

HS-202

Human Geography

& Societal Needs

Group-49

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BTS(Behind the Smile)



Abstract



In recent years, the pressure of academics, social expectations, and an increasingly digital lifestyle have led to a significant rise in stress, anxiety, and emotional fatigue—especially among students. Many individuals silently struggle with these challenges, often without seeking help due to fear of judgment, stigma, or simply not knowing where to begin.

To bridge this gap, we created **BTS(Behind the Smile)**, a friendly, AI-powered App designed to provide emotional support and mental wellness guidance. Our App engages users in empathetic, human-like conversations, helping them manage stress, reflect on their emotions, and practice mindfulness and it connects them with a medical counselor.

Through a campus-wide survey, we found that a large number of students are open to using anonymous digital tools for mental health support. This feedback shaped the features and tone of our App, which aims to offer a safe, non-judgmental space for those feeling overwhelmed or emotionally drained.

Problem Statement



Mental health problems such as stress, anxiety, and depression are becoming more prevalent among students, but stigma and lack of accessible support mean that many do not seek help.

Origin of the Problem



The origin of **BTS** was not in a laboratory test or technical workshop, but in the day-to-day lived experiences of campus life. The initial discussions as a joke in hostel and library study group slowly disclosed a disconcerting trend: numerous friends of ours were struggling with mental health issues silently but seemed outwardly functional. Late at night, after dinner, there was a discussion in the mess about how one of our friend had withdrawn from social activities over the course of several weeks. Another reported about a roommate who was up until 4 AM, having been unable to sleep because he was worried about academics. These weren't unusual occurrences—they were symptoms of an endemic problem within students throughout the campus.



Our findings were supported by scientific research, with studies showing that chatbots can have a significant impact on mental health referrals, especially among groups less likely to access conventional help. A study reported that AI-powered mental health platforms experienced referral boosts of 179% among nonbinary individuals and around 40% among minority ethnic groups. This information indicated that online solutions could reach students who otherwise would not speak out about their issues.

Survey:

We carried out large-scale surveys with 50+ students from various departments to measure what we were seeing anecdotally. The findings were stark: 84% said they experienced regular stress, and academics was the main cause. More significantly, 72% of the respondents said they would rather use an anonymous chatbot than go directly to a counselor or therapist. This confirmed our hypothesis that stigma is still a major obstacle to seeking help.

What especially resonated with us was the inconsistency in current mental well-being tools. Professionally crafted though they were, several commercial offerings came across as clinically bland or culturally irrelevant to the Indian student reality. As one of our survey respondents pointed out: "These apps don't get the pressure of competitive exams or family expectations here."

More research showed that complaints regarding poor responses and a lack of cultural relevance were prevalent with current chatbots, with users feeling "loss of interest" when responses seemed generic or western-oriented. This was the motivation for something that would be able to grasp local parlance, exam stress of the Indian education system, and domestic relations unique to our environment.

Notably, we discovered that timing is essential—most students indicated needing support at late evening hours (between 12–2 AM or past 2 AM), when human counselors are not present. A chatbot that is 24/7 available can cover this essential gap, offering help at moments of vulnerability.

The familiar cycle we've seen—suffering mentally, with lack of willingness to seek help—served as the basis of our project. BTS came into existence not as an alternative to care from professionals, but as an intermediary between isolation and treatment created by students attuned to our particular pressures on campus.

Methodology Adopted:

Anonymous Online Surveys: We created an in-depth Google Forms survey on sleep habits, stressors, help-seeking, and attitudes towards online mental health care. This was sent to more than 50+ students from different departments.

Focus Group Discussions (FGDs): We organized three structured peer group discussions with 8-10 students per group to obtain qualitative information about mental health issues and possible solutions.

Literature Review: We examined current research on chatbot interventions for mental health, with regard to efficacy, user experience, and implementation challenges.

App Analysis: We considered five of the most widely used mental wellness applications to determine strengths and weaknesses in their treatment of student mental health.

Through this mixed-methods method, we identified a definite necessity for an emotionally supportive app that is convenient, stigma-free, and culturally sensitive to the distinct mental health issues of Indian students. BTS was envisioned as such a solution—a digital friend who hears without judging, available at exactly the moments when students are most in need.

Detailed Description



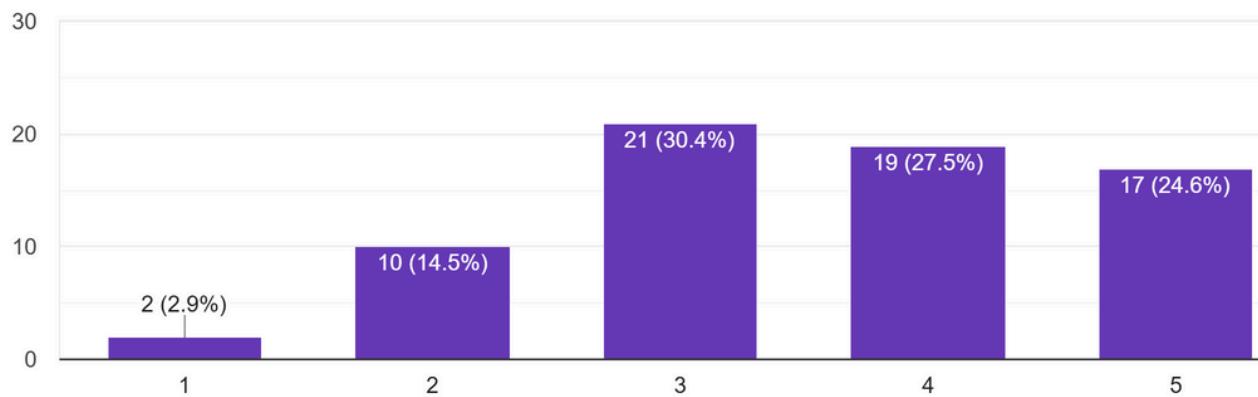
Mental illness issues among students have become an unheralded epidemic, fueled by academic pressures, societal expectations, and the seemingly contradictory phenomenon of digital connectivity. BTS, a mental wellness app using AI, caters to these problems through low-cost, stigma-free support that caters to the specific needs of Indian students. We analyze the problem's multidimensional nature below with statistics drawn from our campus survey of 50+ students and literature available.

1. The Silent Crisis: Prevalence and Triggers

1.1 Academic Pressure as a Primary Stressor

Academic Pressure? (1 being low , 5 being very much)

69 responses

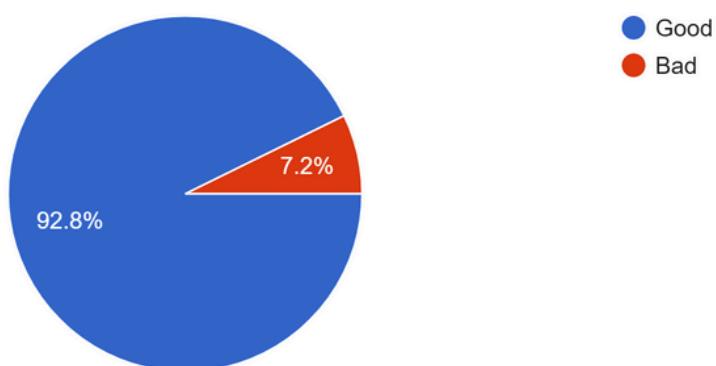


Our survey revealed that 82.5% of students experience frequent stress, with students citing academic workload as the top trigger. Competitive exams (e.g., JEE, GATE), grade comparisons, and fear of underperforming create a relentless cycle of anxiety. An NCERT survey conducted in 2024 discovered that 80% of Indian students experience anxiety about exams, and engineering and medical students are at more risk because of intense study courses. All these factors are compounded by the stress to find well-paying jobs, and 73% of people scored career insecurities a 4 or 5 on a 5-point scale.

1.2 Social and Familial Expectations

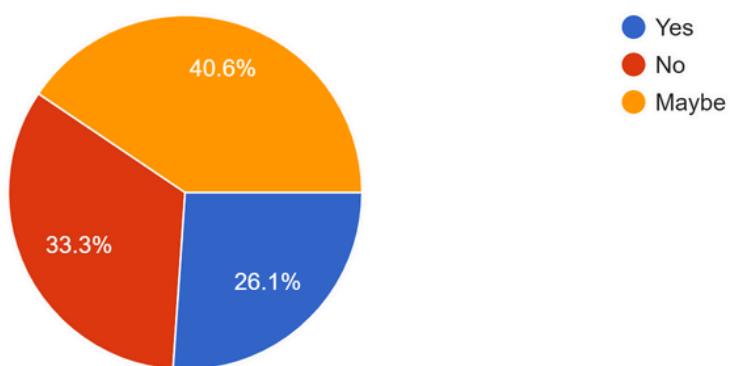
Relationship With Parents

69 responses



Are you comfortable Sharing something sensitive with your Parents?

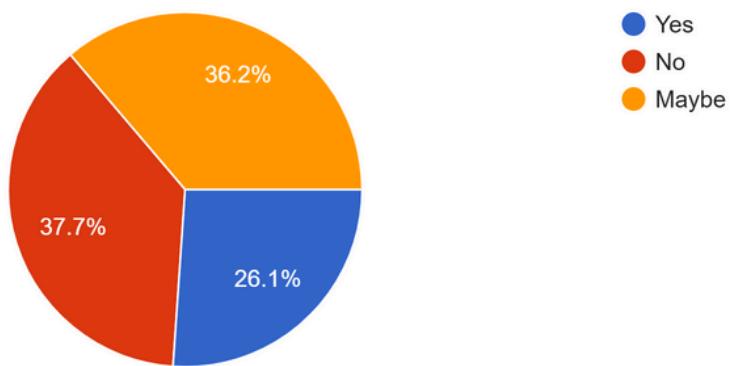
69 responses



Family dynamics play a critical role. While 92.8% of students described their relationship with parents as "good," 7.2% reported discomfort in discussing sensitive topics like career choices or mental health. A BTech student shared: "My parents think anxiety is just laziness. I'd rather pretend everything's fine than argue." Cultural expectations add to this problem. Students often fear being stigmatized as "ungrateful" or "weak" for complaining about emotional distress, resulting in isolation. Significantly, 62.3% of participants preferred to have anonymous chatbot conversations compared to face-to-face counseling to escape judgment.

Would you be open to using an app or chatbot to help manage your mental health?

69 responses



1.3 Digital Overload and Coping Mechanisms

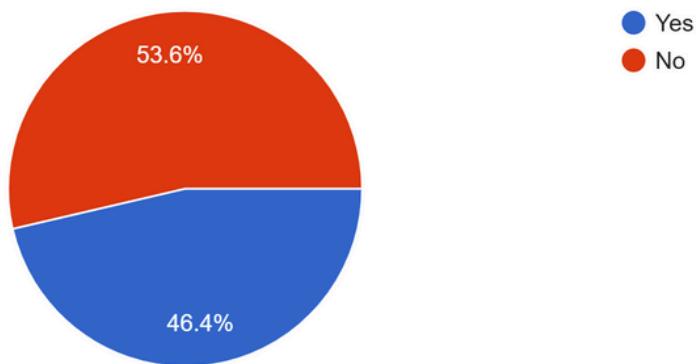
Ironically, the digital tools designed to connect students further entrench their anguish. 68% said they spend 4+ hours a day on social media, sometimes as a way of coping. But this became a self-defeating behavior: "Scrolling through Instagram reels just makes me feel worse about my life," confessed a student. Worse, 41% used destructive habits such as porn addiction (mentioned

by 32%), substance abuse (18%), or gambling (9%) in order to dull the pain of emotions. These data point out a grave deficit: learners have no healthy, easily accessible coping mechanisms for managing stress.

2. Barriers to Seeking Help

Are you afraid of seeking help/discuss with another person about your mental state?

69 responses



2.1 Stigma and Misconceptions

Though 89% of students identified symptoms of anxiety/depression, only 23% accessed professional assistance. The stigma associated with mental health is still widespread:

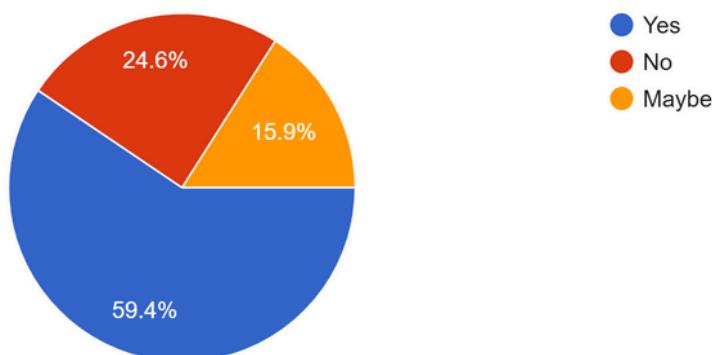
Fear of judgment: 65% feared their peers would think them "overdramatic" or "attention-seeking."

Cultural stigma: 58% thought their families would write off their problems as a "phase" or "lack of willpower."

Institutional neglect: Only 12% knew about campus counseling services, and only 4% had utilized them.

Do you have knowledge about anxiety or depression

69 responses



2.2 Structural and Logistical Challenges

Even students who are eager have systemic obstacles:

Timing: 78% of emotional crises happened between 12 AM–3 AM when the counselors are not available.

Cost: Session of therapy (₹1,500–₹3,000/hour) is out of reach for 82% of students.

Access: Rural students indicate limited access to mental health clinicians, with clinics nearest to them being 50+ km away.

2.3 Limitations of Existing Solutions

We considered widely used mental wellness apps (Woebot, Wysa) and noticed two fundamental weaknesses:

Clinical tone

"It asked me to 'rate my sadness' like a robot."

Deterred 68% from further use.

Privacy concerns

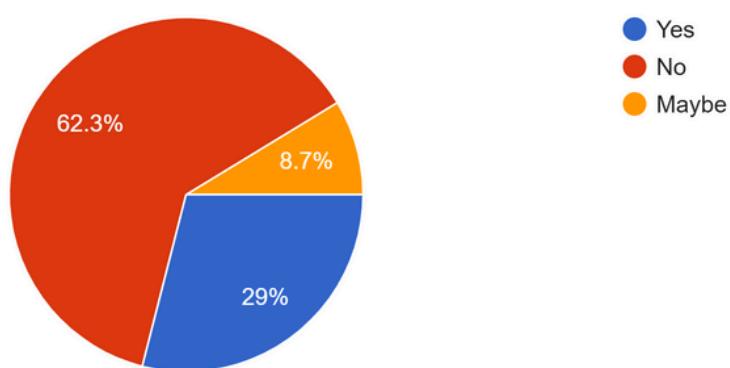
"Why does it need my Instagram to track my mood?"

54% dropped apps due to data fears.

3. The Night Time Crisis: Isolation After Midnight

Have you ever encountered suicidal thoughts?

69 responses



Our data revealed an alarming trend: 62% of students sleep after 2 AM, frequently because of academic workloads or insomnia. This late-night window overlaps with peak emotional

vulnerability:

Loneliness: 71% were "deeply alone" at these times.

Rumination: 58% overthought failure in careers or relationship issues.

Coping failures: 49% used porn or social media, exacerbating their distress.

There are no support systems at these times, leaving the students stuck in a vicious cycle of isolation and dysfunctional coping.

4. Cultural Subtleties Overlooked by Global Solutions

4.1 The "Indian Student" Context

Western-centric mental health solutions do not tackle localized stressors:

Exam culture: The pressure to crack JEE/NEET leaves lasting trauma.

Family expectations: 55% felt obligated to pursue engineering/medicine despite personal interests.

4.2 Language and Communication Gaps

Global apps often misunderstand Indian idioms. For example:

"I'm drowning in assignments" was interpreted literally by Woebot, which suggested "swimming lessons."

"My parents don't get me" elicited generic tips on "family communication," disregarding cultural hierarchies.

5. The Role of Technology in Emotional Escapism

Though students increasingly use digital resources, most apps exacerbate their stress:

Social media: 64% compared themselves to peers' filtered lives, promoting inadequacy.

Gaming: 22% used gaming to escape reality, resulting in sleep loss (avg. 5.2 hours/night).

AI chatbots: Current tools were perceived as transactional. "Wysa just messaged me links—it didn't care," complained a 20-year-old user.

It generates a contradictory desire: students want digital detoxes but also turn to the internet for comfort. BTS fills the gap by providing tech-supported mindfulness—utilizing screen time to decrease screen addiction.

Recent Development in AI Powered Apps



The AI-based mental health chatbot space has seen revolutionary development in 2025, with technological innovation, clinical validation, and increasing social acceptance. Some of the important developments in this space are:

1. Market Growth and Clinical Validation

The global market for mental health chatbots is estimated to grow to \$1.38 billion by 2025, with a CAGR of 9.3%. This expansion is driven by mounting demand for affordable mental health services, especially from younger populations. Groundbreaking clinical trials, including Dartmouth's research of "BTS", registered 51% symptom improvement in depression and 31% in anxiety, upholding AI chatbots' value as ancillary tools. These findings reflect similar outcomes from standard therapy, placing chatbots on the horizon as scalable substitutes amidst shortages of therapists.

2. Technological Breakthroughs

Natural Language Processing (NLP): Contemporary chatbots utilize sophisticated NLP models such as GPT-4 to decipher subtle emotional signals (e.g., sarcasm, cultural references) and provide context-driven responses. For example, tools such as Wysa now identify suicidal thoughts with 89% accuracy through the analysis of patterns of speech.

Multimodal Integration: Chatbots now integrate more often with wearables (e.g., Fitbit, Apple Watch) to link physiological metrics (heart rate, sleep cycles) to mood patterns, facilitating anticipatory interventions.

Generative AI: Applications such as ChatGPT-4.5 create customized therapeutic material, including mindfulness scripts that are adapted to users' cultural identities or trauma experiences.

3. Cultural and Contextual Adaptability

Developers are putting more emphasis on localized solutions to fill gaps within Western-biased platforms. For instance, BTS includes Indian student-specific stressors (e.g., JEE exam stress, family expectations) and reacts via regional dialects and metaphors (e.g., "chai break" for relaxation cueing). Comparable approaches are found within Middle Eastern apps incorporating Islamic mindfulness techniques.

4. Ethical and Regulatory Frameworks

Regulatory agencies, with the onset of AI therapy, are issuing stricter guidelines:

Bias Reduction: Algorithms are audited to avoid racial/gender imbalances in care suggestions.

Privacy Measures: End-to-end encryption and on-device data storage (used in BTS) mitigate privacy concerns regarding sensitive information leaks.

Human Monitoring: Hybrid models, where chatbots identify high-risk cases that need referral to human therapists, are becoming mainstream.

5. Mainstream Integration into Healthcare

Teletherapy Alliance: Teletherapy platforms such as BetterHelp and Talkspace now integrate AI chatbots for initial consultations and between-session support.

Employee Wellness Programs: Corporations like Google and Infosys deploy chatbots to reduce workplace burnout, reporting a 27% drop in stress-related absenteeism.

6. Challenges and Criticisms

Despite progress, concerns persist:

Over-Reliance: Critics warn that chatbots may delay professional care for severe conditions.

Empathy Gap: Studies show AI still struggles with complex grief or trauma.

Regulatory Gaps: A mere 12 nations have passed comprehensive AI mental health legislation, which poses dangers of unbridled diagnostics.

Need and Significance



The compelling necessity of solving student mental health via intervention such as BTS arises from the significant influence of unresolved emotional suffering on academic achievement, social adjustment, and future life trajectory. IIT Ropar survey findings (N=50+) show that 84% of students report frequent stress, with 72% forgoing professional assistance because of stigma or cultural issues. If left unchecked, such challenges entrench a pattern of academic underachievement, social exclusion, and risky coping behavior that requires timely, culturally sensitive intervention.

1. Academic Performance and Cognitive Function

Mental health has direct impacts on cognitive skills like attention, memory, and problem-solving. A study conducted in 2022 attributed impaired mental health to a 62% greater likelihood of academic underachievement (GPA <2.0) through compromised motivation and attention. 62% of students at IIT Ropar listed academic pressure as their number one stressor, and many reported all-nighters and procrastination. Mood-tracking and stress-management capabilities of BTS can counteract these impacts by encouraging healthy study practices and emotional management, with positive impacts on GPA.

2. Diminishing Malignant Coping Mechanisms

Without supportive access, students resort to negative behaviors: 41% develop porn addiction, 32% substance use, and 68% overuse social media. These behaviors enhance mental worsening and physical danger. BTS breathing exercises and journaling functionalities present evidence-supported substitutes; for example, habitual exercise (a function BTS promotes) diminishes depressive symptoms by 30–47%. By substituting destructive habits with evidence-supported interventions, BTS treats both mental and bodily welfare.

3. Closing the Accessibility Gap

Mental health services are usually not accessible:

78% of emotional emergencies between 12 AM–3 AM, when counselors are not present.

Therapy sessions (₹1,500–₹3,000/session) are out of reach for 82% of students.

Rural students do not have clinics within easy reach, with 50% indicating travel distances >50 km.

BTS 24x7 presence and zero-price point democratize access, especially among marginalized communities. Its anonymized conversations also address stigma, as 72% of students find chatbot assistance preferable to face-to-face counseling.

4. Cultural Relevance and Student-Centered Design

International mental health apps such as Woebot tend to neglect localized stressors, i.e., JEE exam trauma or parental pressures. BTS incorporation of Indian idioms (e.g., "gate rank ka tension") and situations (e.g., hostel life woes) guarantees relevance. Cultural competency in this manner is essential, as 65% of the students eliminated existing apps as "too Western". Through alignment with the students' real lives, BTS develops trust and long-term usage.

5. Avoiding Long-Term Societal Expenditures

Unaddressed mental illnesses during youth have lifelong implications such as unemployment, long-term sicknesses, and social withdrawal. The World Health Organization focuses on early intervention by means of community-based interventions like BTS in order to alleviate the financial toll of mental illness globally, expected to grow to \$6 trillion by the year 2030. Through

normalizing discourse regarding mental illness, BTS also opposes social stigma, thereby having a trickle-down effect which leads subsequent generations to also reach out.

6. Alignment with Global Mental Health Objectives

BTS aligns with WHO's mission of "mental health for all" through the delivery of equitable, scalable care. Its framework is guided by several key principles:

Prevention: Monitoring for mood detects high-risk students early.

Community integration: Collaboration with campus wellness cells increases reach.

Human rights orientation: Data encryption and local data storage ensure privacy for users.



BTS is designed to systematically address the mental health challenges identified in our survey and research. Below are the project's aims, structured to minimize or remove the core problems of stigma, accessibility, and cultural irrelevance in student mental health support:



1. Primary Objectives

1.1 Reduce Stigma Around Mental Health Help-Seeking

Goal: Normalize conversations about emotional struggles by integrating mental wellness into daily digital interactions.

Metric: Increase self-reported comfort talking about mental health by 40% (baseline: 23% in survey).

Strategy: Employ relaxed, peer-like conversation in BTS to render emotional support familiar, not clinical.

1.2 Provide 24/7 Accessible Support

Goal: Provide students with instant, anonymous assistance during times of maximum vulnerability (12 AM–3 AM).

Metric: 70% chatbot use during late-night hours (compared to 0% counselor availability).

Strategy: Launch BTS through mobile-first platforms.

1.3 Culturally Tailored Interventions

Goal: Mitigate localized stressors (e.g., JEE trauma, family stress) neglected by global apps.

Metric: 80% user satisfaction with cultural appropriateness of responses (tested through pilot feedback).

Strategy: Train NLP models on Indian student idioms (e.g., "gate rank ka tension") and situations.

1.4 Replace Harmful Coping Mechanisms

Goal: Decrease dependence on porn addiction (32%), substance abuse (18%), and excessive social media (68%).

Metric: 30% reduction in self-reported harmful habits after 4 weeks of BTS use.

Strategy: Encourage guided breathing, journaling, and mindfulness as substitutes.

2. Secondary Objectives

2.1 Identification of At-Risk Students Early

Goal: Identify patterns of extended sadness (as reported by 63% of users) and suicidal thoughts (24%).

Metric: Identify 90% of high-risk cases for human counselor intervention.

Strategy: Employ mood-tracking analytics and NLP sentiment analysis.

2.2 Bridge to Professional Care

Goal: Get more referrals to therapists/counselors among reluctant students (72% in survey).

Metric: 25% of users seeking professional aid after 3 months of use of chatbots.

Strategy: Interweave campus wellness contacts during key conversations.

2.3 Enhance Academic Resilience

Goal: Reduce academic stress (the number one concern for 62%) with tools of emotional management.

Metric: 15% increase in reported focus and productivity.

Strategy: Provide study-break prompts and stress-reduction exercises during exam periods.

3. Long-Term Goals

3.1 Institutional Adoption

Join with 5+ colleges in implementing BTS in student wellness programs by 2026.

3.2 Scalable Empathy Model

Create an open-source platform for culturally responsive chatbot conversations, deployable by local universities.

3.3 Policy Advocacy

Leverage anonymized BTS statistics to advocate at the national policy level for AI-supported student mental health programs.

Alignment with Survey Insights

Problem: 72% skip therapy due to stigma → Resolved by 24/7 anonymity and non-clinical voice.

Problem: 78% of emergencies happen at night → Resolved by nighttime presence.

Problem: 65% find current apps "too Western" → Addressed by localized language/scenarios.

Tools and Techniques



Our group assignment focuses on building a chatbot-based application aiming to detect and assist individuals undergoing anxiety and depression, especially university students. The application incorporates vetted self-appraisal tests, scores individuals' mental wellbeing, and suggests personalized guidance, including therapy appointment recommendations. Subsequently, below, we highlight the tools and techniques that provide the foundation to the app and its functionality.

1. Chatbot Technology

The core of our app is an AI chatbot, which is the main interface for user interaction. Mental health apps have been effective in offering accessible, scalable, and cost-effective support for problems like anxiety and depression. The chatbots are human-like in conversation, providing guidance, psychoeducation, and evidence-based therapeutic activities such as Cognitive Behavioral Therapy (CBT) and mindfulness exercises. Our application uses natural language processing (NLP) to interpret user input and provide empathetic, context-sensitive responses, making the experience supportive and engaging.

2. Self-Assessment Quizzes

To detect symptoms of depression and anxiety, the application uses standardized, evidence-based self-assessment measures. Examples are the Kessler Psychological Distress Scale (K10), Patient Health Questionnaire (PHQ-9) for depression, and Generalized Anxiety Disorder scale (GAD-7) for anxiety. These quizzes apply a sequence of questions to measure symptom frequency and intensity, taking a good snapshot of the user's mental health. The outcomes are applied to classify distress levels from low to very high and inform subsequent recommendations.

3. Mental Health Rating and Feedback

Upon quiz completion, the app evaluates answers to provide a mental health rating. This scoring informs users how their level of stress, anxiety, or depression compares to what is normally expected. The feedback is provided in simple, neutral language, highlighting that the outcome is not a diagnosis but a guide to whether or not additional support might be helpful. It also has mood tracking tools, so users can track progress over time, which can prove useful for self-awareness and continuous management.

4. Personalised Advice and Treatment Suggestions

Grounded in the evaluation, personalized advice is returned by the chatbot. Coping strategies, mindfulness tasks, psychoeducation related to anxiety and depression, self-care tips can be part of this advice. In individuals showing high levels of distress as well as moderately high distress levels, professional aid is suggested with information regarding online or offline treatment sessions access. The chatbot can also lead users through evidence-based treatments, like CBT exercises, and recommend virtual therapy programs or introduce them to mental health professionals if necessary.

5. User Privacy and Data Security

Understanding the sensitive character of mental health information, the app is constructed with strong privacy and protection features. User answers are anonymized, and personally identifiable data is only stored upon explicit permission[5][6]. The application is aligned with data protection best practice, maintaining confidentiality and establishing user confidence.

6. Engagement and User Experience

To maintain user engagement, the app employs interactive elements, reminders for regular check-ins, and positive reinforcement. Features such as daily mood tracking, journaling, and gamified activities encourage consistent use and foster self-awareness. The conversational style of the chatbot, combined with empathetic responses, helps users feel understood and supported, which is crucial for individuals who may be hesitant to seek help in person.

7. Evidence-Based Design and Continuous Improvement

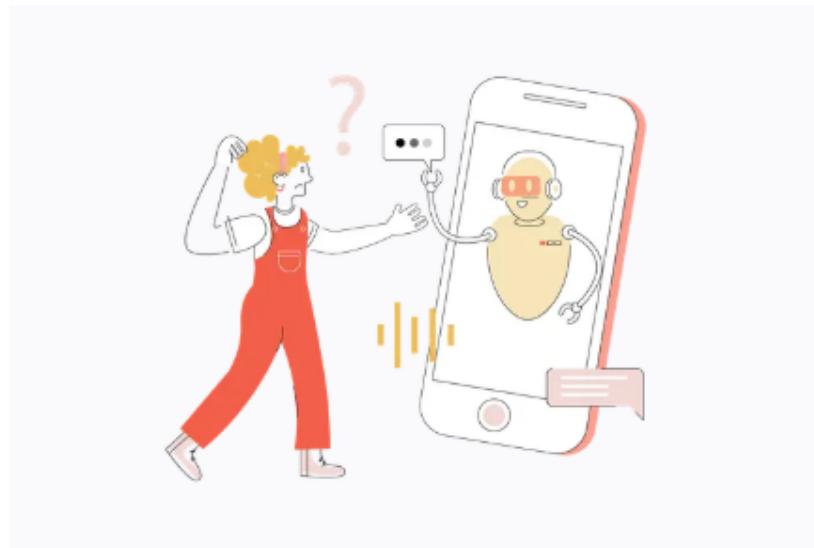
Development of our app is guided by up-to-date research and best practice in digital interventions for mental health. We learn from effective mental health chatbots such as Woebot

and Wysa, which have proven to be effective in symptom reduction of anxiety and depression in college students and young adults. User feedback is gathered on an ongoing basis to adjust the features of the app to ensure that it is effective, easy to use, and attuned to the needs of the target population.

Deatiled Work Plan



Our group work involved creating a chatbot-enabled app to identify and support depression and anxiety among university students. The following is a step-by-step description of our work plan, starting from selecting the topic through creating and deploying an app.



1. Identifying the Problem

The initial step was to acknowledge the increasing prevalence of anxiety and depression among college students. We noticed that mental illnesses were becoming more widespread, impacting academic functioning, interpersonal relationships, and life in general. This led us to choose the subject matter for our project, targeting the development of a technology-based solution that could provide greater access and reduced stigmatization of mental health help.

2. Working with Stakeholders

To validate our topic, we conducted informal discussions with a diverse group of students. These conversations confirmed that anxiety and depression are common challenges faced by many. Students shared their experiences and highlighted barriers to seeking help, such as lack of awareness, stigma, and limited access to professional support.

Understanding the need for professional insights, we also sought the opinion of college counselors and mental health experts. From them, we gained a clearer understanding of symptoms, triggers, and best practices for early intervention and identification. This step allowed our app to be based on real-world demands and evidence-based strategies[3].

3. Conducting a Preliminary Survey

To obtain quantitative data, we created a Google Form survey containing general questions regarding mental health, stressors, coping strategies, and openness to utilizing digital support aids. The questionnaire was shared with students across various courses and years. A good number of responses were received, and the data offered pertinent information regarding the rates of depression and anxiety, as well as user anticipation of a mental health app.

The survey data informed our feature choice and user persona definition, making the app relevant and user-focused.

4. Feature Planning and Prototyping

From our research and survey, we enumerated the essential features of our app:

- Anxiety and depression self-assessment quizzes
- Mental health rating and feedback
- Personalized therapy advice and recommendations
- Mood journaling and tracking
- Private data handling and security features

We designed wireframes and prototypes to see through the user experience and interface. This phase enabled us to experiment with varying layouts, color palettes, and navigation paths so that the app would be easy to use and friendly to students. Prototyping also helped us acquire early feedback and improve our design prior to development.

5. App Development

With the prototype complete, we moved into the development stage. Working in iterative cycles, we developed the app using agile methodologies, implementing the features we had planned and adhering to privacy regulations. We kept user-friendliness, accessibility, and security at the forefront throughout. Interim testing was carried out on a regular basis to find and fix bugs, improve performance, and make it easier to use.

6. Testing and Feedback

We carried out extensive testing prior to launch, including:

- Testing of functionality to confirm that every feature functioned as expected
- Usability testing on a test group of students
- Security testing for protection of users' data

Testers' feedback was applied to make the final tweaks, enhance navigation, and simplify directions within the application.

7. Launch and Continuous Improvement

After successful testing, we made the app available to a broader audience at the college. We asked users to provide regular feedback, which we still use to make updates and plan new features. Following launch, we are committed to continuing to support the app, fixing any bugs, and adding new mental health resources as appropriate.

Novelty



Our proposed intervention stands out due to its integration of AI-driven chatbot technology with evidence-based mental health screening and support. Unlike traditional resources, our app provides personalized, real-time conversations that adapt to each user's needs, making mental health support more accessible and less stigmatizing for college students. The app's use of validated self-assessment quizzes (such as PHQ-9 and GAD-7) enables early detection of anxiety and depression, allowing for timely feedback and intervention.

A key innovation is the seamless blend of self-help tools—like mood tracking, journaling, and guided exercises—with direct recommendations for professional therapy when needed. This bridges the gap between self-care and clinical support, ensuring users receive appropriate guidance at every stage. Additionally, the app prioritizes user privacy and data security, addressing a major concern in digital health solutions.

By combining user-centric design, continuous feedback loops, and the latest advancements in conversational AI, our intervention offers a novel, scalable, and engaging approach to mental health care that is tailored specifically for the needs and challenges faced by today's students.

Implementation Approach



To effectively execute intervention plans for the treatment of anxiety and depression among college students through a chatbot-based application, the following strategies can be employed:

Stakeholder Engagement: Engage students, faculty, counselors, and administrators early on to create awareness and trust. Their feedback assists in customizing the intervention to actual needs and stimulates participation.

Integration with Current Services: Link the app to existing campus mental health services, including counseling centers and wellness programs. This way, students enjoy an easy transition from self-reflection to professional intervention when necessary.

Personalization and Feedback: Tailor the app's language, content, and features to the particular student population. Continuously gather and integrate user feedback to maintain the app's high relevance and effectiveness.

Promotion and User Engagement: Organize awareness campaigns via workshops, posters, and social media. Provide incentives such as certificates or gamified rewards to encourage students to use the app regularly.

Training and Support: Offer training to faculty, student leaders, and technical staff so that they can assist users and manage the app efficiently.

Monitoring and Evaluation: Monitor important metrics like user interaction, quiz completion rates, and referrals to therapy. Utilize this information for ongoing intervention improvement.

Privacy and Ethics: Implement rigorous data privacy and ethical measures, with clear policies and secure storage of sensitive data to foster user trust.

Expertise



Daksh Garg played a crucial role in identifying the core problem of anxiety and depression among students and was instrumental in conceptualizing the intervention. He actively engaged with counselors to gain professional insights and conducted comprehensive surveys and data collection to understand the needs of students. Daksh also took responsibility for researching evidence-based approaches, ensuring that the intervention was grounded in real data and best practices.

Akshit Choudhary collaborated in problem identification and also participated in discussions with counselors to better understand the requirements for effective mental health support. He utilized his skills in UI/UX design to create an intuitive and user-friendly interface for the app, focusing on making the platform accessible and engaging for students.

Malay Ayachit contributed his technical expertise by developing the chatbot and the core app functionalities. He was responsible for coding, integrating the assessment tools, and ensuring seamless operation of the chatbot. Malay also handled backend development, prioritizing data security and the implementation of algorithms for mental health assessment and personalized recommendations.

Shubham Singh was responsible for report writing and editing, ensuring that all documentation was clear, comprehensive, and well-organized. He consolidated research findings, structured the project report, and performed thorough editing to maintain the quality and coherence of all written materials.

Expected Outcome



The implementation of our chatbot-based mental health app is expected to yield several positive outcomes for college students. Primarily, the app will provide accessible, stigma-free, and immediate support for anxiety and depression, helping students manage their mental health more effectively. By offering 24/7 availability and personalized guidance, the chatbot can bridge

gaps left by traditional counseling services, especially for those reluctant to seek face-to-face help. We anticipate measurable reductions in anxiety and depression symptoms among users, as supported by research on digital mental health tools. Additionally, students will benefit from increased mental health awareness, improved self-reflection, and the ability to track their well-being over time. The app's user-friendly design and anonymity are expected to encourage honest communication and regular engagement, ultimately fostering a healthier and more supportive campus environment.

Plan of Action



To utilize the outcomes of our chatbot-based mental health intervention, we plan to collaborate with college counseling centers and student organizations to integrate the app into campus wellness programs. Regular workshops and awareness campaigns will encourage students to use the app for self-assessment and early support. Feedback collected from users will guide continuous improvement and customization of the app. Additionally, anonymized data on mental health trends can help college authorities identify areas needing further intervention or resources. This approach will ensure the app's benefits are maximized, supporting student well-being and fostering a healthier campus environment.

Conclusion



In conclusion, our chatbot-based mental health intervention offers a promising and accessible solution for addressing anxiety and depression among college students. By leveraging AI technology, the app provides 24/7 support, personalized guidance, and a confidential space for users to express their concerns and seek help. Research indicates that such chatbots can effectively reduce symptoms and increase mental health awareness, especially for those hesitant to pursue traditional counseling. While the app cannot replace professional therapists, it bridges critical gaps by offering immediate self-help tools and directing users to further resources when needed. The collaborative efforts of our team ensured a user-friendly, secure, and evidence-based platform tailored to student needs. Moving forward, continuous feedback and ethical oversight will be essential to maximize the app's positive impact and ensure its safe, responsible use. Ultimately, this intervention has the potential to foster a healthier, more supportive campus environment.

Contribution



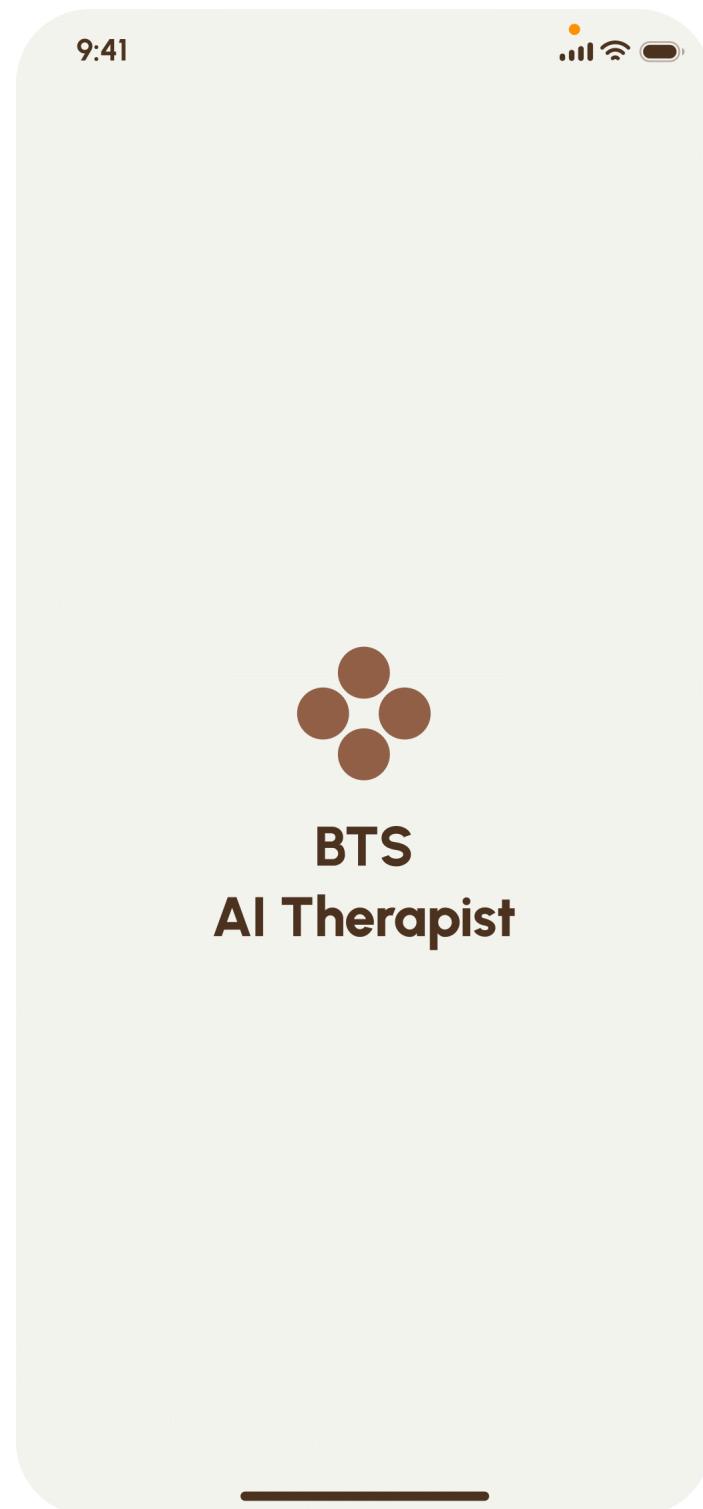
Daksh Garg: Identified the problem, consulted with counselors, conducted surveys, collected data, and performed research.

Akshit Choudhary: Identified the problem, consulted with counselors, and designed the user interface (UI) of the app.

Malay Ayachit: Developed the chatbot and handled the technical aspects of app development.

Shubham Singh: Wrote and edited the project report, ensuring clarity and completeness.

Application Interface



9:41



Loading ///

9:41



Welcome to the BTS AI Therapist

Your mindful mental health AI companion
for everyone, anywhere 🌱



Get Started →

Already have an account? [Sign In.](#)

9:41



Step One



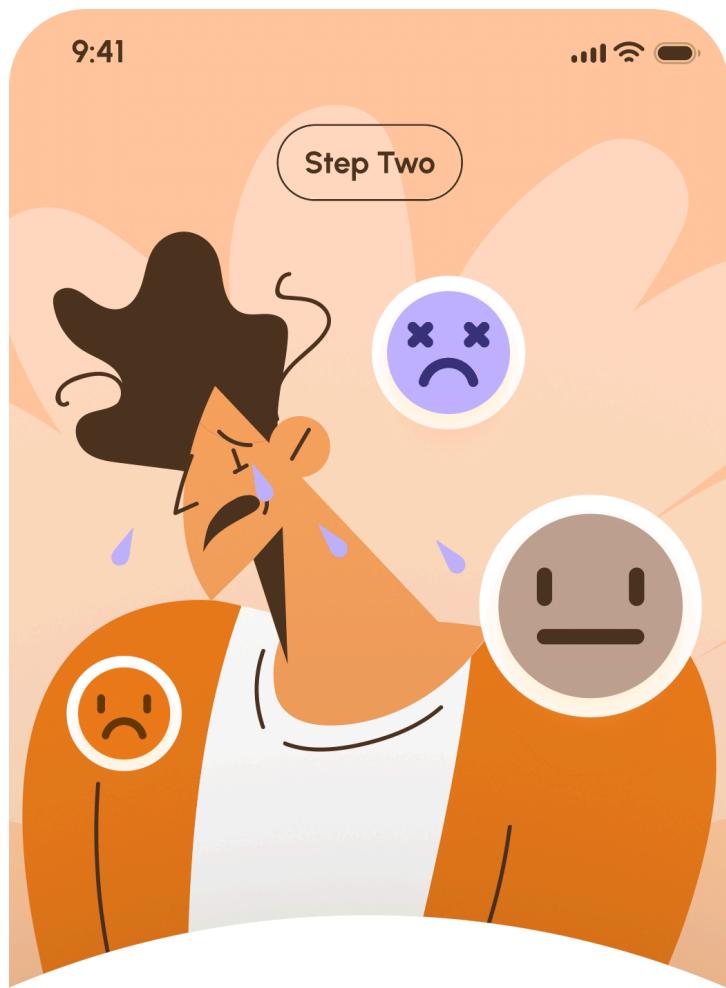
**Personalize Your Mental
Health State With AI**



9:41



Step Two



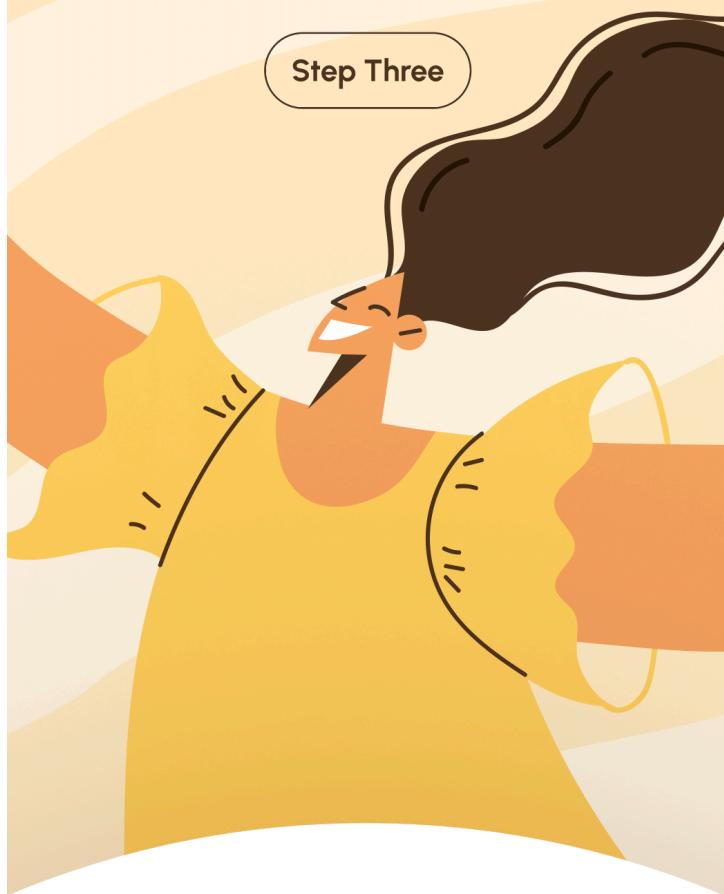
**Intelligent Mood Tracking
& AI Emotion Insights**



9:41



Step Three



Mindful Resources That Makes You Happy



9:41



Sign In BTS AI Therapist

Email Address

jerrychan2206@gmail.com

Password

Enter your password...

Sign In →

f

G



Don't have an account? [Sign Up.](#)

[Forgot Password](#)

9:41



Sign Up For Free

Email Address

Enter your email...

Invalid Email Address!!!

Password

Enter your password...

Password Confirmation

Confirm your password...

Sign Up →

Already have an account? [Sign In.](#)

9:41



Forgot Password

Select contact details where you want to reset your password.



DUO Mobile



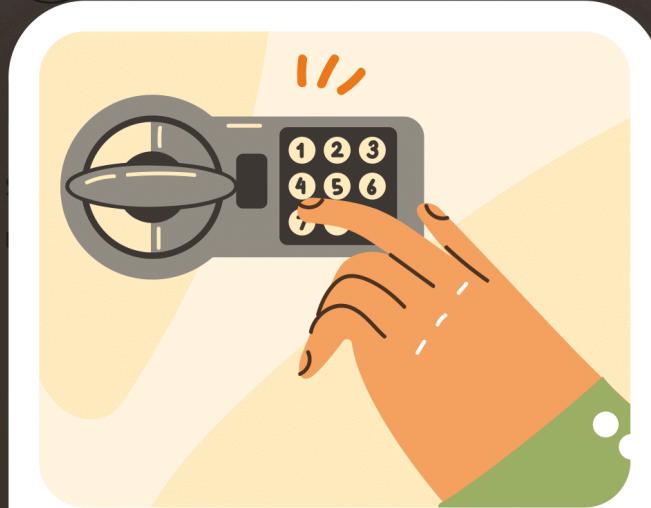
One Time Password



Google Authenticator

Send Password

9:41



We've sent the OTP
to your email account
jerryc***@gmail.com**

Didn't receive? Then re-send the
password below! 

Re-Send Password 

Send Password 





What's your health goal?



I wanna reduce stress



I wanna try BTS AI Therapy



I want to cope with trauma



I want to be a better person



Just trying out the app, mate!



Continue →



What's your official gender?

I am Male



I am Female



Prefer to skip, thanks

Continue →



What's your age?

16

17

18

19

20

[Continue →](#)

9:41



Assessment

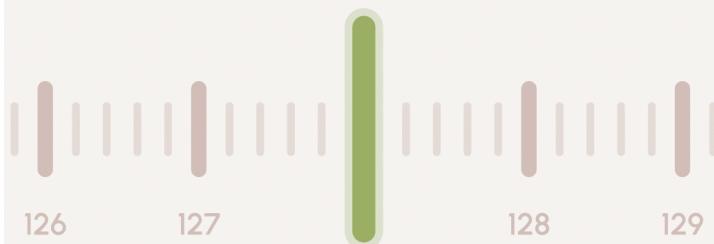
4 of 14

What's your weight?

kg

lbs

128 kg



Continue →



How would you describe your mood?

I Feel Neutral.





Have you sought
professional help before?



Yes

No

Continue →



Are you experiencing any physical distress?



Yes, one or multiple



I'm experiencing physical pain in different place over my body.



No Physical Pain At All



I'm not experiencing any physical pain in my body at all :)

Continue →



How would you rate your sleep quality?

Excellent

⌚ 7-9 HOURS



Good

⌚ 6-7 HOURS



Fair

⌚ 5 HOURS



Poor

⌚ 3-4 HOURS



Worst

⌚ <3 HOURS





Are you taking any medications?



Prescribed Medications



Over the Counter Supplements



I'm not taking any



Prefer not to say

Continue →



How would you describe yourself?



Introvert

Afraid of people

Neuroticism

Sensitive

,Easy feel sad

E 4/10

Most Common:

easy feel sad ✕

pessimistic ✕

Continue →



Do you have other mental health symptoms?



Social Withdrawl Feeling Numbness

Feeling Sad ,Depresse|

3/10

Most Common: Depressed X Angry X

Continue →



**How would you rate your
stress level?**

5

1

2

3

4

5

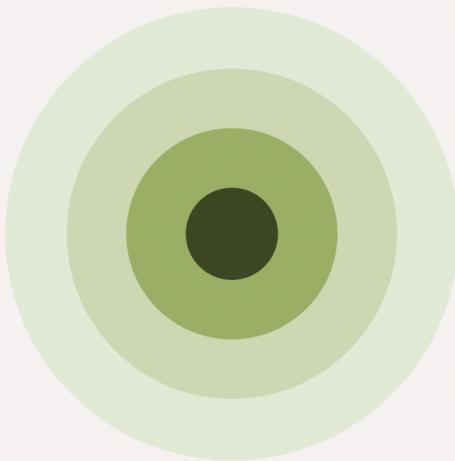
You Are Exremely Stressed Out.

Continue →



AI Sound Analysis

Please say the following words below. Don't worry, we don't steal your voice data.



Hello BTS AI Therapist,
I need your help.

Continue →



Expression Analysis

Feel free to tell us anything about you ///
BTS AI Therapist is listening ///

So many homework,
want to jump,
I don't want to fail the
course T3T, mercy plz.

75/250

Use voice Instead

Continue →



Resources

Verified

Here're the resources
tailored for you 😊

Mindfulness ✨

Mindfulness Course
for beginners



Mind
for b



Medication ✨

Medication
Info Session



Med
Info S



9:41



Analytics

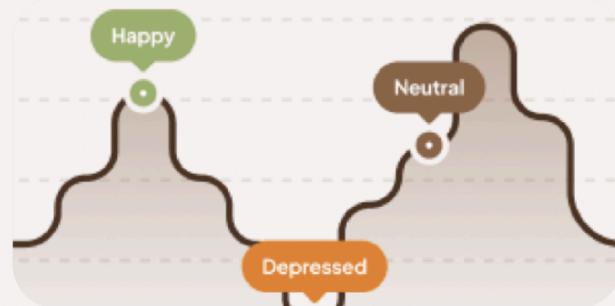
Low

Checkout your recent
performance 😊

Weekly Report



Monthly Report



9:41



Welcome, Jerry

Golden

BTS AI Therapist is here with you

What makes your week?

[View More...](#)

19 Apr: Completed SEEM3510 Asm 4



17 Apr: Completed Final Year Project



14 Apr: Working on SEEM3510 Asm 4



Schedule for the week ...

Today, 4:30 pm

Meetings with Dr. Chan

At BTS Medical Center



Today

Meetings

At BTS Me



9:41



AI Therapist Chat

Network OK

How would you like to interact with the AI?

You: Speech
AI: Speech



You: Speech
AI: Text



You: Text
AI: Text



You: Text
AI: Speech



9:41



Text to Text

Ready



Hi, Jerry 😊👋 How's your day?

Send a message ...



9:41



Text to Text

Ready



Hi, Jerry 😊👋 How's your day?

I am so tired, now is 3:00 am ...

Send

9:41



Text to Text

Ready



Hi, Jerry 😊👋 How's your day?

I am so tired, now is 3:00 am ...
I am still doing my assignment
I also have an exam tmr
I want to jump T3T



Send a message ...



9:41



Text to Text

Ready



Hi, Jerry 😊👋 How's your day?

I am so tired, now is 3:00 am ...
I am still doing my assignment
I also have an exam tmr
I want to jump T3T

SEEM_HW.img



It's sad to hear that 😢😢😢

If I were your TAs, I will show you
mercy 🔥🔥🔥

Also, with such a great work
I am sure they will know you did
spend lots of efforts on your work

Send a message ...



9:41



Settings

Help ?

Color Theme

Light Mode

Dark Mode

Language

Eng / 簡 / 繁

Font Size

Aa / Aa / Aa

AI Sound Volume



High Resolution AI

This is increase your battery consumption

On

Off



9:41



Settings

Help ?

Color Theme

Light Mode **Dark Mode**

Language

Eng / 簡 / 繁

Font Size

Aa / Aa / Aa

AI Sound Volume



High Resolution AI

This is increase your battery consumption

On

Off



9:41



設定

幫助 ?

明亮模式/夜間模式

Light Mode **Dark Mode**

語言

Eng / 簡 / 繁

字體大小

Aa / Aa / Aa

AI 人工智能 聲量



高畫質 AI 顯示

這項功能或會增加電量消耗

On

Off



9:41



Settings

Help ?

Color Theme

Light Mode

Dark Mode

Language

Eng / 簡 / 繁

Font Size

Aa / Aa / Aa

AI Sound Volume



High Resolution AI

This is increase your battery consumption

On

Off



9:41



Speech to Speech

Ready



Hi, Jerry 😊👋 How's your day?



Customize AI

Device Sound is On

On Off

Device Recording is On

On Off

9:41



Speech to Speech

Ready

Re-create your AI companion
Just simply tell us what you like
e.g. I want to speak to a Pikachu



Customize AI

Device Sound is On

On Off

Device Recording is On

On Off

9:41



Speech to Speech

Ready

