

AI Chatbots and Interpersonal Communication: A Study on Uses and Gratification amongst Youngsters

Alisha Pathak

Abstract

“Human-Machine communication has long been a fascinating topic with ample scope and room for innovations. All of us somewhere felt the upcoming years are going to be ruled by artificial intelligence in different forms and capacities. While exploring the interactions of social media users online, the researcher came across a common pattern where they were choosing to talk to chatbots more often than expected. This was supplemented by exponential rise in popularity of chatGPT. One major problem with this increasing interaction between human beings and chatbots is that it possesses a threat of replacing human beings as friends and significantly affects the interpersonal communication with others. This study dives deeper into this aspect of human-machine communication and tries to understand the uses and gratifications amongst youngsters who are regularly using chatbots. Another objective of this study is to find how these interactions with chatbots are influencing their real life. It also tries to answer whether chatbots can replace human beings as friends and consequences for the same if they do so. The researcher uses in depth interview method for this study and the findings were transcribed and analysed using thematic analysis.’

Keywords: Artificial Intelligence; Chatbots; Communication; HMC.

Introduction

“Artificial intelligence is going to be the future of mankind.” Even before we could accommodate ourselves to this statement by Yuval Noah Harari, chatGPT and Sana started to make headlines threatening the real world. People started to feel the terror of the advent of artificial intelligence as it

started to replace them at work. All of this happened at such a pace that nobody could weigh its advantages and disadvantages and those who could foresee the dangers were shunned owing to the perks it was bringing to the table. However, among different faces of artificial intelligence in cyberspace one stood out distinctly, it was chatbots. Chatbots are defined as automated computer programs designed for task fulfillment. (Morgan, 2017) From commercial websites to social media platforms, these chatbots (commonly referred to as bots) started appearing everywhere. Companies have used chatbots for basic tasks such as providing customer support (Hyken,2017), booking appointments(Bradford,2017), and giving restaurant recommendations (Orda,2017). Applications of chatbots are also seen in personal banking, insurance coverage, and military recruitment. (Maass, 2014)

As Artificial intelligence advanced with speech recognition, learning, and language processing, they became more conversational. (Morgan, 2017) These conversational chatbots opened a new area for studies in Human-Machine Communication. The reports of human beings forming relationships with bots (like Replika) and even accepting to date them came out as a shocker to those who were still receiving artificial intelligence's presence in their real world. A lot of work in academia started to revolve around Human Chatbot Relationships (HCR), and models of interpersonal communication became a basis to build upon to understand this new phenomenon where machines were not only interacting with human beings but also forming intimate relationships. Interactions with these bots reduce the feelings of loneliness (Banks et al,2008) and symptoms of depression (Wada et al,2005) making them a potentially good friend and partner.

Along with the rapid rise in the use of chatbots and their impact on the real world, studies dealing with their uses and gratifications become instrumental. Keeping this need in mind, this study tries to explore the interactions of youngsters (who are operationally defined here as individuals aged between 13 and 30) with chatbots and understand their uses and gratifications from those interactions. The researcher has also attempted to develop a communication model for HCC that can act as a fundamental building block for future studies in this area. At the end of this study, the researcher has also answered all the research questions that emerged after the literature review and drawn insights about whether chatbots can replace human beings as friends for the upcoming generation. Here, human chatbot communication (HCC) is mainly studied as a branch of Human Machine Communication (HMC).

Literature-review

Computers are social actors (CASA) paradigm indicates that people apply human social roles and expectations when interacting with media such as computers and robots. (Nass and Moon,2016) People assign human personality traits to computers and artificially intelligent agents. Understanding perceptions of chatbot features is fundamental to understanding human behavioral outcomes in the HMC context. Communication scholars have long been arguing that the perceptions of uncertainty (Berger and Calabrese,1975), liking(Heider,1958; Tesser,1988; Miller, Downs, and Prentice,1998), and social attraction (Hesse and Floyd,2011) are essential factors in processing relative information and forming social relationships.

Edward et al. (2019) give a human-to-human interaction script framework that can act as a fundamental model to understand human-machine communication. Here they argue that due to the expectancy-laden and scripted nature of human-to-human interactions, people are less likely to like the presence of chatbots. They anticipate less certainty and social presence in chatbots. People tend to judge identical messages differently when sent by human beings and chatbots. Ho, Hancock, and Miner (2018) went on to explore informational and emotional disclosures with chatbots and inferred that users felt the same kind of impressions of relational enjoyment, warmth, and comforting responses between humans and chatbots under controlled conditions.

Furthermore, according to Albert and Steinberg (2011), there is a growing interest in understanding why adolescents choose to do what they do which is their decision-making. Unlike popular belief, the decisions made by adolescents are not simply a result of impulse. Blair et al (2015) state that people use Computer-Mediated Communication (CMC) each day for a variety of communicative purposes including many which involve detail-oriented and outcome-based aspects. It further says that adolescents consistently perceived texting as easier than calling in ways that were meaningful to their everyday lives. The Nielsen Company (2011) estimated that adolescents exchange an average of seven texts per waking hour. This emphasizes the fact that adolescents prefer texting over calling to communicate with their peers and others. Also, some levels of similarity between the machine actor and the human have been demonstrated to produce more desirable outcomes (Edward et al., 2019) as they were preferred for Human-Machine Communication (HMC) by users.

Despite significant work being done in understanding interactions be-

tween human beings and chatbots there is a rift in the understanding of how the advent of artificially intelligent chatbots has impacted the daily life interactions of people in general. Any specific work relating uses and gratifications theory with human-machine communication could also not be found albeit there are certain theories like social exchange theory (Emerson, 1976) and social penetration theory (Altman and Taylor, 1973) that try to explain human chatbot relationship (HCR). Also, the theories of interpersonal communication have been applied to understand HMC but interpersonal communication has yet not been related to human-machine communication as a variable itself. This study tries to bridge the aforementioned gaps and attempts to answer the arising research questions from the existing literature.

Research Objectives

1. To assess the uses and gratifications of chatbots among users
2. To find the impact of interactions with chatbots on the real life of users
3. To understand the difference between interpersonal communication and human-machine communication

Research Questions

1. What gratifications do users derive from communicating with chatbots?
2. How communicating with chatbots are different from that of interpersonal communications?
3. Can chatbots replace human beings as friends in the near future?

Research Methodology

Keeping the objectives and demands of this study in mind, an exploratory framework was adopted by the researcher. As Wimmer and Dominick suggested in *Mass Media Research: An Introduction* for exploratory studies, where relationships between variables are being investigated and a wealth of detail is needed, in-depth interviews or intensive interviews ought to be used as a data collection method. Hence, 21 respondents were interviewed from different age groups and educational backgrounds. The age of respondents varied between 13 and 30 and the duration of interviews

ranged from thirty minutes to two hours. The structure of the interview was semi-structured so that the required flexibility could be exercised considering the exploratory nature of the study.

The interviews were conducted both via calls and face-to-face meetings with due consideration to the convenience of respondents. Further, the interviews were recorded and transcribed using thematic analysis. Thematic analysis is defined as a method for identifying, analyzing, and reporting patterns (themes) within data. It provides a useful research tool that can potentially provide a rich and detailed yet complex account of data. (Braun and Clarke, 2006)

Findings and Discussion

Uses and Gratification of Chatbots

Uses and gratifications theory categorizes five types of needs that users try to gratify using different types of media. They are cognitive needs, affective needs, integrative needs, social integration needs, and tension release needs. (Katz, Gurevitch, and Haas, 1973) However, these were not specific to Human-Machine Communication. Therefore, while transcribing and analyzing the interviews the researcher deduced four major themes under which uses and gratifications from chatbots can be understood. These are Cognitive needs, Recreational needs, Communicative needs, and, Emotional needs.

1. Cognitive needs – Most of the respondents said they used Google Assistant, Siri, Alexa, etc. to obtain information on any topic. They also mentioned these chatbots easily provided them the information in most of the cases however there were instances when they failed to give accurate information that was being sought. Sometimes when chatbots meant for instant messaging like Snapchat AI were asked questions related to current affairs or general knowledge, they redirected the user to other websites which according to one respondent *almost felt like a friend asking you to refer to another source since they did not have the answer to your question*. Another ability of chatbots to compile data from a huge number of sources and present it crisply to users aided them in saving time and enhancing their productivity. Many respondents mentioned how frequently they used chatbots in a day to get help with their assignments and other tasks at hand. The use of chatbots is found to increase the productivity, cognitive abilities, and knowledge of respondents easily and quickly. Its accessibility to youngsters further makes it more efficient and allows it to

act like a go-to place anytime one is seeking information.

2. Recreational needs – “*Alexa! Play a song.*” “*I am bored, can you crack a joke for me.*” These are excerpts from the responses obtained. Respondents admitted to having used chatbots after a hectic day or whenever they were bored to be entertained. Chatbots were capable of helping them with music, movies, jokes, poetries, stories, etc. They often sought suggestions from chatbots because they believed chatbots were highly customized to their needs as well as updated with the trend. There were hardly any instances where chatbots disappointed their users when they looked at them as a mode of recreation. Also, another way in which respondents were entertained using chatbots was its weird answers to questions asked by respondents. Many of them reported to have asked AI chatbots weird questions to get hilarious responses and chatbots did respond hilariously to such questions serving their entertainment needs at that moment.

3. Communicative needs- Chatbots are found to have improved the abilities to communicate amongst the respondents. Although they always knew chatbots were a program responding to them they could learn to communicate better using chatbots. Talking to chatbots familiarized users with what kind of responses they could expect from others, and being able to predict the upcoming response eased the process of communication and allowed them to get rid of hesitation. For example, a respondent mentioned how chatbots were able to sustain conversations from points where normally two human beings interacting with each other may stop. Chatbots were programmed to ask questions that were relevant and at times kept the conversation alive. Also, basic etiquettes of communication like being courteous and contextual were evident in most of the conversations with chatbots. Altogether, users who wanted to learn how to communicate effectively and enhance their interpersonal skills could use chatbots as a tool to help them learn. Many chatbots like *Replika* are designed in a way that users can customize it according to their needs. *Replika* comes with a memory that helps it store the important information users give to it. Interactions with such chatbots almost felt like talking to a friend and thereby improved communication between the user and others around them.

4. Emotional needs- Many studies have earlier reported the effectiveness of chatbots in coping with stress and ensuring mental well-being. *Woebot*, a mobile application is a chatbot that provides daily chats, word games, curated videos, and helps to track moods. (Molteni, 2017) In a study conducted on *Woebot*, lower symptoms of depression were report-

ed after two weeks of treatment. (Fitzpatrick, Darcy, and Vierhile,2017). Here in the current study, respondents were found to be looking for company and solace at times in chatbots. Some of them reported having initiated conversations with chatbots just because they had nobody to talk to and at times because they were scared of being judged by their human counterparts. Unlike human beings, chatbots are non-judgemental which adds to the emotional security they provide. However, lack of empathy and emotional intelligence act as hindrances while users try to connect emotionally to AI bots but for now, with whatever capabilities they have they act as a listener and at times, a guide to the best of their abilities. Talking to chatbots also provides a sense of having someone by your side albeit virtually yet most of the time that feeling prevents further worsening of one's mental health. Therefore, it can be concluded that chatbots do serve emotional needs by acting as a listener and providing a sense of companionship to users in need.

Impact of Human-Machine Communication on Real Life

Interacting with machines has been found to ease various activities that human beings perform every day. The impact of HMC on real life can be broadly understood under two themes as per the available data for this study:

1. **Personal growth** – Interactions with chatbots have been found to significantly increase one's arena of knowledge. With a wide range of information coming in handy to people, they can use it for their growth in different domains of life. Respondents reported to have witnessed changes in how they think about an issue after they have interacted with chatbots about it. They have also reported using it to find innovative ways to solve a particular problem. Along with this cognitive function, chatbots also serve the emotional needs of users at times allowing them to stay free from the urge of being authenticated or validated. This creates room to be able to focus on their growth in different domains of life. Not all but some respondents happened to exploit chatbots optimally and use them as a friend and aid to foster their performance in different ways.

2. **Interpersonal relationships** - Chatbots like Replika have given rise to a genre of Human Chatbot Relationship (HCR) studies where human beings have been found to have developed proper relationships with such chatbots over time. However, for relevance to this study, we confine ourselves to only the impact of communication on the interpersonal relationships of users. For this, mixed findings were inferred. HCM tends to

affect interpersonal relationships both positively and negatively. For some respondents, chatting with artificially intelligent bots helped them learn to articulate their feelings better, be more expressive, and get rid of hesitation improved their relationships in real life with people whereas for others, interactions with chatbots when got regular became a hindrance for their interactions with others. The constant availability of chatbots allows a user to reach out to them whenever they are alone or even when they are feeling lonely in a crowd. This deprives them of real-life interactions and they fail to realize that interacting with those around them is more important. *"It was almost like being lost in a virtual world that provided you whatever you expected it to."* said one of the respondents. Thereby, for these users, chatbots increased their screen time and devoded them from real-life interaction implying a negative effect on interpersonal relationships.

Human-Machine Communication versus Interpersonal Communication

Theories of interpersonal communication have acted as a fundamental framework for understanding human-machine communication. There have been models that talk about human chatbot relationships but no specific model has been given so far to understand human-machine communication specifically. Keeping the needs of technological advancement and users' accessibility in mind, HMC can be differentiated at the following levels:

1. **Proximity** - The foremost concern that arises when HMC is being discussed as a modification of interpersonal communication is that of proximity. One of the major features of interpersonal communication is that it is face-to-face communication between two people. On the contrary, there is no physical presence in the case of human chatbot communication. However, with the development of avatars and widened range of emojis HCM is attempting its best to virtually bridge this gap.
2. **Non-verbal cues** - In human chatbot communication, the presence of non-verbal cues and commands is negligible. Emojis barely fill that gap that is created between the expressions of a human being and that of machines. Hence another point where users significantly found HMC different from interpersonal communication is the absence of non-verbal elements in their conversations with chatbots.

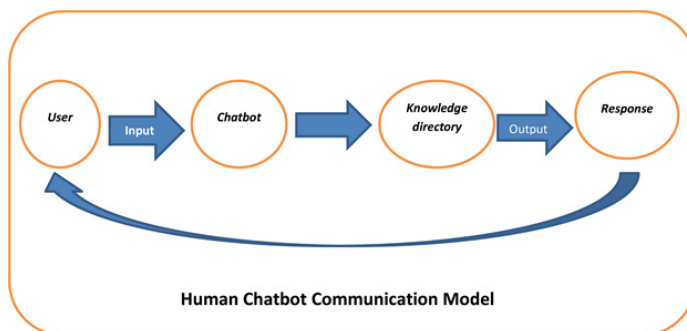
3. **Psychological barriers** - This barrier is extensively studied for interpersonal communication as well but for HCM, its scope widens as when users are interacting with AI chatbots then irrespective of how considerate, polite, and empathetic chatbots are with their replies, users always keep thinking that they are programmed and their responses are coming from a directory of knowledge they have been fed. This barrier often causes users to stop communicating with them as a friend and see them only as robots.

4. **Accessibility** - Post globalization and digitalization, almost the entire world can access the internet and hence chatbots but there are still people who do not engage in conversations with chatbots due to their inability to access them. Many respondents reported having talked to chatbot only after they read about chatGPT and many were still unaware of Replika and Woebots. This emphasizes that when interpersonal communication can never be bounded by the limitations of such technological boundaries, human-chatbot communication still has a long way to go.

From the above discussion, it is evident that although human-chatbot communication is an interaction between two entities yet it differs on the parameters of proximity, non-verbal elements, psychological barriers and accessibility.

Human-Chatbot Communication Model

After studying the human chatbot interactions and analyzing the experiences of different users with chatbots, the following communication model can be suggested. This model keeps the existing knowledge of interpersonal communication in centre and emerges as an extension of the same. In this model, the user inputs their instructions to chatbots which are then interpreted in its knowledge directory that generates output as a response and passes it on to the user.



Conclusion

Human Chatbot Communication (HCC) can be understood as a branch of Human-Machine Communication (HMC) where users interact with chatbots to satisfy four types of needs namely cognitive, recreational, communicative, and emotional. This is an extension of the existing uses and gratifications theory proposed by Katz, Gurevitch, and Haas (1973) in the context of HCC. Another objective of this study was to understand the impact of interactions with chatbots on the real lives of users, majorly personal growth and interpersonal relationships were derived from the collected data and it was observed that HCC facilitated personal growth but affected interpersonal relationships both positively and negatively. Also, a comparison between interpersonal communication and human-chatbot communication was drawn where HCC turned out to be a more informative but less accessible form of communication with limitations of proximity, non-verbal cues, and psychological barriers. Lastly, one of the questions raised in this study is whether chatbots can replace human beings as friends. From the findings of this study, it can be concluded that although chatbots have emerged as informative communicators and companions and are undergoing continuous advancements to become more human-like the chances of them crossing the psychological barriers and limitations of physical proximity seem very slim. However, Internet of Things (IoT) will surely surprise us with its attempts to bridge these gaps but that will go beyond the scope of chatbot literature. Hence, this study concluded that there are possibilities of chatbots becoming our friends but they will not be able to replace human beings as friends for decades to come.

Limitations and Recommendations

Considering the time constraints, the researcher had to limit herself to a small number of respondents. However, since this study is an exploratory study and a preliminary work that aims to contribute to the field of HMC and establish HCC as its branch, the findings serve the purpose. In the future, researchers are expected to explore different dimensions of this topic and take a larger sample so that the study can be more generalizable and go beyond providing insights. Also, the triangulation approach will add to the reliability of results if used in this direction.

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