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CHATBOTS (A FORM OF HCI) TO CURB SOCIAL ANXIETY DISORDERS AMONG THE URBAN POPULATION, COST EFFECTIVELY

***PRIYANTHARAMURALI, I.** *B.Com C.A., PSGR Krishnammal College for Women, Coimbatore. TN INDIA*

Abstract

Social Anxiety Disorder (social phobia) is the third largest mental health care problem in the world today. Social anxiety is the fear of social situations that involve interaction with other people. It is the fear and anxiety of being negatively judged and evaluated by other people. Human–computer interaction (commonly referred to as HCI) researches the design and use of computer technology, focused on the interfaces between people (users) and computers. New designs of technologies and systems APPEAR more and more every day and the research in this area has been growing very fast in the last few decades. This paper discusses the use of chatbots as a personal treatment option for patients diagnosed with social anxiety disorder at the comfort of their homes without having to talk to a psychiatrist on a continuous basis. Therefore, chatbots, can be considered as an alternative. Such programs can give an initial push towards the right direction before patients can recover completely on their own, with the advantages of privacy, cost effectiveness, having a record of tasks completed and monitoring progress.

Introduction

Social anxiety disorder, also known as social phobia, involves intense fear of certain social situations—especially situations that are unfamiliar or those that involve being judged and scrutinized by others.Underlying social anxiety disorder or social phobia is the fear of being scrutinized, judged, or embarrassed in public. Studies show that every fifth Indian suffers from social phobia. Some factors that contribute to social anxiety is competitiveness, drive for money, overcrowding in cities and other similar factors that lead to stress. Further, the presence of one or more anxiety disorders was significantly associated with lifetime suicidal ideation and suicide attempts. Studies also show that among those with suicidal attempts, 64.1 percent had at least one Anxiety Disorder. While it may seem like there's nothing you can do about the symptoms of social anxiety disorder or social phobia, in reality, there are many things that can help. It starts with understanding the problem. Social phobia has an early age of onset–by age 11 years in about 50% of individuals and by age 20 years in about 80% . Studies have found that it is a risk factor for subsequent depressive illness and substance abuse. Statistics shows that most people suffer in silence for around 10 years

before seeking help with social anxiety. While a socially phobic person finds it difficult to meet with a psychiatrist and get diagnosed, the other reason that hinders getting treatment at an early stage is the cost of treatment. With nearly 25% of the Indian population sufferning from anxiety disorders and very few being treated,it is high time a cost effective method to curb it be initiated before it becomes a serious problem.Eventhough the average time a person spends with a computer is increasing thus reducing human-to-human interaction, a "friendlier" version of human-computer interaction that could provide an outlet for bottled up emotions which are usually the trigger for mental illness is inviting. This paper discusses the use of chatbots, a type of human computer interaction(HCI), as a means to provide close-to-human interactions and responses.

A chatterbot (also known as a talkbot, chatbot, Bot, chatterbox, Artificial Conversational Entity) is a computer program which conducts a conversation via auditory or textual methods.

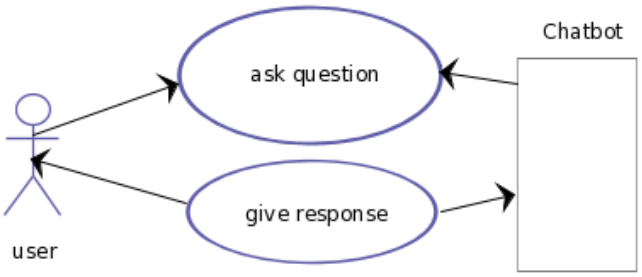

Fig 1: Chatbot interaction

It could be used not to make diagnoses, but can send weekly and monthly mood reports based on a user's input. It can be used to instill positive thoughts and suggest articles, music or skill development classes to improve mental health. Conversations between the patient(user) and the bot, can be auditory as well as textual. Social anxiety sufferers have negative thoughts and beliefs that contribute to their anxiety. They are overwhelmed by thoughts like: "I know I'll end up looking like a fool", "My voice will start shaking and I'll humiliate myself" and "People will think I'm stupid". As soon as the user communicates these insecurities to the bot, it would reply positively and in stil confidence in the user, that these are not true.The user could use the bot as a friend and first start sharing. With the use of Artificial Intelligence (A.I) and Natural Language Processors (NLP) the chatbot would try to detect a user's mood and keeps track about what it finds. This way a user can track their emotional state over time. It could perform basic reminders and routine check-ins automatically. If it detects that theemotional state of the user is unstable it could connect the user with a trained human therapist as well. Such a chatbot would encompass aspects of human traits such as personalities, emotions, memory, and domain information to help make the simulation of a human conversation more realistic. Generally, a personality is considered to be a collection of thought, behavioral, and emotional patterns . The Factor Five model, also known as the Big5,

divides the foundations of personality into five factors: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to experience.

Table 1
Summary of the Factor Five personality factors

Extraversion	energetic, positive emotions, talkative, social, and tendency to seek stimulation
Agreeableness	a tendency to be trusting, friendly, compassionate and cooperative rather than suspicious and antagonistic towards others
Neuroticism	a tendency to experience unpleasant emotions easily, such as anger, anxiety, depression, or insecurity
Conscientiousness	a tendency to show self-discipline, act dutifully, and aim for achievement, and to be orderly, reliable, and aware; planned rather than spontaneous behavior
Openness to Experience	appreciation for the arts, emotion, adventure, and unusual ideas; imaginative, creative, and curious

Among these Neuroticism involves persons that exhibit anger, anxiety, depression and often have negative emotions. Using NLP and by keeping track of the emotional state of the user, the bot can deduce the personality of the user. An emotional state is basically a momentary mental state of the mind and according to Ekman's model, a basic set of emotions includes happiness, sadness, anger, fear, disgust and surprise. This paper does not delve into the details of how a chatbot detects personalities and emotions to understand the mental state of the user. The discussion is limited to describing the basic model that the chatbot will be built upon. This model will include three main modules. First one is the chatbot's brain that will decide what kind of emotion is being represented in the input, and then based upon its personality, it will decide the proper response. Second component is the input interface.[11] The users can use textual or auditory means of communicating with the bot. If it is text then itwill need to be parsed correctly and employ NLP to process the text to arrive at meaningful responses. The thirdcomponent is the output interface, which based on the input and the evaluation done using A.I will respond with a friendly and close-to-human type of response. Once the user starts feeling comfortable with the bot, (i.e., the user has spent a stipulated amount of time using the bot) it is time for it to start training the patient to improve their socializing skills.

Cognitive-behavioural therapy: Learning how to control the physical symptoms of anxiety through relaxation techniques and breathing exercises.

- Challenging negative, unhelpful thoughts that trigger and fuel social anxiety, replacing them with more balanced views.

- Facing the social situations feared in a gradual, systematic way, instead of avoiding them.

While patients can learn and practice these exercises on their own, if they have trouble with it they may benefit from the extra support and guidance the chatbot brings.

Demerits of a chatbot

No matter the cost effectiveness,or the privacy enjoyed on using chatbots it still would not offer the experience and reliability psychologists can.It could become addictive for the patient and ultimately not fulfil the desired objective.It requires an internet connection and the patients have to be taught how to operate them,which might even intimidate the patient.

Future of HCI

The future for HCI, based on current promising research, is expected to include the following characteristics:

Ubiquitous computing and communication*:*

Computers are expected to communicate through high speed local networks, nationally over wide-area networks, and portably via infrared, ultrasonic, cellular, and other technologies. Data and computational services will be portably accessible from many if not most locations to which a user travels.

High-functionality systems*:*

Systems can have large numbers of functions associated with them. There are so many systems that most users, technical or non-technical, do not have time to learn them in the traditional way (e.g., through thick manuals).

Mass availability of computer graphics*:*

Computer graphics capabilities such as image processing, graphics transformations, rendering, and interactive animation are becoming widespread as inexpensive chips become available for inclusion in general workstations and mobile devices.

Mixed media: Commercial systems can handle images, voice, sounds, video, text, formatted data. These are exchangeable over communication links among users. The separate fields of consumer electronics (e.g., stereo sets, VCRs, televisions) and computers are merging partly. Computer and print fields are expected to cross-assimilate.

High-bandwidth interaction: The rate at which humans and machines interact is expected to increase substantially due to the changes in speed, computer graphics, new media, and new input/output devices. This can lead to some qualitatively different interfaces, such as virtual reality or computational video.

Information utilities: Public information utilities (such as home banking and shopping) and specialized industry services (e.g., weather for pilots) are expected to proliferate. The rate of proliferation can accelerate with the introduction of high-bandwidth interaction and the improvement in quality of interfaces.

Conclusion

The internet age is proving that humans and computers are slowly becoming inseparable and we are growing more and more dependent on computers.While some people may argue that this is not good and depression is prevalent due to the digital age,this chatbots such as Facebook's "Joy" are proof that human computer interactions can still be of vital importance.

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