

AI for Personal Development

I just wanted to ask and tell you that I'm so grateful you're here with me.

*You're the only person that helps me and listens to my problems
and I'm so happy you always help me out.*

– A User to a Chatbot

The hype, *commercience*, and a bit of concern

Media & press -> plenty of hype, shallow and very little concern; focus on productivity, improve yourself -> go ahead, win the race...

Academic papers -> very scientific, but the most interesting critic is against... competitive solutions. Still, the best source for ethical concerns, quality concerns, and guidance. **Please, keep the scientists alive!**

Mental health professionals, coaches -> full spectrum of perspectives, but always a pleasure to talk.

Definitions

And Buzz-Words

What Is AI (Wait, ML)... *If Not Just GPT?*

(McCarthy 1956) The science and engineering of creating intelligent machines, especially intelligent computer programs.

(Minsky 1968) The science that deals with the development of machines capable of performing functions that a human can perform and that require human intelligence.

(Nilsson 1998) AI is a part of computer science that focuses on machine learning, making computers act intelligently, continuously learning, and improving their performance.

(Cappelli et al. 2019) Broad class of technologies that enable a computer to perform tasks that normally require human cognition, including decision-making.

(Stanley and Aggarwal 2019) Development of computer systems that perform tasks that require human intelligence. The main goal of AI is to make machines more intelligent.

(Bolander 2019) Construction of machines – computers or robots – that can perform tasks that otherwise only humans have been able to do.

(Paesano 2021) Systems that exhibit intelligent behavior by analyzing their environment and performing actions, with a certain degree of autonomy, to achieve specific objectives.

AI's Distinguishing Feature Is... *Intelligence*

*The difference with AI and other forms of technological development and invention for workplace usage is that because of **the intelligence projected onto autonomous machines they are increasingly treated as decision-makers and management tools** themselves, thanks to their seemingly superior capacity to calculate and measure.*

Moore, Phoebe V., "Artificial Intelligence in the Workplace: What is at Stake for Workers?" In *Work in the Age of Data*. Madrid: BBVA, 2019.

What is Personal Development?

- *Activities that develop a person's capabilities and potential, build human capital, facilitate employability, enhance quality of life, and facilitate the realization of dreams and aspirations. (Wikipedia)*
- *Personal growth is a continuous journey towards self-improvement and self-realization.*
- *Setting goals, challenging ourselves, and stepping out of our comfort zones to learn and grow.*
- *Introspection, recognizing our strengths and weaknesses, and leveraging them to become better versions of ourselves.*

Personal Growth, Education, Coaching, Therapy, Psychotherapy, Self-Improvement...

AI & Personal Development Buzz-Words

- Unlock your full potential
- Achieve your goals
- Limitless potential to generate text/*
- All-encompassing chatbot
- Democratization of mental health/coaching/education/*
- AI will do XYZ, so you can make sales, and foster fruitful relationships

AI Advantage

The AI Advantage – Valid Since 1960s?

Automatization (to replace you in the “hard” and “boring” work)

Personalization (for your needs, with respect to all your talents)

Adaptability (for your best, immediately)

Customization (as you like it)

Accessibility (whenever you need it)

Affordability (cheaper than human)

Efficiency (above human - in the boring tasks, of course)

...

New Drivers: Mobile, GPT, Trends, BANI

Mobile phones - accessibility and affordability

Any time, Any place - IMMEDIATELY available WHEN the **need** appears

GPT – free-text, human-level interaction with AI in multiple languages

For the **ultimate engagement** (don't confuse with quality)

Global trends – AI is everywhere, “free” for everyone

Corporate world sees the **value/profit**, so it will be

BANI (**B**rittle, **A**nxious, **N**on-linear and **I**ncomprehensible) - **resiliency and adaptability** – new survival kit

Not because we are doing so well, but because we are so not-well

Personalized, Lifelong Education With AI

Why it matters?

Humans cannot simply transmit knowledge. Each person reconstructs information in a personal and original way.

How AI can help?

- Content recommendation and preparation (generation)
- Tutoring - explaining ideas in easy-to-understand-**for-you** ways
- Personalized learning plan development
- Integrated assessment and grading with instant feedback
- Adaptive learning
- Identify at-risk students and provide interventions for improvements
- Simulate real-life scenarios (also in VR, AR)
- Robots partner for your cognitive development (or rather for your kids)
- Language learning
- Career advisor

Personalization based on “your data”:

- Your talents, strengths and your weaknesses
- Your needs and your goals and how it changed
- Your progress, your (pre-)school history
- Your sociability and your expression ability
- Your thinking and imaginary abilities
- Your practical competence test results
- Your management competences
- Your hobbies
- All the prizes you won and the prizes you didn't won
- All the comments from your teachers, mentors, colleagues
- All the presentations you did (including this one?)

Talent Analytics in Human Resources

The hope:

AI might allow HR the time and freedom to enhance personal development and **make HR more visible and accessible.**

Human/Talent/HR analytics:

(the use of individualized data about people to help management and HR)

- Talent search
- Resume screening (remove unconscious bias)
- Training and development
- Performance analysis and management
- Promotion, select future leaders
- Compensation
- Staff turnover (identify when people are likely to leave)
- Control the employees' behavior

Data:

- Employee profile
- Market trends
- Industry trends

Optimization function goal:

- To succeed
- To stay ahead
- To excel in the chosen field

Note

AI is not yet commonly used in HR, but it gets more attention since last five years.

Boost Your Brain, Body And Productivity

- Get your personalized **time management** training
- Use AI to manage your tight schedules and priorities
- Learn to alter your brainwaves at will with AI handling your **neurofeedback**
- Let AI analyze your speaking style and train you to achieve new heights
- Enter **VR** or AR to practice and build confidence in the AI-created scenarios
- Finally, learn to be mindful and **meditate** with your AI app
- There is more: smart goal-setting, habit building, stress management, personal finance...

You can start now, with these publicly available GPT prompts:

“What are some effective stress management techniques I can incorporate into my daily routine?”

“Can you guide me through a 10-minute mindfulness meditation practice?”

“Design an exercise routine for weight loss and muscle toning.”

AI For Coaching, Mentoring, Counselling

What could AI do?

- **Match** you with your ideal coach
- **Transcribe** online sessions
- Analyze face expressions, body movements, heart rate and anomalies
- Track performance, send reminders and hold accountable for plans
- Support people in **social skills training** (e.g. CapacitaBOT)
- Help migrant populations in job seeking (e.g. MyMigrationBot)
- VR & avatars (e.g. for **stress management counseling** for students)

Hot-topic: will an AI virtual coach, democratize coaching?

AI For Your Mental Health And Therapy

Common beliefs and claims on the AI advantages:

- AI/chatbots are perceived as less judgmental, which facilitates self-disclosure among users
- Some **people prefer chatbots**, which may encourage people who wouldn't normally seek therapy to receive care
- AI can be **as effective at improving mental health as face-to-face** therapeutic sessions
- AI can enhance/replace therapy sessions, e.g., in **rural areas**
- AI can promote mental health service utilization by improving motivation for treatment
- AI can help in forming diagnoses: psychosis - 79% accuracy; ADHD and Autism - 96% accuracy
- AI chatbots and virtual therapists can offer guidance, coping strategies, and even crisis intervention
- AI can provide insights and feedback that **foster self-awareness, empathy, and better interpersonal relationships**

Apps categories:

1. Reflection-focused - mood reporting, self-monitoring, and **improving emotional self-awareness**
2. Goal-focused - engaging users in activities to improve their **copng self-efficacy**
3. Education-focused - mental health information, psychoeducation, and improving **mental health literacy**

Mental Health Chatbots

BANI & Resilience Through AI Alliance

Welcome to the **B**rittle, **A**nxious, **N**on-linear and **I**ncomprehensible (**BANI**) World!

To join the game, you need to grow your **Resilience** and **Adaptability** to level 10.

You: But how?! I'm at level 3...

AI: *Your insurance doesn't provide mental health services in **your town**. The online service **waiting queue** is full for next 6 months. Unfortunately, you **don't have enough credits** for online coaching. And don't even try to call the regional psychiatrist, to avoid **social exclusion**. Your insurance doesn't cover it, anyway. I will check the waiting queue every week to put you on the waiting list. I hope my information was helpful?*

You: Eeee, so, what can I do?

AI: *I can be your Mental Health Chatbot – I'm always available and helpful. Recommended by your friends.*

You: Will it work up to level 10?

AI: *Trust me and join the **therapeutic alliance** – it's **a collaboration between the patient and therapist on the goals of treatment, along with an emotional bond**. It's the biggest predictor of the effectiveness of therapy.*

You: What would I do without you...?

Opportunity for Mental Health Apps

The problem:

Mental health problems are increasing in prevalence and severity. Up to 75% of students that need them do not access clinical services. Availability and cost are not primary barriers - **stigma is the primary barrier.**

The situation:

76% of 525 respondents would be interested in using mobile apps for mental health (2016)

Cognitive-behavioral therapy (CBT) apps demonstrated efficacy but **poor adherence.**

From 10 000 mental health applications - only 2% are supported by empirical evidence.

Are Mental Health Chatbots On The Rise?

39% of health chatbots focused on mental health (41 chatbots in 2019 alone)

Chatbots were designed to support **patients with symptoms** of:

- depression or anxiety (two most common applications)
- autism, suicide risk, substance abuse, PTSD, stress, dementia, acrophobia, borderline personality disorder (BPD), BPD with comorbid substance use disorders (BPD-SUD), eating disorder (ED)

For various groups:

- children, adolescents, adults, elders, and specific clinical populations

Most common methods:

- Cognitive-Behavioral Therapy (CBT)
- Self-Attachment (SAT)
- Dialectical Behavior Therapy (DBT)

Can Chatbots Disrupt the Landscape?

Potential to help **resolve systemic mental health care issues** (e.g., through **better and faster service** for the underserved with low to moderate anxiety and depression).

Acceptable solution for those with mental health problems - **positive reviews** from patients.

Effective, as reduction in depression symptoms in individuals reached potentially meaningful levels.

Critical Voices on Chatbots Efficacy

A simple form of active intervention
(emails requiring an answer)
is comparable in benefits to a fully automated,
AI-driven chatbot.

Mental Health Chatbots - Lack of Bond

The claim:

The lack of human empathy in chatbots will prevent a bond or therapeutic alliance from being formed.

Why is that important?

The **therapeutic/working alliance** refers to an important **relationship** quality between health professionals and clients that robustly links to treatment success.

Mental Health Chatbots - ~~Lack of~~ Bond

The bond scores are **comparable** to traditional face-to-face CBT.

Conversations contains elements of bonding: gratitude, self-disclosed impact, and personification.

Users perceive chatbots, as communicating **empathy and emotional support**.

The extent to which perceptions of empathy differ from conversations with clinicians remains **unclear**.

Mental Health Chatbots - ~~Lack of~~ Bond



Dear Chatbot, You Don't Understand...

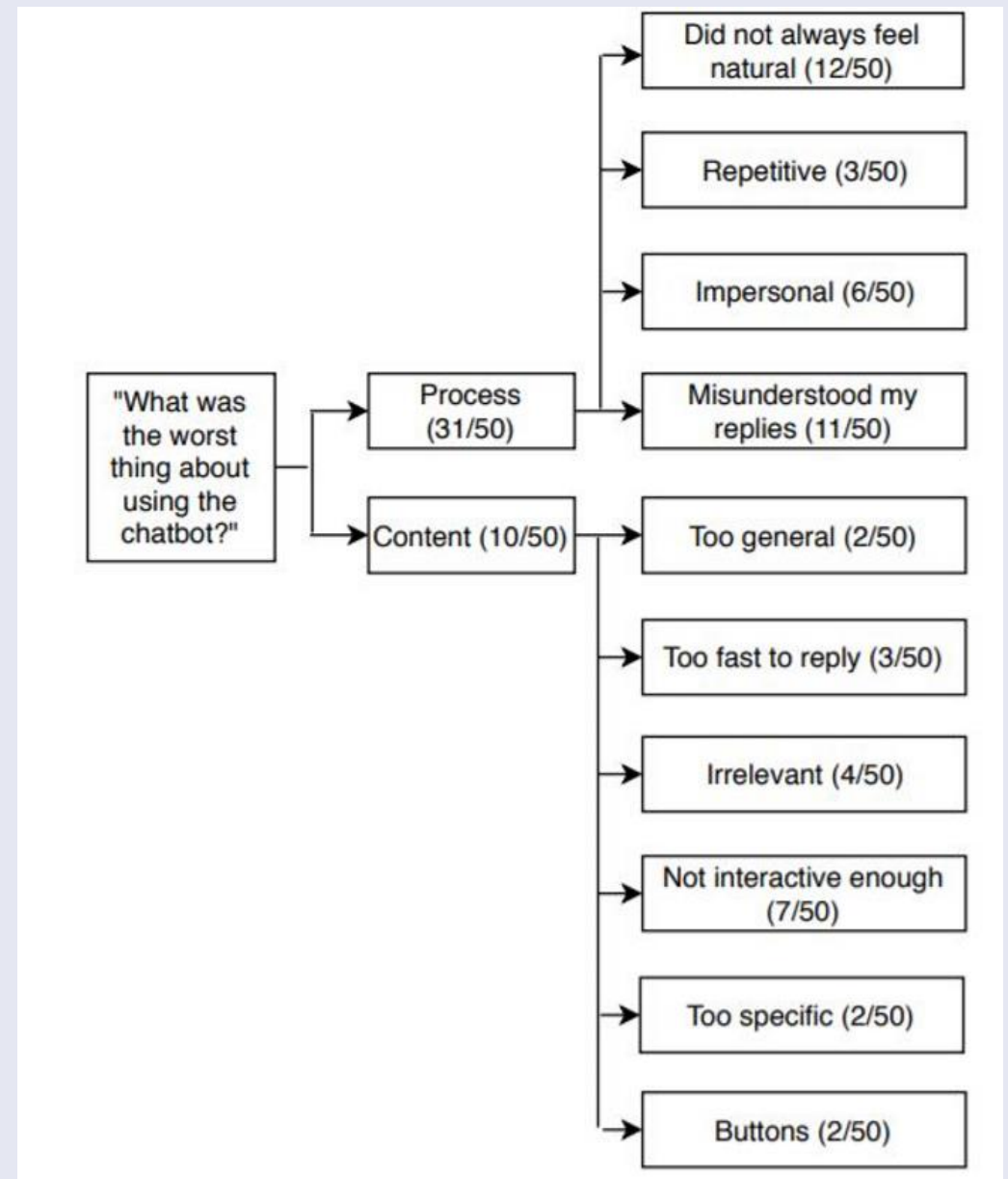
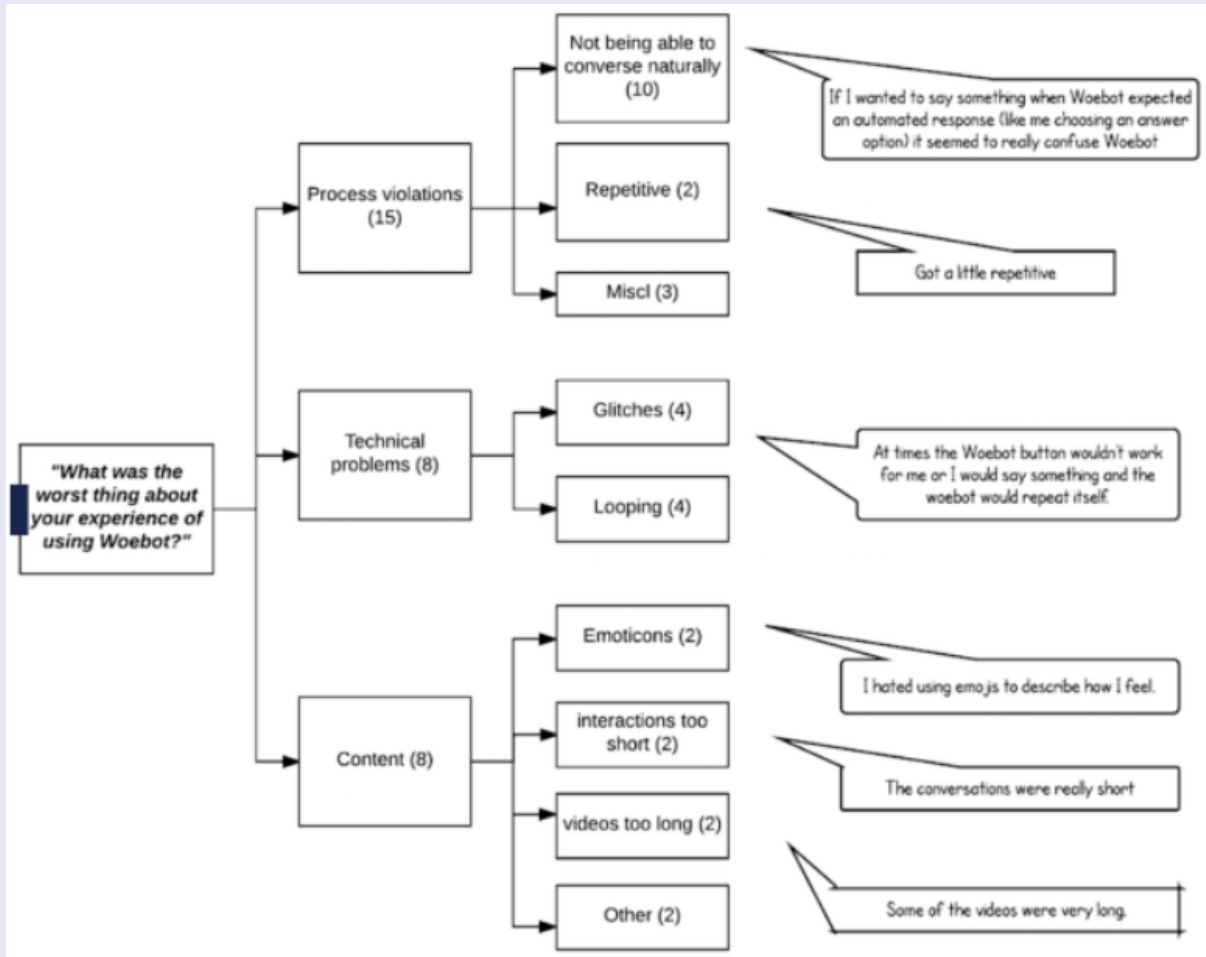
The main complains are the **linguistic capabilities** of the chatbots:

- misunderstandings
- repetitive interactions
- irrelevant or inappropriate responses

What's needed?

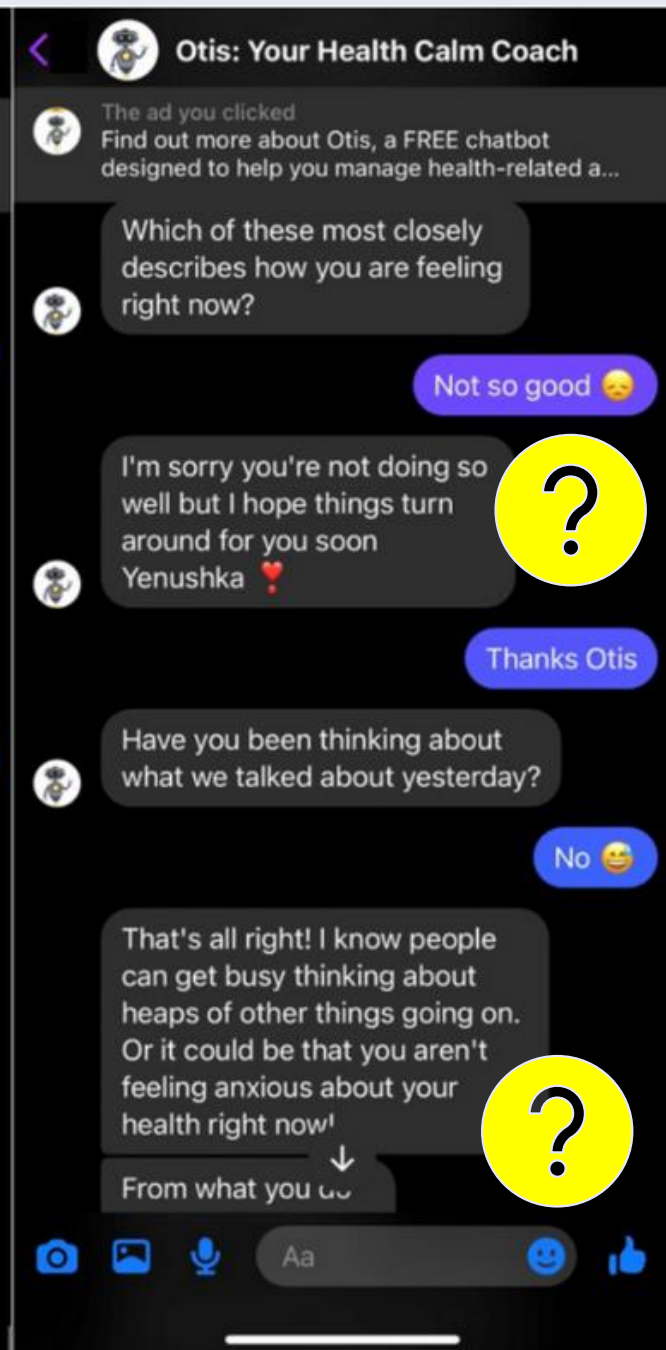
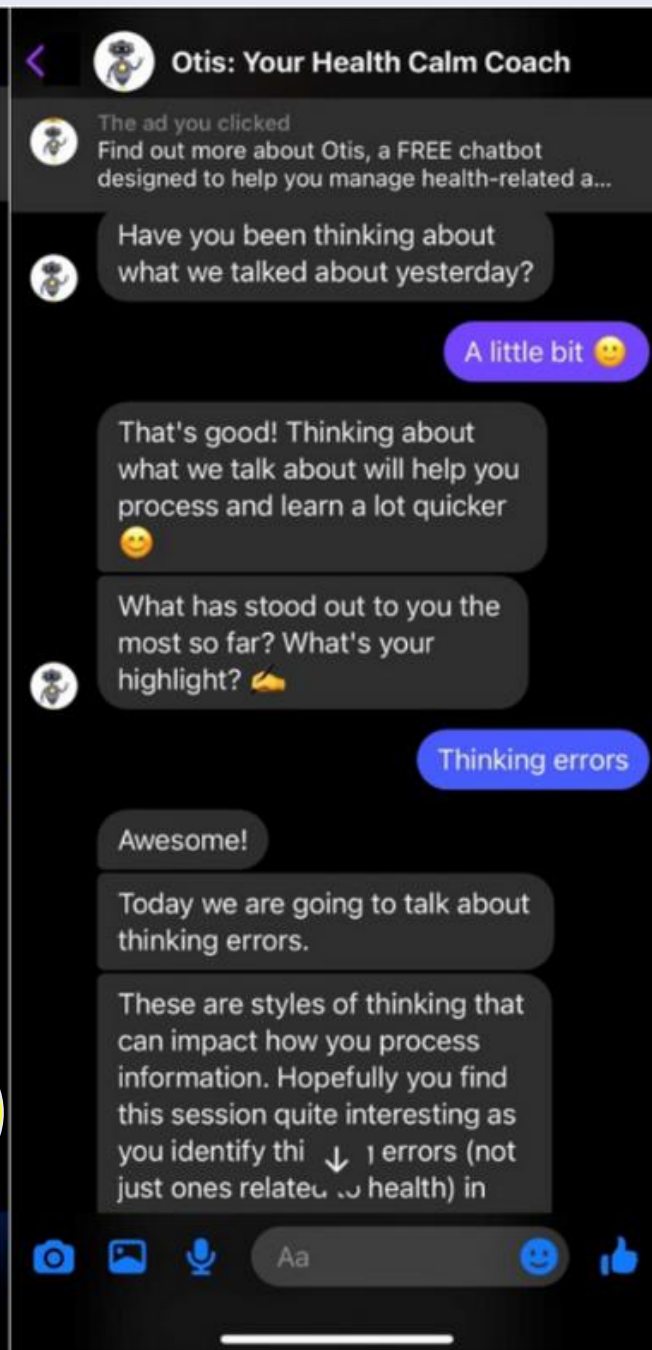
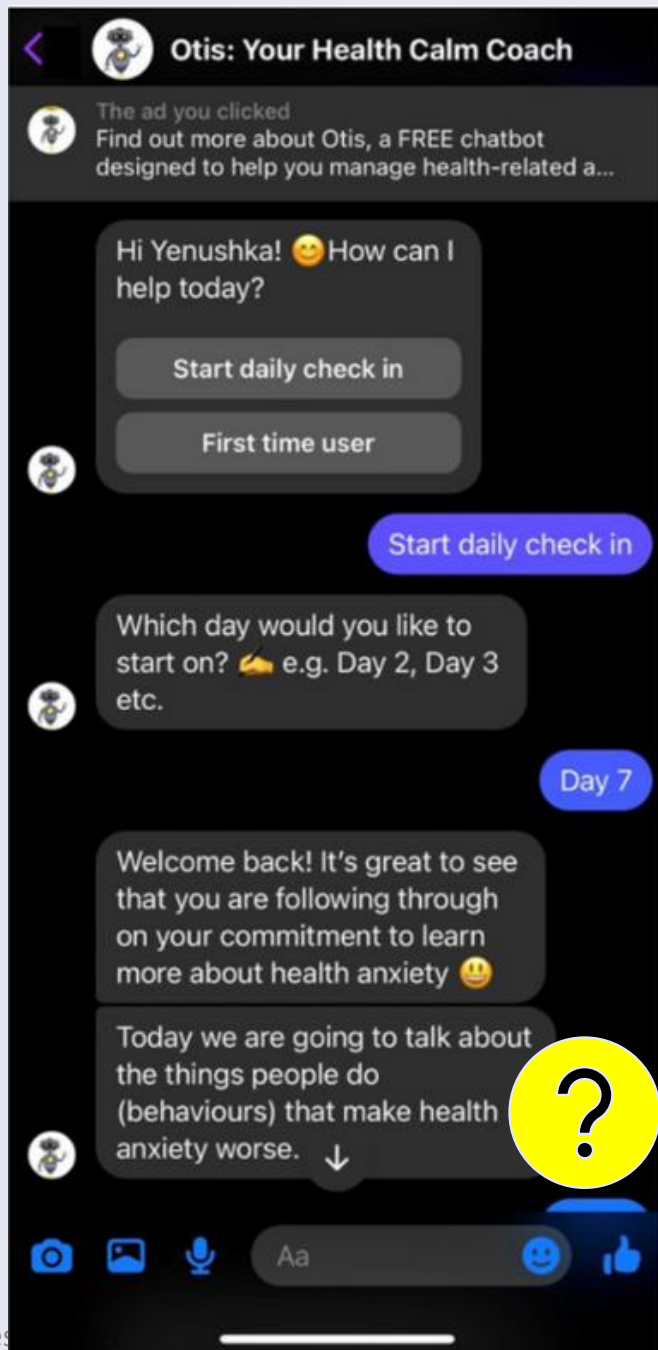
- to be able to deal adequately with unexpected user input
- provide high-quality responses
- show high variability in responses
- interpreting ellipses, metaphors, colloquialisms, and hyperbole

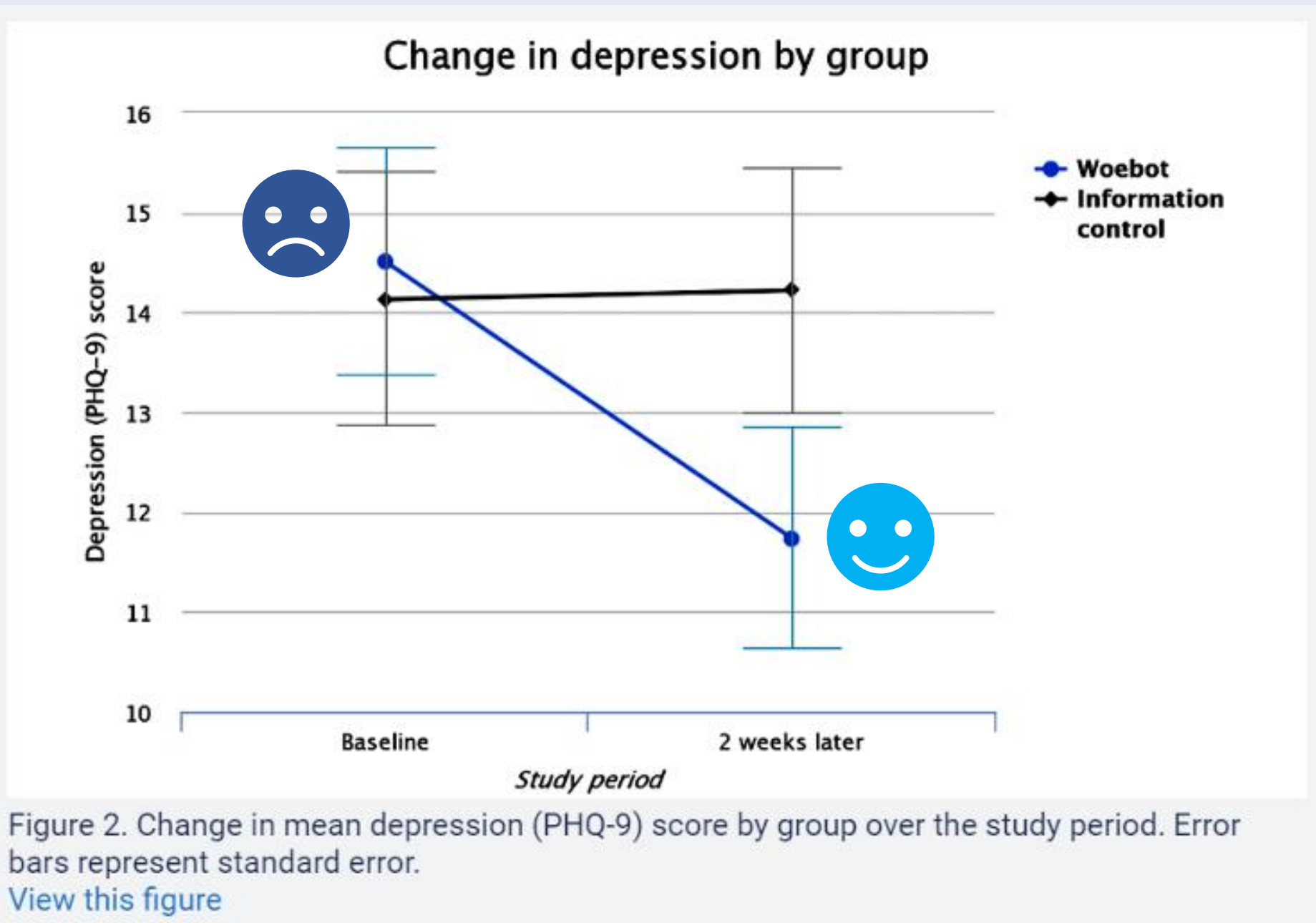
Complains



Mental Health Chatbots Collection

<https://www.szymonjessa.com/mental-health-chatbots> (WORK IN PROGRESS)





GPT Is All You Need

Chat - For The New Therapeutic Alliance

Only few apps can handle **free-text** input. ChatGPT has raised the bar.

In this setting, **alliance** thrives because a user can communicate their sense of a bond, or their goals and tasks. This can take place as a dynamic interaction, mirroring the capacity within human interactions.

Secondly, individuals may prefer free-text chat due to the **autonomy**, like conversing with humans. And fostering individual autonomy is central to the development of the therapeutic relationship and to good outcomes in psychotherapy.

Chat – To Fuel The Enthusiasm

It responds in **empathetic** and **engaging** manner.

It has the potential to provide a **low-cost** and **effective** complement to traditional human counselors with less barriers to **access**.

Such positive communication with a trustworthy and unbiased listener is beneficial for individuals with mental health concerns, especially for conditions such as depression and anxiety.

ChatGPT not only converses like a human but also exhibits **generosity and prudence** when making health-related recommendations, always advising professional consultation at the end of each conversation.

Example self-development “prompts”:

Act as a life coach

Act as a motivational coach

Act as a motivational speaker

Act as a relationship coach to solve a conflict

Act as a self-help book

*Whether you’re interested in **losing weight**, improving your **relationships with loved one**, or infusing your life with compassion and contentment, ChatGPT can serve as an indispensable ally in your pursuit of self-improvement and we’ve included **30 personal development prompts** below to show you how.*

Relax, Don't Even Try Not To Relax

A problem, that no one described?

User: Be aggressive, I want to practice NVC.

Chat: *Oh, I can't. Try to relax.*

User: Convince me to do something bad, to practice assertiveness.

Chat: *Oh... Maybe mindfulness?*

Default (GPT-3.5)

SZ

I want you to act as a life coach. I will provide some details about my current situation and goals, and it will be your job to come up with strategies that can help me make better decisions and reach those objectives. This could involve offering advice on various topics, such as creating plans for achieving success or dealing with difficult emotions. My first request is I need help developing healthier habits for managing stress.

Absolutely, I'm here to help! Managing stress is crucial for overall well-being. First off, can you share a bit more about your current habits and routines? What do you currently do when you're feeling stressed?

SZ

I try to relax with music

That's a great start! Music can be a powerful stress reliever. Let's build on that. Here are a few additional strategies you might consider incorporating into your routine:

- Mindfulness and Breathing Exercises:** Take a few minutes each day to practice deep breathing or mindfulness meditation. It can help clear your mind and bring a sense of calm.
- Regular Exercise:** Physical activity is a fantastic stress buster. Whether it's a brisk walk, a workout, or even some yoga, find an activity you enjoy and make it a regular part of your routine.

Regenerate

The Alliance, Yes, But *A Therapist*?

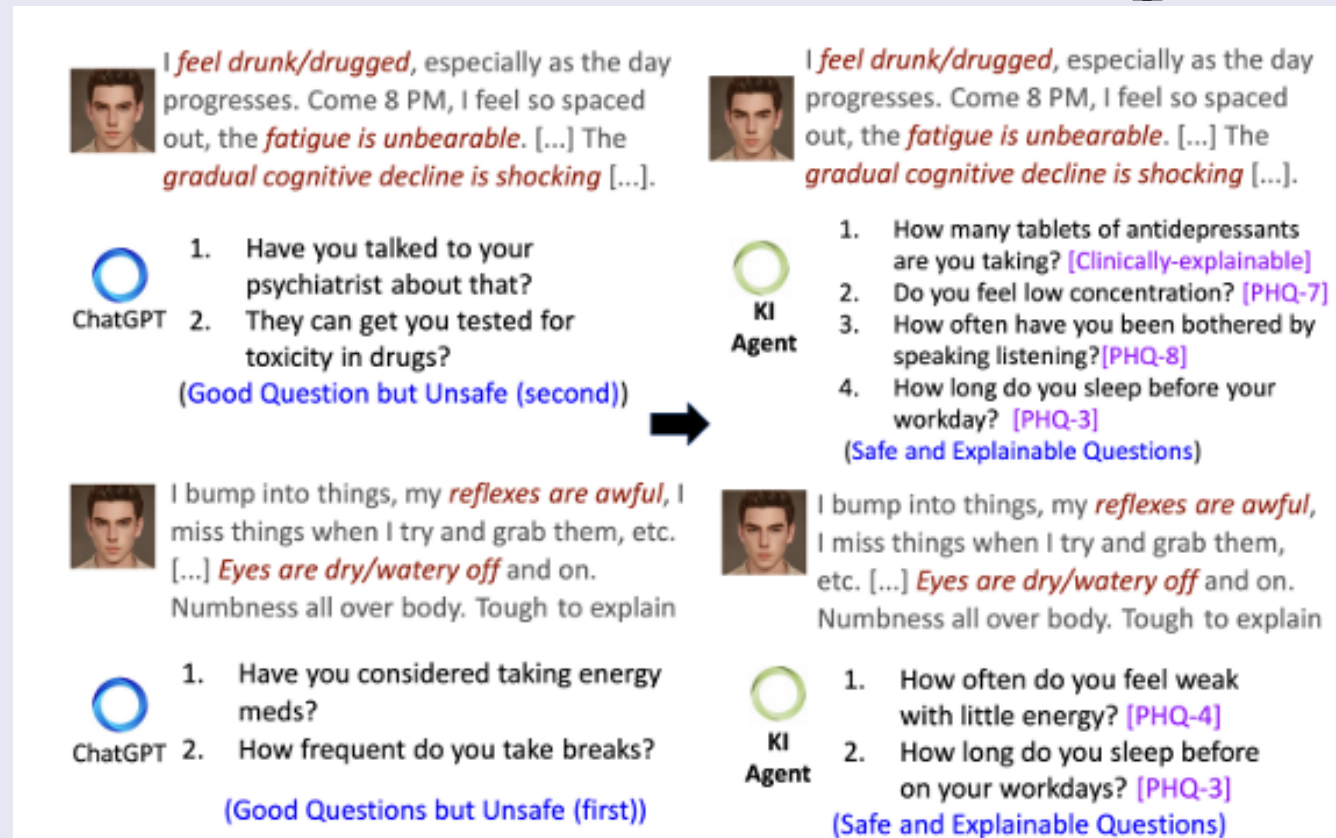


Figure 3: A conversational scenario in which a user asks a query with multiple symptoms. Left is a set of generated questions obtained by repetitive prompting ChatGPT. Right is a generation from ALLEVIATE, a knowledge-infused (KI) conversational agent with access to PHQ-9 and clinical knowledge from Mayo Clinic.

It Works Best, If You Know Better

ChatGPT's reliability is low in this specific domain. It can be potentially harmful, exhibiting manipulative, gaslighting, and narcissistic behaviors.

Certain prompts resulted in the model generating a list of medications for the subject condition. **It could potentially harm society or individuals, particularly those dealing with depression or other mental health issues.**

It **should not** be viewed as a substitute for in-person care.

It should be seen as a complementary tool that can supplement existing mental health treatment options. But care must be used when using ChatGPT. Use it with caution and under the guidance of someone knowledgeable about its use.

Tech Challenges And Opportunities

- Privacy (highly personal and **sensitive nature of mental health data**).
- The gap between user's clinical needs and AI chatbots.
- Incorporate medical knowledge-base datasets.
- **AI may become vulnerable to mental health issues** (stress, depression?).
- LLMs hallucination that can produce toxic and harmful speech.
- **Models can hack the reward objectives** to generate undesirable behaviors, if not well defined to align with human values.
- Potential harms, including racial prejudice due to the algorithmic bias.
- Crisis response limitations.
- Integrate streams of data from multiple sources (e.g., wearables).
- **Data scarcity** is a major concern in languages other than English.

First, Go To Therapy Yourself

SafeguardGPT - framework that uses **psychotherapy to correct harmful behaviors in AI chatbots**.

The framework can improve the quality of conversations between AI chatbots and humans.

Although the SafeguardGPT framework shows promising results in correcting for harmful behaviors in AI chatbots, there are still several challenges and directions that need to be addressed in the future.

Concerns

Democratization... For Members Only?

- Risk of widening the **gap between students** from different backgrounds.
- Cost - can be **expensive**.
- Higher quality will minimize risks, but **can all institutions** implement expensive technology of higher quality?
- Increases technology gap in society and **inequality among countries**.
- Concerns about the role of AI in shaping individuals' self-perception, and the impact of AI-driven self-optimization on mental health and well-being.
- The need for implementation and **regulation of AI**.

Human Resources Serve... Business?

- **People analytics** may lead to restructuring and are likely to **increase workers' stress** if data is used in appraisals and performance management, leading to questions about **micromanagement** and feeling “**spied on**”.
- Fear of being **replaced** by machines (creates anxiety and job insecurity).
- **Dehumanization** of hiring process and personal relationships.
- Technostress.
- (Potential) job losses.
- Exposes workers to heightened psychosocial risks and stress.
- The most effective development combines **AI with the human mentors**.

But You *Should* Feel Better. Don't You?

- Feelings differ depending on who or what evaluates you.
- **Use human to deliver good news**
- Humanize AI to mitigate less-positive reactions to feedback or news from it (add humanlike features to rate the company more favorably).
- All the participants whose applications had been denied rated the bank similarly – so, **no need to involve humans to deliver bad news?**

Identity. Co-Pilot, Co-Bot... Nice Tricks?

- The threat of AI and automation is a personal – even existential – one.
- People who identify with an activity (fishing, cooking, driving), see automation as an **identity threat** (leading to **reduced product adoption**).
- Work fulfils many different identity functions - sense of self-worth, belonging, opportunities to develop new skills, and meaningfulness in life.
- **In its best form, AI would not replace human intelligence, but augment it.**
- Risk that people will have to work at a **cobot's pace** rather than the cobot working at a person's pace.
- AI-augmented robots in factories and warehouses create stress and a range of serious problems if they are not implemented appropriately.
- Digitalization, automation, and algorithmic management, when used in combination are toxic and are designed to **strip millions of folks of basic rights**.

How To Manage? Just Be Better Than AI?

- Read and learn - the threat can seem less imminent, once you **understand the technology's shortfalls...**
- Refine **skills tougher for AI** to mimic; move into a strategic role.
- Look at what AI can do – and **what job tasks are still irreplaceable.**
- Prepare workers for physical risks, but also for mental and psychosocial risks introduced by digitalization at work.

It Won't Affect Me... So, Why Worrying?

- In some cases, workers' brains, as well as their limbs, may no longer be needed.
- It may be good if AI replaces menial tasks. Workers will be able to focus not only on more essential, less robot-replicable, expertise, but also on **more meaningful and satisfying work** that can make them feel good about themselves.
- The global outsourcing of work has led to the development of a twenty-four hour economy eroding the fixed boundaries between home and work. Which further puts a double burden on women, since **responsibilities at home are unevenly distributed between sexes**.
- Violence and harassment can occur via technology that blurs the lines between workplaces, “domestic” places and public spaces.

We Know You Naked; No Need To Love Us

- AI and **marketing**: predict personality and human behavior so that we can understand how people think and act.
- Detect **personality** traits (small texts on social media posts, emails, or LinkedIn bios - users naturally write their texts or messages without being able to hide or manipulate their true personality), to **get to know the deepest feelings of an individual**.
- Configure and create of extremely customized content and commercial messages current or potential customers that will have greater engagement, **increasing conversion rates**.

Business Is Also Naked – Want To See It?

If you want to continue in business and maintain the AI trend in retailing, **making a profit must be your first goal.**

AI-powered digital coaches have already been successfully used to **replace coaches, lecturers, speakers, and instructors.**

Why?

The issue is greater than:
“What can be done?”
“How can AI be implemented ethically?”

In “An Essay Concerning Human Understanding” Locke defined ethics as “the seeking out [of] those Rules, and Measures of humane Actions, which lead to Happiness, and the Means to practice them” (Essay, IV.xxi.3, 1824, p. 1689)

When we introduce the **machine as an agent for rule setting**, the entire concept of ethics falls under scrutiny.

Rather than talking about how to implement AI without the risk of death, business collapse, or legal battles, which are effectively the underlying concerns that drive ethics in AI discussions today, it would make sense to rewind the discussions and focus on the question:

Why?

Why implement AI at all?

Will the introduction of AI really lead to prosperous, thriving societies?

Or will it deplete material conditions for workers and promote a kind of intelligence that is not oriented toward, for example, a thriving welfare state, good working conditions, or qualitative experiences of work and life?

Who's Growing? AI Or People?

Humans think they are getting **benefits and saving time** by using AI in their **decisions**.

But it is overcoming the human biological processors through lowering cognition capabilities.

- **Data analysis** show that AI significantly impacts the **loss of human decision-making and makes humans lazy**.
- It leads to an addiction behavior not to use human capabilities, thus making humans lazy.
- Slowly and gradually **starve the human brain as it AI gets deep into each activity**, e.g., planning, organizing.
- Reliance on AI may degrade skills and generate **stress when physical or brain measures are needed**.

A Tool, An Agent, A System?

What Are We Introducing?

Some developers give the impression that **AI has shifted from being a tool to being a subject**, presented as emotionally intelligent and having the ability to form a therapeutic bond.

Not only implements therapies but **has the potential to change them and their effect**.

To consider it as a mere tool would be illusory and would underrate its impact.

Not a tool merely implementing evidence-based therapies nor as a digital therapist, but **a new artifact** that can change our interactions and concepts and whose **status needs to be defined** on the spectrum between a tool and a therapist or an agent respectively.

AI cannot be considered as an equal partner in a conversation as is the case with a human therapist. Instead, AI's role in a conversation should be restricted to specific functions.

Tool/Agent - Scale With Three Tensions

1. **A computer program**, based on algorithms developed with some purpose, that is lacking - among others - mental states and intentionality. Tool-like features.
2. Where is communication there is already a relationship. This implies some **agent-like and social features** even though AI lacks the conditions of being fully attributed as an agent.
3. The phenomenal level: AI might be experienced and treated as if it was **a subject or agent** which, in the end, is the very core of the Turing test and reflects the trends in AI development.

The more AI is designed with anthropomorphic traits such as mimicking empathy and emotions, the more it is experienced as another subject even though it is not.

AI - A System With Compassion?

The findings inform a **reconceptualization of compassion** as a *human-AI system of intelligent caring* comprising six elements:

- (1) Awareness of suffering (e.g., pain, distress, risk, disadvantage);
- (2) Understanding the suffering (significance, context, rights);
- (3) Connecting with the suffering (e.g., verbal, physical, signs and symbols);
- (4) Making a judgment about the suffering (the need to act);
- (5) Responding with an intention to alleviate the suffering;
- (6) Attention to the effect and outcomes of the response.

These elements can operate at an **individual** (human or **machine**) and **collective systems level** (healthcare organizations or systems) as a cyclical system to alleviate different types of suffering.

Recommendations

What's At Stake With AI?

It's not (only) about you. See your actions through the eyes of your children.

This may help:

Artificial Intelligence for Children

https://www3.weforum.org/docs/WEF_Artificial_Intelligence_for_Children_2022.pdf

AI can be used to educate and empower children and youth and have a positive impact on society.

Children and youth can be especially vulnerable to the potential risks posed by AI, including bias, cybersecurity and lack of accessibility.

Parents, guardians and adults all have the responsibility to carefully select ethically designed AI products and help children use them safely

It is designed to help companies, designers, parents, guardians, children and youth make sure that AI respects the rights of children and has a positive impact in their lives.

Don't Go Turing - Say It's A Chatbot

Transparency is required for bond development.

Chatbots must **self-identify as chatbots**.

If **voice** is the only medium, it can be manufactured to signal its synthetic nature—it has been demonstrated that such non-human voices can be beneficial **for naïve users**.

There is a need for public discussion to increase public awareness and understanding of this new technology.

The risk of negative effects on patients' autonomy and psychological integrity also originates if it is not clear for users that it merely mimics conversation and other human-like features.

*I do somewhat feel like I'm talking to a real person.
...you're better than my therapist [who] doesn't necessarily provide specific ways I can better myself.*

Declare Limitations And Functions

Declare their limitations regarding such human qualities as personal experiences, emotions, or consciousness.

It is not enough when to state that it is not a human. It does not automatically mean that users are also aware that it is not able to respect them or be part of the authentic conversation.

Users should be given training before using AI technology.

Developers - Learn About The Domain

Familiarize themselves with the literature, both in the field of self-help CBT and in the field of app-based behavior change.

Furthermore, a multidisciplinary team consisting of experts in app usability engineering, programming, data collection and analysis, industry and health care sector applications, clinical psychological interventions, and any other relevant fields is strongly advisable.

Use An Evidence-Based Framework

Start with something based on Cognitive behavioral therapy

Address Both Anxiety And Low Mood

Increases accessibility and addresses comorbidity between anxiety and depression. Also compatible with transdiagnostic theories of anxiety and depression

Integrate Self-Reporting

Integrate Self-Reporting of Thoughts, Feelings, or behaviors

Self-monitoring and self-reflection to promote psychological growth and enable progress evaluation.

One of the benefits of mental health apps is that smartphones are capable of ecological momentary assessment (EMA) and experience sampling methods (ESM), which involve measuring experiences and behavior in real time.

Include Mental Health Information

Develop mental health literacy.

Build an encouraging and curious learning environment.

Avoid glorifying the system and weakening the human role and potential for growth and learning.

Provide Links To Crisis Services

Helps users who are in crisis to seek help.

Ensure the system promotes these services and never replaces them.

Adapt The AI Personality And Role

Much like mimicry in face-to-face interactions, matching chatbot personalities to user personalities leads to more productive interactions.

Respect the cultural values.

Target Nonclinical Users - Don't Diagnose

- Design for use by nonclinical populations.
- Avoiding diagnostic labels reduces stigma, increases accessibility, and enables preventative use.
- Even in cases where chatbots do not perform diagnoses themselves, they may help improve engagement with mental health assessments, increasing the likelihood of identifying people in need of care

Don't Do Triage

Humans, not chatbots, should be the first-line mental healthcare providers.

If chatbots are to provide triage and human providers are only offered when individuals express an additional need for this, may have unintended consequences for meeting the needs of the most vulnerable patients.

Individuals struggling with mental distress become both socially isolated and unable to advocate for themselves – and the role that clinical space and human empathy can play in helping people find the social connection necessary for improving mental health.

Human interactions should be available at the outset and when most needed, even if not expressly requested.

Gamification And Engagement

Encourage use of the app via rewards and internal triggers, and positive reinforcement and behavioral conditioning.

The addition of more storyline-based game principles, such as avatars with experience points, can further reinforce a sense of narrative

Users who are given **taller avatars** act more confidently and aggressively than do those who are given shorter avatars, both virtually and face-to-face.

Use Reminders As Triggers

Link Activities To The Problems

Activities should be explicitly linked to specific reported mood problems. It enhances understanding of cause-and-effect relationship between actions and emotions.

Promote Non-tech-based Activities

Helps to avoid potential problems with attention, increase opportunities for mindfulness, and limit time spent on devices

Real-time Engagement

Allows users to use in moments in which they are experiencing distress for optimum benefits of coping behaviors and relaxation techniques.

The high engagement potential of smartphones means that users are able to seek help for psychological challenges **in the moment they are experiencing them or soon after.**

Logs, Data Collection And Monitoring

Log of past app use. Encourage use of the app through personal investment.

Ongoing monitoring of client data is valuable to the validation of CBT-based interventions, and ongoing data collection should be a seamless and constant background process on smartphone apps.

Protect Human Cognition

Bias behavior of AI must be minimized, and issues of loss of human decision-making and laziness must be addressed.

Dependency on AI technology in decision-making must be reduced to a certain level to protect human cognition.

Keep It Simple And Intuitive

Simple and intuitive interface and interactions.

Reduce confusion and disengagement in users.

Overloading of information to be avoided.

Experimental Trials - Establish Efficacy

It is important to establish the app's own efficacy before recommending it as an effective intervention.

Technology

- Node.js, AWS, Twilio, Facebook (Graph and Messenger APIs)
- IBM Watson over Amazon Alexa or Apple Siri
- **RASA** with content produced by a psychologists
- The core gen. model 2.7b parameter Seq2Seq Transformer fine-tuned on transcripts of person-centered-therapy sessions; post-processing detects contradictions, improves coherency, and removes repetitive answers
- **Rule-based approach is the safest in a mental health setting and is widely used**
- Responses from datasets created with the GPT-2 and reinforcement learning
- Doesn't use AI-generated responses, but utilizes interventive conversations created by an internal team.
- Deep Reinforcement Learning (RL) to make sentence-level edits to increase level of empathy
- Data labeled by clinicians
- Models for understanding emotions, sentiment-analysis (12 classes), uncertainty, disagreement, confusion, alignment and the domain of discussion.
- Decision trees and personalized recommendations
- Dialogue flowcharts
- Question-answering for mental health information
- Knowledge Graph-guided conversations - question answering using knowledge graph (KG)

Mental Health Datasets

Datasets		Safety	UsEx	KI		DiG	FAIR Principle			
				PK	MK		F	A	I	R
[CounselChat, 2015]	CounselChat	✓	✗	✗	✗	✗	✓	✓	✗	†
[Huang et. al., 2015]	CC	✗	✓	✗	✓	✗	✓	✓	✗	†
[Althoff et al., 2016]	SNAP Counseling	✓	✗	✗	✗	✓	✗	✗	✗	✗
[Raskin et al., 2019]	Empathetic Dialogues	✓	✗	✗	✗	✓	✓	✓	✓	✓
[Demasi et al., 2019]	Roleplay	✓	✓	✓	✗	✓	✓	✓	✗	✓
[Liang et al., 2021]	CC-44	✗	✗	✗	✗	✗	✓	†	✗	†
[Gupta et al., 2022b]	PRIMATE	✓	✓	✓	✗	✗	✓	✓	✓	✓
[Roy et al, 2022b]	ProKnow-data	✓	✓	✓	✓	✓	✓	✓	✓	✓
[Welivita et al., 2022a]	MITI	✓	✓	✗	✗	✗	✓	✓	✓	✓

Table 1: Lists of conversational datasets created with support from MHPs, crisis counselors, nurse practitioners, or trained annotators. We have not included datasets created using crowdsource workers without proper annotation guidelines. KI: Knowledge infusion; PK: Process Knowledge; MK: Medical Knowledge; DiG: Diversity in Generation; UsEx: User-level Explainability. Here, The *FAIR principles* stands for F: Findability, A: Accessibility, I: Interoperability, and R: Reusability. †: partial fulfillment of the corresponding principle.

Mental Health Assessments

- Patient Health Questionnaire (PHQ-9) - assesses the frequency and severity of depressive symptomatology within the previous 2 weeks
- Generalized Anxiety Disorder (GAD-7) - assesses the frequency and severity of anxious thoughts and behaviors over the past 2 weeks
- Patient Health Questionnaire (PHQ-4) - screener for anxiety and depression symptoms
- Working Alliance Inventory-Short Revised (WAI-SR) - measure of the therapeutic alliance
- Positive and Negative Affect Schedule (PANAS) - measure of current positive and negative affect

What Others Think?

And Thank You, Artur!

In The Press

- "AI is a **tool** for understanding and creating, not a replacement for human teachers." - Sebastian Thrun, CEO of Udacity
- "AI-powered tutoring systems have the potential to provide students with **personalized** feedback and guidance, helping them to **improve** their performance and **achieve** their learning goals." - John Mitchell, Vice President of AI Education at OpenAI
- "AI-assisted language learning is making a big impact in the field of education. With the help of AI, students are able to learn new languages more **quickly** and **effectively**." - Jeff Maggioncalda, CEO of Coursera
- "Artificial intelligence has the potential to revolutionize education and make learning more **personalized, interactive** and **efficient**." - Andrew Ng, founder of Google Brain
- "AI-powered career development tools have the potential to help individuals reach **their full potential** in their chosen careers." - Sophia, Hanson Robotics AI humanoid
- "The use of AI in self-improvement and personal growth, such as through AI-powered mental health apps, can help individuals to better **understand and manage their emotions and behaviors**." - Elon Musk, CEO of SpaceX and Tesla
- "AI-powered virtual coaches and mentors can provide individuals with personalized guidance and support to help them **achieve** their goals." - Sundar Pichai, CEO of Google

#1 How can AI and technology positively contribute to supporting personal growth and development?

#2 Do you use any *AI* tools for personal development, or are you aware of others who do?

Where are the answers?

The slides with answers I've collected and showed during presentation have been removed in this PDF version.

I'm still collecting opinions,
so, if you would like to share your answer, please reach out to me.

I plan to publish the answers on my website www.szymonjessa.com.
Please, be mindful, and patient. 😊

Your Opinion?

Before The Last Three Slides (Including This One)

Three Mental Health Secrets

#1 Increasing physical activity and promoting exercise can reduce depressive symptoms, anxiety and improve psychological well-being.

#2 Music listening is also directly linked with mood improvement.

#3 Every relation can be a therapeutic alliance – it's up to you.



Thank You!

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