasing gap between the demand for psychological care and the availability of professionals to provide it. Chatbots offer an accessible solution that is available 24 hours a day and capable of maintaining privacy, which is particularly valuable for those who have reservations about seeking conventional help. Furthermore, in recent years, chatbots have experienced a significant surge in popularity [8] and can be valuable in offering support to individuals living in areas encountering challenges such as a shortage of mental health services, a lack of 24-hour support, difficulties in accessing services due to barriers, etc. [9]. This research aims to offer a comprehensive understanding of the potential and constraints of chatbots in emotional health. The findings could facilitate the greater adoption of these tools in clinical practice and lead to a substantial enhancement in the psychological well-being of individuals worldwide.

## 2 LITERATURE REVIEW

This section reviews the research related to the topic under study. By reviewing previous research, we can gain a deeper understanding of the effectiveness,

scope, and limitations of this innovative technology in the therapeutic field. This review enables the identification of best practices and approaches for developing a chatbot.

Park et al. [10] analyzed the influence of the chatbot's emotional expression on user satisfaction and their likelihood to reuse a chatbot counseling service, with a focus on mental health context. The researchers recruited 348 American adults to participate in counseling sessions where they interacted with two types of chatbots: those that provided factual information and those that expressed human emotions. The study found that the emotional tone of the chatbot significantly positively affected user satisfaction and the intention to reuse the advice service. Moreover, the willingness of users to disclose their emotions and their perceived intimacy with the chatbot were found to independently and consistently mediate the relationship between chatbot emotional disclosure and user satisfaction. These findings have significant practical implications for the development of chatbot counseling services in mental health and indicate potential psychological mechanisms underlying these dynamics.

Similarly, researchers [11] conducted a study with the aim of developing an analytical method using the theory of consumer value to evaluate the factors influencing user satisfaction and their willingness to continue using mental health chatbots during the pandemic. An online survey, which gathered 371 valid responses, revealed that personalization, entertainment features, education, and the pandemic context had a slight influence on user satisfaction and their willingness to continue using these chatbots. Interestingly, voice interaction did not significantly predict user satisfaction or their retention of these resources. This approach contributes to understanding how consumer values impact the adoption of chatbots in mental healthcare, emphasizing the need to enhance the theoretical framework in this area.

Similarly, researchers [12] conducted a study on mental health chatbots and their influence on user perception and satisfaction during the COVID-19 pandemic. The researchers utilized the theory of consumer value (TCV) to analyze data gathered from 295 users in Wuhan and Chongqing. According to the results, attributes such as personalization, entertainment, learning, and fitness have a positive impact on user experience and satisfaction. However, voice interaction is not very significant. As a result, they recommend that government agencies and AI service providers improve mental health chatbots and encourage their use in addressing mental health disorders in the general population during public health crises.

Furthermore, the Aroha chatbot was developed to offer practical tools based on cognitive behavioral therapy and positive psychology for managing anxiety, including tips for maintaining social and cultural connections and overall well-being [13]. It was launched in April 2020 in response to the Aotearoa lockdown that occurred in March of the same year. A trial was conducted with 393 registrations and 238 logged-in users, 127 of whom were in the 12–24 age range. The feedback they received motivated them to adjust and improve the chatbot's content and structure to better suit various conversational purposes. The process demonstrated the feasibility of providing tailored digital mental health support for specific, tailored-to-appropriate situations and underscored the importance of having a flexible and enabling architectural framework for the chatbot.

Similarly, the authors [14] studied the effectiveness of the mobile chatbot app Todaki on adults with attention deficits. Over the course of the study (September 2019–March 2020), 46 participants were divided into two groups: one group used

the application, while the other received an informational book. The chatbot group showed a significant decrease in attention deficits symptoms, especially hyperactive-impulsive symptoms and overall ADHD symptoms. Frequent users of the chatbot experienced improvements, but some reported issues with the flow of conversation. In summary, the study confirms that the chatbot is effective as a digital therapeutic tool for addressing attention deficit in adults. However, further research on a larger scale is necessary.

In their study, Wlasak et al. [15] aimed to assess the viability of a chatbot system intended to enhance users' self-motivation to walk for the purpose of improving their mental health. The system applied behavior change techniques and self-determination theory. 12 variants of the chatbot were created with different behavior-changing techniques, utilizing apps such as Telegram and Google Fit. Subsequently, a study was conducted with 102 participants who used the chatbot for a period of 3 weeks. The results demonstrate that the users were satisfied with the system and reported an increase in their autonomous motivation to walk.

Similarly, in collaboration with technology partners, young people, and expert stakeholders, they developed a chatbot for mental health and well-being that utilizes AI and NLP to provide evidence-based resources and support for well-being [16]. They emphasized the participatory process of co-designing with young people, providing examples of designing the conversation and content. It also explores the potential of these digital tools to support the mental health of young people in environments such as high schools or healthcare, concluding with insights gained and precautions to be taken into account.

The researchers in [17] carried out a study that focused on determining the feasibility of AI-powered platforms to support mental well-being, with a specific focus on the model called Leora. Leora is a conversational agent that utilizes AI to offer mental health support, focusing on mild symptoms of anxiety and depression. This tool provides accessibility, customization, and privacy, serving as a web-based self-care coach. While the significance of the model is emphasized, the ethical challenges related to the development and implementation of AI in mental healthcare, such as trust, bias, and health equity, are also underscored. To ensure effective and ethical use, it is essential to address these challenges and rigorously test them with the help of users to validate their effectiveness.

Furthermore, in a mixed-methods pilot study, researchers investigated the feasibility, acceptance, engagement, and efficiency of a chatbot named Otis, which is based on cognitive behavioral therapy. The study aimed to assess Otis as an early intervention for addressing health anxiety in older adults during the COVID-19 pandemic in New Zealand [18]. The users completed a 14-day program. Several factors, including health anxiety, general anxiety, and intolerance to uncertainty, were evaluated, before and after the 12-week intervention during a follow-up assessment. Although no significant decrease in health anxiety was found, qualitative analyses showed that participants benefited from the intervention. After the intervention and during the follow-up, there is evidence of significant progress in general anxiety, personal well-being, and quality of life associated with the use of Otis.

Simultaneously, Anmella et al. [19] presented the development, feasibility, and potential efficacy of Vickybot, a chatbot designed to detect, supervise, and reduce anxious-depressive symptoms and burnout, as well as to evaluate the risk of suicide in primary care patients and healthcare professionals. Various studies were conducted to assess the feasibility and effectiveness of the chatbot, including simulations that involved monitoring and individuals with mental health issues as users. The results

demonstrated that Vickybot was effective in detecting symptoms of anxiety and depression, as well as in identifying suicide risk. A potential reduction in burnout was also observed; however, no significant changes in anxiety or depressive symptoms were found.

Daley et al. [20] analyzed the involvement and efficacy of Vitalk, a mental health chatbot that reduces levels of anxiety, depression, and stress. Data from 3,629 users who participated in programs and engaged in written conversations with the chatbot was analyzed. The study found that increased engagement, as measured by the frequency of daily responses to the chatbot, was associated with a reduction in symptoms of anxiety and depression. While the results are promising, further research is necessary to fully comprehend the potential of chatbots in enhancing mental health within the population.

In conclusion, numerous studies have demonstrated the value of chatbots in mental health treatment, showing significant results and addressing various development methods. Some of these studies have also addressed the ethical considerations that need to be taken into account when developing a chatbot. Based on this information, the aim of this study is to create a chatbot that offers therapy and emotional support to individuals who are balancing work and study commitments.

## 3 METHOD

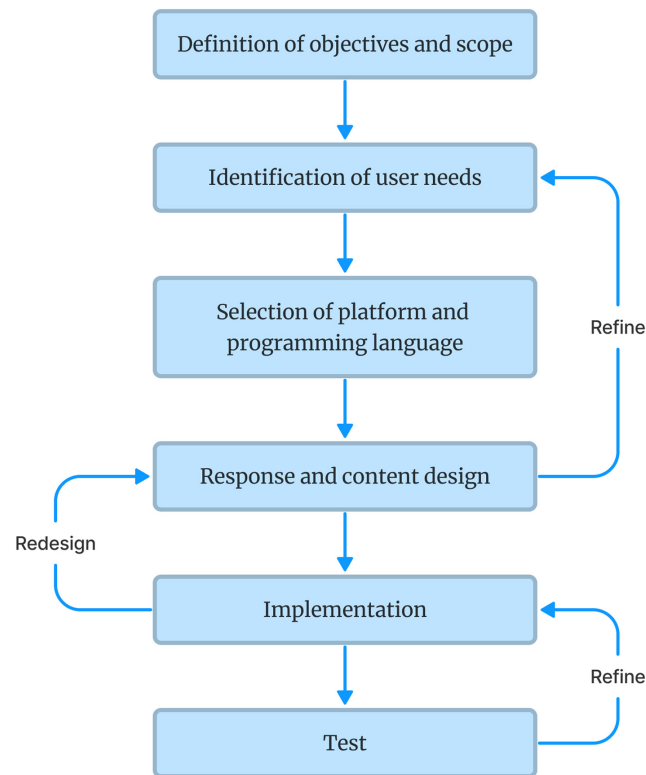
### 3.1 Research methodology and sampling selection

**Research methodology.** The research approach favored the quantitative method because it was necessary to quantify and measure user satisfaction numerically, enabling a more rigorous statistical analysis of the collected data. In this context, priority was given to obtaining quantitative data capable of providing specific and measurable information on user satisfaction with the developed chatbot.

**Sampling selection.** Non-random convenience sampling was selected because of the limited resources and time constraints. This sample method enabled the recruitment of participants in a more accessible and efficient manner, making it easier to gather qualitative data in a shorter period of time. Despite the non-random nature of the sample, precautions were taken to ensure that the sample reflected the diversity of users who interacted with the chatbot, thus providing a wide range of perspectives and experiences.

### 3.2 Chatbot development phases

The development of a chatbot for therapy and emotional support involves following a series of phases, as illustrated in Figure 1. These phases were evaluated and validated by experts using various metrics, rating each aspect on a scale of 1 to 5. The overall average rating was a solid 4.35, confirming the effectiveness of the approach. The method was evaluated based on its logical structure and coherence, flexibility and adaptability to different projects, user-centered approach, technical efficiency of the implementation, incorporation of a feedback loop, and continuous improvement, as well as security and testing considerations. Usability testing is essential to ensure the proper development of the chatbot.



**Fig. 1.** Phases of the chatbot development

Furthermore, to ensure the quality of the development process and optimize the performance of the chatbot, a comprehensive review was conducted at the end of each development phase. As shown in Table 1, this review was conducted according to pre-defined evaluation criteria to ensure alignment with the objectives of the development phase.

**Table 1.** Evaluation criteria for compliance with the development phases

Phase	Objective	Evaluation Criteria
Definition of objectives and scope	Validate that the objectives and scope of the chatbot are consistent with the requirements and goals of the project.	The chatbot's goals are clearly defined.
		The scope of the chatbot is appropriate and fits the needs of the target audience.
		The objectives and scope are consistent with the organization's overall strategy.
Identification of user needs	Ensure that user needs and expectations have been accurately identified.	Research and surveys have been conducted to understand user needs.
		User needs have been thoroughly documented.
		Possible use cases and interaction scenarios for the chatbot have been identified.
Selection of platform and programming language	Verify that the choice of platform and programming language is appropriate to achieve the chatbot's objectives.	The choice of platform and programming language has been justified based on the project requirements.
		The platform's capabilities for natural language processing (NLP) and the integration of external services have been considered.
		Security and scalability considerations have been taken into account.

*(Continued)*



**Table 1.** Evaluation criteria for compliance with the development phases (*Continued*)

Phase	Objective	Evaluation Criteria
Response and content design	Evaluate the quality and relevance of the content and responses provided by the chatbot.	The content is accurate and up to date.
		The answers are coherent.
		Strategies have been defined to handle inappropriate or sensitive questions.
Implementation	Validate the technical implementation of the chatbot and its ability to interact with users effectively.	The chatbot is implemented according to the technical specifications.
		The user interface is intuitive and easy to use.
		The chatbot is capable of understanding questions and commands in natural language effectively.
Test	Check the performance and robustness of the chatbot in a variety of test scenarios.	The chatbot responds accurately and consistently in test scenarios.
		Bugs and technical issues have been identified and addressed.
		The chatbot is capable of handling unexpected situations appropriately.

## 4 CASE STUDY

### 4.1 Define project scope and objectives

**Objective.** The therapy and emotional support chatbot aim to provide an accessible and effective tool to support individuals over the age of 18 who encounter a range of emotional and psychological challenges in their daily lives. This approach focuses on addressing the specific needs of this demographic, including managing work stress, addressing and managing their emotions, negative thoughts, and other situations common to adult life. This service provides a secure and confidential environment for users to seek solutions and find relief for their emotional concerns. The chatbot offers a convenient way to access therapeutic and emotional resources that can positively impact mental and emotional well-being.

**Scope.** The therapy and emotional support chatbot will cover the following topics:

- 1. Supportive therapy.** The chatbot will provide a secure and confidential environment for users to express and process their emotions. It will employ therapeutic techniques such as active listening and empathy to offer emotional support, validate users' experiences, and establish a trusting environment.
- 2. Guided cognitive behavioral therapy (CBT).** The chatbot will utilize CBT principles to assist users in identifying and addressing negative or distorted thoughts that can contribute to emotional disorders like anxiety and depression. It will provide practical strategies and tools to replace these negative thoughts with healthier and more constructive ones. This therapeutic approach was chosen because CBT has proven to be highly effective in treating mental health disorders [21]. Furthermore, this approach operates using pre-defined templates and exercises to provide cognitive support that can be customized to the specific needs of our target demographic.
- 3. Mindfulness and relaxation exercises.** The chatbot will guide users through mindfulness and relaxation exercises to help them reduce stress and anxiety and enhance their overall well-being. These exercises may include mindful breathing techniques, meditation, visualization, and muscle relaxation.

## 4.2 Identify the user's needs

Users have specific needs that require attention. They need a safe and confidential environment where they can express their emotions without fear of judgment. Additionally, individuals need to feel understood and validated in their experiences. They should seek out a therapist or emotional support professional who actively listens to them and shows empathy. Emotional support is crucial for clients to feel supported during the therapeutic process, as they receive encouragement and compassion. They may also need guidance, counseling, and practical strategies to address their emotional challenges and overcome obstacles. To accomplish this, user interviews were conducted, taking into account four dimensions (refer to Table 2).

These dimensions were validated by experts in therapy and emotional support, who rated them on a scale from 0 to 10 according to five fundamental aspects. First, relevance was ensured to make sure that the questions were highly pertinent and directly related to the interview's objective, thus significantly contributing to obtaining the necessary information. Second, clarity is important, as it ensures that questions are easily understood by respondents and avoids ambiguity and jargon. Impartiality, as the third criterion, ensured that questions did not suggest specific answers, allowing respondents to express their opinions freely and fairly. Fourth, coherence, focuses on the logical organization of questions and the natural flow of the interview to elicit sequential and coherent responses. Finally, objectivity focuses on avoiding biases that might influence respondents' answers and addressing issues in an impartial manner. Thus, Dimension 1 (interaction) stands out with a score of 50 points, emphasizing the relevance of the questions. Dimension 2 (content) scores 45 points, indicating the clarity of the questions. Dimensions 3 (accessibility) and 4 (expectations) received 37 and 45 points, respectively. In this manner, the interview instruments to be used will be validated.

**Table 2.** Questions focused on the user's needs

Dimension	Questions
Interaction	What type of interaction are you hoping to get from the therapy chatbot?
	What would you like the chatbot to do for you?
	Are you worried about the confidentiality and privacy when interacting with the therapy chatbot?
Content	Would you like mindfulness and relaxation exercises to be added as a feature of the therapy chatbot? If so, why?
	What type of therapeutic techniques or approaches you find relevant to address emotional needs through a chatbot?
Accessibility	What devices or platforms do you prefer for therapy chatbot (e.g., mobile app, website, messaging platform)? Explain
Expectation	Do you think that a therapy chatbot could be a main solution to approach emotional needs or you see it as a complementary tool for traditional therapy?

Figure 2 displays the networks created using the ATLAS.ti 22 software, based on its four dimensions. In terms of interaction, users emphasized the importance of keeping the conversation simple and easy to understand to ensure that they do not encounter any difficulties. Similarly, this enables it to provide customer satisfaction. On the other hand, when it comes to accessibility, it must be facilitated through the website and offer various options for access. It should be user-friendly. Accessibility is very important



because it enables the most effective way to access information. The content should focus on therapy and emotional support provided through a chatbot. This must be done in the simplest way possible for easy understanding and in a structured manner based on the level of complexity. The content must be carefully planned in a didactic and engaging manner. Finally, users expect the chatbot to provide support in reducing negative emotions, stress, and anxiety, among others issues. This approach would result in high user satisfaction. Similarly, users would recommend the chatbot to others.

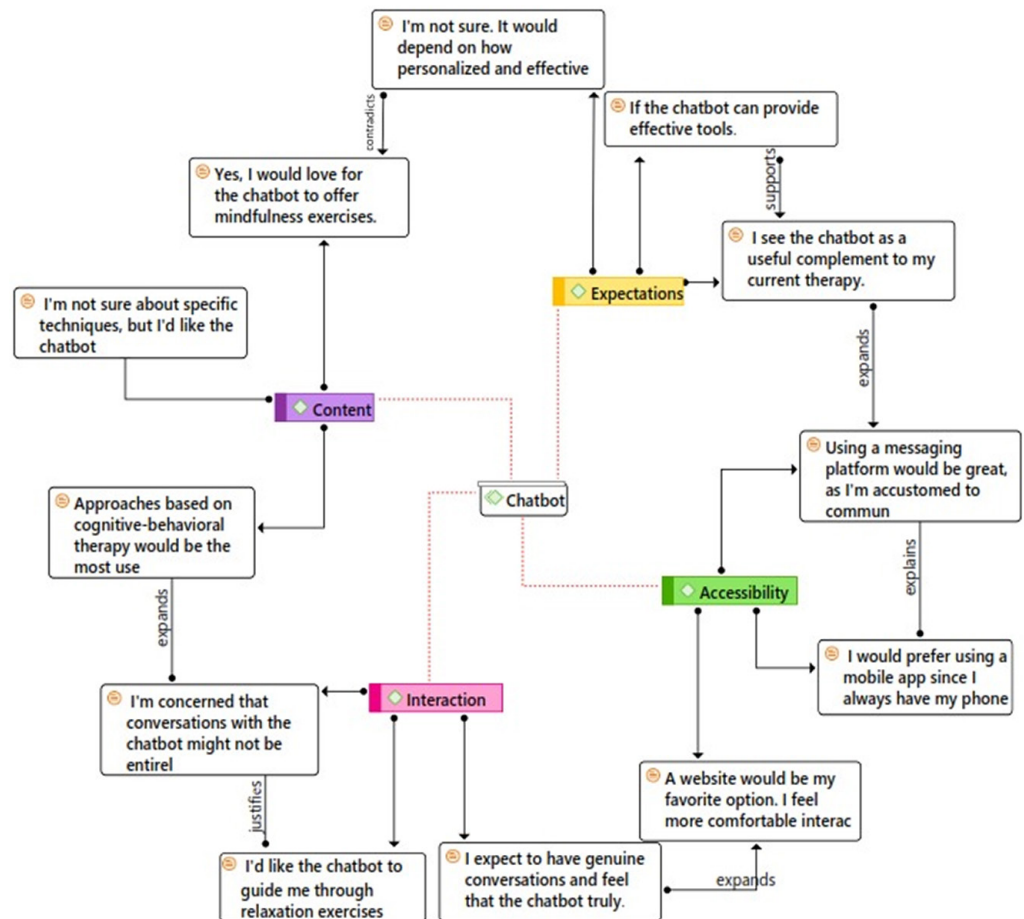


Fig. 2. Chatbot dimensions

### 4.3 Select the platform to build the chatbot

Dialogflow and Chatfuel are both platforms used for creating chatbots. When comparing its features, as shown in Table 3, Dialogflow stands out in three key aspects. First, it uses machine learning to enhance language comprehension and deliver more precise and contextually relevant responses. Secondly, it offers a wide range of integrations with other tools and platforms, making it easy to connect the chatbot with different systems. Third, Dialogflow allows for a high level of customization, enabling the chatbot to be tailored to the specific needs and preferences of the user. These advantages make Dialogflow a strong option for developing a therapy and emotional support chatbot. It offers advanced machine learning capabilities, flexible integrations, and a high degree of customization to provide a more effective and personalized experience for each user.

**Table 3.** Dialogflow and Chatfuel

Characteristic	Dialogflow	Chatfuel
Uses automated learning (ML)	It uses ML for natural language understanding and improve its comprehension.	It does not use ML.
Graphical interface	It provides an intuitive graphical interface to design and build chatbots.	It has a user-friendly graphical interface.
Integration	Various options for integration with other Google services such as Google Assistant, Google Cloud, Facebook Messenger, Telegram, etc.	It offers integration with other messaging platforms such as Facebook Messenger, Telegram and WhatsApp.
Level of personalization	It allows hyper-personalization with the possibility to create a logical and complex conversation flow.	It offers limited personalization options in comparison with Dialogflow.
Functionalities	It offers advanced features such as the detection of intentions, identify entities and the capacity to build multilingual chatbots.	It has features such as to send mass messages, message sequencing and the creation of automated responses.
Community and Support	Its community and complete documentation help the developers.	It has community and knowledge base, although its support may be limited compared to Dialogflow.
Price	It has a usage-based pricing structure, with a free and paid option, as well as payment plans based on user needs.	It offers a free option with limited functionality, as well as additional paid plans with broader features.

#### 4.4 Content design

**Conversation flow design.** Defines the chatbot's interaction flow, including the questions and answers that will facilitate the therapeutic conversation. The Dialogflow interface is utilized for creating and organizing the chatbot's intents, entities, and responses. By establishing a logical flow, users are guided through a series of questions and answers that cater to their emotional needs. This enables the system to deliver pertinent and customized responses tailored to the intentions and concerns of each user. Additionally, a thoughtful design of the conversation flow helps prevent confusion and misunderstandings, enhancing the user experience and fostering trust with the chatbot. By examining specific scenarios and potential emotional crises, we can develop suitable responses and resources to offer effective support in sensitive situations involving anxiety and depression.

**Web application design.** An easy-to-use user interface is created using HTML, CSS, JavaScript, and Flask, a framework written in Python, a high-level, object-oriented, multi-platform, and multi-paradigm language [22]. This way, it provides users with a pleasant and seamless experience. A well-crafted interface enhances the usability and accessibility of the chatbot, enabling a diverse range of users to interact effectively. Additionally, a visually appealing design conveys professionalism and instills confidence in the therapeutic services provided. Customizing the web interface enables users to personalize their experience according to their individual needs, thereby enhancing their engagement and satisfaction. Furthermore, the web interface can provide extra functionality, including support resources, which enhances the user experience and creates a welcoming and functional environment for users.

#### 4.5 Implementation

To effectively manage the interaction between the user and the chatbot, 50 intentions have been implemented. These are pre-determined actions designed to identify

and respond to the user’s intentions in a conversation. Each attempt is purposefully designed to guide the conversation, collect relevant information, and offer appropriate responses, enabling the chatbot to fulfill its intended function. These efforts are crucial elements in establishing a cohesive and fulfilling user experience, aligning with the objective of delivering emotional and therapeutic support.

Figure 3 illustrates a subset of the 50 defined intents aimed at understanding and addressing users’ emotional and psychological needs. The efforts aim to welcome, assess the emotional state, and provide coping strategies, among other things. Each of these attempts serves a specific purpose within the therapy and emotional support chatbot, helping to create a compassionate and effective conversational environment that adapts to the emotional needs of users.

Figure 4 displays the code provided by Dialogflow for seamless integration with the web application. This code can be added to the previously designed web application. In this integration, the home screen of the chatbot is customized, including the title, icon, and other aspects. This configuration enables you to directly call the API to send requests and receive responses from the application. By integrating the web application with the developed chatbot, various benefits are obtained. These include real-time interaction with users, providing instant responses, and creating an interactive experience similar to a live conversation. The 24/7 availability ensures that users can access the app whenever they need emotional support. Furthermore, the integration enables the handling of a large number of users in a scalable and efficient manner.

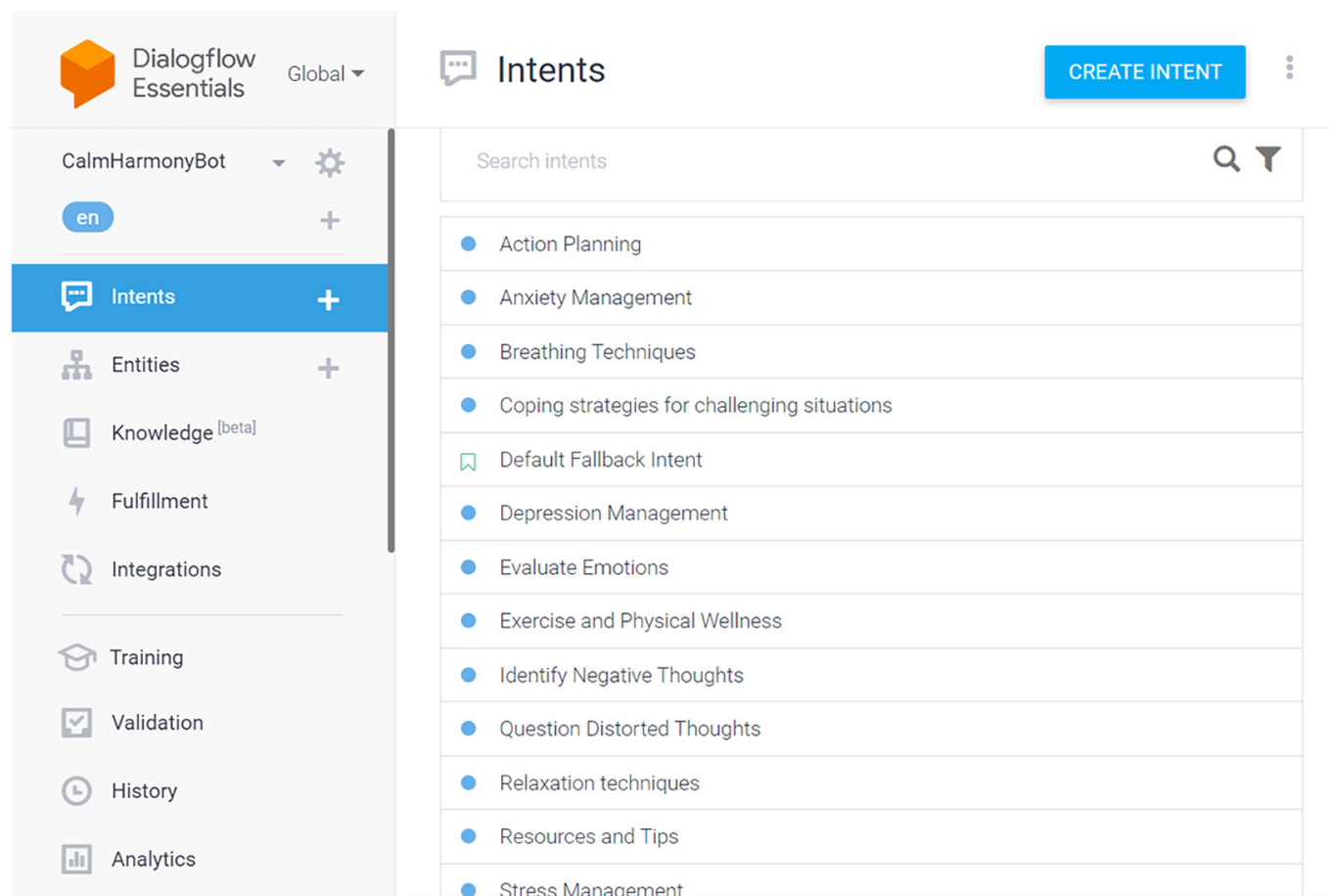


Fig. 3. Intent settings

```

<!-- Integration of the ChatBot to the website -->
<df-messenger
  intent="WELCOME"
  chat-title="CalmHarmonyBot"
  chat-icon ="/static/icon-bot.png"
  agent-id="e449..."
  language-code="en"
></df-messenger>
<!-- Script -->
<script src="https://..." ></script>

```

Fig. 4. The integration of the website with Dialogflow messenger

## 4.6 Test

The chatbot evaluation was conducted using a questionnaire consisting of 10 questions (refer to Table 4) and a 5-point Likert scale (1: strongly disagree, 2: disagree, 3: neutral, 4: agree, 5: strongly agree).

Table 4. Satisfaction questionnaire

No	Item
1	The chatbot is useful to address emotional needs.
2	The chatbot provided relevant and adequate responses based on my questions or inquiries.
3	I felt that the chatbot clearly understood my messages and emotional expressions.
4	I felt heard and understood by the chatbot during my interactions.
5	The chatbot provided resources and useful tools to manage my emotions or challenging situations.
6	The chatbot built trust and confidence through the therapy and emotional support given.
7	The interaction with the chatbot was easy and simple.
8	The chatbot offered levels of personalization with its answers and therapeutic approach.
9	I would recommend the chatbot to others in need of therapy and emotional support.
10	Overall, I am satisfied with the chatbot experience.

## 5 RESULT

### 5.1 User interface

The therapy and emotional support chatbot offers a welcoming, mobile-friendly interface, as shown in Figure 5. In this introductory interface, the chatbot's function is described in detail, providing the user with a clear understanding of how they can benefit from using it. When integrated into the app or website, the chatbot automatically displays an introductory message upon loading, ensuring a seamless interaction from the start. In addition, the chatbot possesses comprehensive knowledge of various emotional topics and provides access to useful resources, enabling users to obtain relevant information and the support needed to manage their emotions and navigate challenging situations.



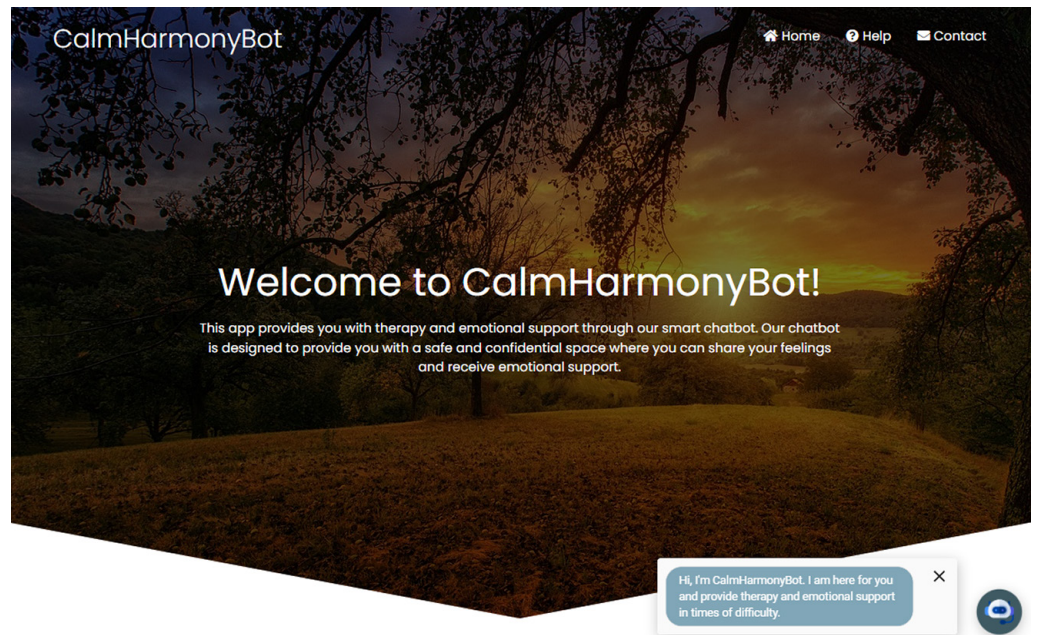


Fig. 5. Welcome interface

Figure 6 clearly and effectively presents the interaction between the user and the chatbot. Users can interact with the application anonymously and without having to register. The user has the opportunity to describe their emotional state, and in response, the chatbot offers advice, recommendations, and additional resources such as music and videos. This personalized interaction allows the user to receive tailored support adapted to their specific needs, facilitating the emotional management process and providing a more comprehensive and enriching therapeutic approach.

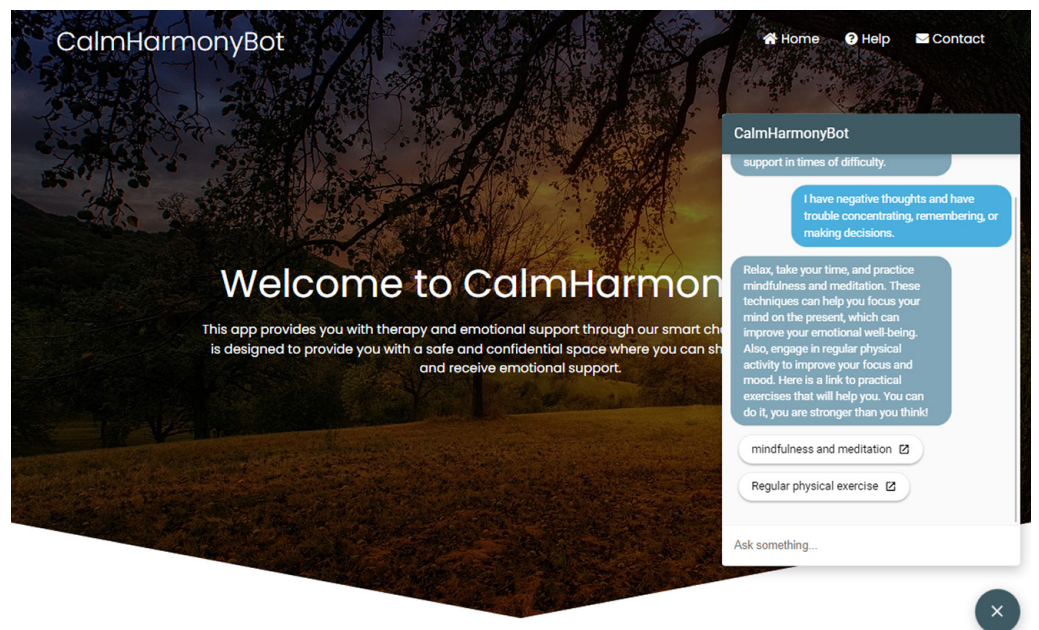


Fig. 6. Interaction with the chatbot

## 5.2 User satisfaction evaluation

For the evaluation, 15 users were selected using non-random convenience sampling. Table 5 presents the results of the satisfaction evaluation conducted by 15 users, who rated their satisfaction on a scale from 1 to 5, where 1 represents “very dissatisfied” and 5 represents “very satisfied.” The data was analyzed using descriptive statistics. The findings provide valuable insights into users’ perceptions of the therapy and emotional support chatbot.

The evaluation results highlight the overall positive user satisfaction with the therapy and emotional support chatbot, as it received an overall mean rating of 4.09 with a standard deviation (SD) of 0.616. Users found the chatbot helpful and appreciated its relevant responses, highlighting its ease of use. However, there was some variability in the perceived emotional understanding and personalization of responses, suggesting potential areas for improvement in these aspects. Overall, the majority of users expressed satisfaction and would be willing to recommend the chatbot to others in need of therapy and emotional support, indicating a positive value in the overall user experience. These findings provide opportunities to optimize the service by focusing on emotional understanding and personalizing responses to achieve even greater user satisfaction.

In addition, the minimum and maximum averages in the evaluation provide crucial information about the weakest and strongest areas of the therapy and emotional support chatbot. In this context, the minimum average score of 3.67 is observed in the question related to the chatbot’s understanding of messages and emotional expressions, indicating that some users may not feel fully understood in their interactions. On the other hand, the maximum average of 4.93 is observed in the ease and simplicity of the interaction, highlighting that the usability of the chatbot is an outstanding aspect of the experience. These results emphasize the importance of enhancing chatbots’ emotional understanding to effectively address users’ concerns while also preserving and reinforcing the simplicity and user-friendliness that users appreciate.

**Table 5.** Satisfaction evaluation results

Id	Item	Average	SD
1	The chatbot is useful to address emotional needs.	4.40	.507
2	The chatbot provided relevant and adequate responses based on my questions or inquiries.	4.60	.507
3	I felt that the chatbot clearly understood my messages and emotional expressions.	3.67	.488
4	I felt heard and understood by the chatbot during my interactions.	3.80	.414
5	The chatbot provided resources and useful tools to manage my emotions or challenging situations.	3.87	.352
6	The chatbot built trust and confidence through the therapy and emotional support given.	3.73	.458
7	The interaction with the chatbot was easy and simple.	4.93	.258
8	The chatbot offered levels of personalization with its answers and therapeutic approach.	3.73	.594
9	I would recommend the chatbot to others in need of therapy and emotional support.	3.80	.414
10	Overall, I am satisfied with the chatbot experience.	4.40	.507
Total		4.09	.616



## 6 DISCUSSIONS

The study assessed user satisfaction with a chatbot that offers therapy and emotional support through supportive therapy, guided CBT, and mindfulness and relaxation exercises. The results showed an average satisfaction rating of 4.09 with a standard deviation of 0.616, indicating a high level of user satisfaction. Previous research, such as the study by Park et al. [10], emphasizes the positive influence of emotional expression by chatbots on user satisfaction, affirming the efficacy of the therapeutic strategies in our chatbot. Additionally, our findings are consistent with studies that have utilized the theory of consumer value, which highlights personalization and content diversification as crucial factors in influencing user satisfaction [12]. However, it is noteworthy that previous studies [11], [12] indicate that voice interaction has a minimal effect on user satisfaction. This suggests that while emotional expression and personalization are important, greater attention should be given to improving the interaction mode to enhance satisfaction. Consistent with Aroha's example [13], the effectiveness and relevance of the chatbot for ever-evolving mental health resources depend on its flexibility and adaptability to user feedback, highlighting these traits as essential factors. Taken together, this study makes important contributions to the field of mental health chatbots. It provides valuable insights into user satisfaction, emphasizes the significance of emotional expression and personalization, and identifies the need to enhance voice interaction and maintain adaptability in the design of these resources.

## 7 CONCLUSIONS

The aim of this study was to create and assess a chatbot for providing therapy and emotional support while analyzing its effectiveness and limitations. An online satisfaction questionnaire was utilized to gather data from users, and the results indicated a positive outcome. With an overall average satisfaction rating of 4.09 out of 5, users expressed satisfaction with the experience provided by the chatbot. The friendly, intuitive, and mobile-friendly interface features were highlighted in the successful implementation of the chatbot. The significance of this finding lies in the progress it represents for mental health, offering a valuable and convenient option for those in need of emotional support.

One of the main limitations of this study is the small sample size, which includes only 15 participants. While the obtained results provide valuable insights into user satisfaction with a chatbot for therapy and emotional support, it is important to note that this assessment only offers insights into user satisfaction. Further research could explore a broader range of measures, such as therapeutic effectiveness, improvement in users' mental health, long-term retention, and comparison with alternative treatment methods. Additionally, conducting longitudinal studies that enable ongoing monitoring would improve our understanding of how user satisfaction changes over time and the lasting effects of interacting with the chatbot. Broader research in these areas would provide a more comprehensive understanding of the benefits and impact of mental health chatbots on user well-being.

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