

A Comprehensive Review of Literature and Research on User Preference in Chatbot Personality

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Abstract

Research in chatbot personality preference by user is an emerging field as AI becomes more useful in everyday life. As such, there has been a large increase in the last ten to twenty years in the number of papers published on this topic. And as the utility of chatbots increases, the necessity for clarification on the preferred personalities of AI also increases, to create AI that is more tailored to user preference. Given that the field is so new, it is becoming increasingly mandatory that a literature review be performed on this research. We review the researched personality preferences in chatbots of the following types: counselor, assistant, entertainer, and customer service agent. This novel review, which is the subject of this paper, provides a basis for understanding for future researchers in creation of chatbots.

1 Introduction

Artificial Intelligence has become one of the most relevant topics in today's world. The recent advancements made in LLMs allow chatbots to aid people in several ways. As they are becoming a bigger part of our lives, whether it's for problem-solving, finding information, or just for entertainment, it's crucial that chatbot get along well with users. This funnels research into the question: what kind of personalities do users like in their chatbots?

1.1 Chatbot Research

There has been a large increase in research on this topic over the last couple of decades. As chatbots become useful in different ways, there is a growing need to understand what kinds of personalities make AI interactions better for users. This is especially important because this area of study is still new to research.

Our literature review analyses and gathers several different research papers done on this chat-

bot personality preference, focusing on four types of chatbots: counselors, assistants, entertainers, and customer service agents. We will see that depending on the user and on the chatbot type, there is a different preference for how the personality of the chatbot should be.

1.2 Our Goal

By gathering all the papers and analyzing their findings we can discern and concretize the user preference in regard to its chatbot's personality. We want to provide insights that can help in the future development of chatbots, to make them more relatable and effective for the user, which in turn, makes their interaction and experience better.

2 Related Work

Because the field of chatbots, especially chatbots for human use and interaction, is so new, there is little research on the topic. As such, we could not find any identical or similar literature reviews on user preference in chatbot personality.

Within chatbot literature review research, we found some papers similar to [Luo et al. \(2022\)](#) and [Abdel-Hafez and Xu \(2013\)](#)'s work. The former critically reviews chatbot "designs and applications" and discusses chatbot personality, briefly. The latter analyses user modeling of AI, specifically in social media. These reviews are incredibly helpful to the chatbot development industry, but neither of them perform extensive research on chatbot personality which is representative of most papers in this category.

[KangMinjeong \(2018\)](#)'s paper is closest to that of our research as it exclusively surveys users on their preference in chatbot personality as identified by chatbot type. This paper was incredibly helpful to our research as it directly researches the topic we are reviewing, whereas many tested for personality preference as a secondary or tertiary aspect of their research. However, despite being a

well-rounded resource for our paper on our topic, it is still not a literature review and therefore ultimately not comparable to our paper.

We conclude that our literature is novel because it is the only one done on recent research into chatbot personality. We believe this is due to the newness of the field, seeing as all of our cited papers were published or submitted for publishing in the last 5 years.

3 Literature Review Methods

A literature review is a process through which researchers gather numerous papers on research into a topic and collate the data to represent the conclusions of the majority. For our literature review, we isolated our research into two rounds. The first round focuses on gaining a preliminary understanding of the categories of research within user preference in chatbot personality papers. This round aims to narrow our research focus by segmenting categories within the field of chatbot personality testing. Once we have established trusted categories, we then continue searching for papers in a similar fashion, this time using papers that either fit into our niche categories or into our topic as a whole.

3.1 Initial Research Survey

In our initial round of research we found 3 main categories within user preference: general preference, preference by user identity, and preference by chatbot role. General preference in chatbot personality is a category with numerous papers and well-rounded research, however, it is too broad a topic to focus on for our literature review. Preference by user identity (i.e. preference by user age, race, gender, etc.) has a convenient distribution of internal categories, but lacks sufficient papers in each category to present in a review. The final category of user preference by chatbot role has both a convenient distribution of internal categories and sufficient research papers to review to draw valid conclusions. We will continue our second round of research adopting a focus into the user preference in chatbot personality based on the various chatbot roles.

3.2 Chatbot Categories

The first step in our second round of research is to identify and define which chatbot categories we are researching within. We found four ap-

parent categories of chatbots: counselor/friend, aide/assistant, leisure/entertainment, and customer service agent. We found additional evidence of a transactional agent category, but there was not enough research on this chatbot type to draw any real conclusions on user preference in this bot's personality.

The counselor/friend chatbot is identified by its requirements of trust and privacy. This bot may take the role of a healthcare agent collecting personal health information or as a crisis counselor chatting with humans in high-stress situations. It is conversational, letting the user speak, and interactive, asking the user questions. The counselor chatbot may have access to external resources and likely has some emotional/medical training or understanding.

The aide/assistant chatbot requires compliance and submissiveness. As a task-oriented bot, it must be able to take instructions and perform simple tasks such as taking notes on an essay for the user. It must do what it's told with efficiency and confidence. This chatbot can sometimes act as a search engine, and a common example is how the well-known ChatGPT-4 has been used.

The leisure/entertainment chatbot is more casual, requiring independent information access and spontaneity. This chatbot is often in charge of providing, finding, or suggesting tasks and activities to the user. It may facilitate or guide the user to avenues of entertainment on its own. It is often conversational and knowledgeable, sometimes being able to independently access search engines or other databases as resources. It may also think dynamically, as it must change its output to user preference.

The final category of the customer service chatbot requires professionalism and problem-solving. This chatbot is task-oriented, can follow instructions, and is understanding. It is likely emotionally aware and adaptive as it must be prepared for human intervention in conversations. It is also important that this chatbot is knowledgeable in its field.

While the chatbot titles used by researchers vary, we use papers that align with the aforementioned definitions.

3.3 Final Research Survey

After finalizing our area of research within chatbot personality, we repeated the initial re-

search survey. In this second round of research, we specifically targeted papers that conducted research focusing on one or more of our specific chatbot types. Through both rounds of research, we found 14 total usable papers.

4 Results

Ultimately we found 18 papers tracking user preference in chatbot personality, with 14 of those being usable for our literature review.

Year	Paper Count
pre-2018	0
2018	1
2019	2
2020	2
2021	3
2022	2
2023	4

Table 1: This table represents the timeline of papers we found in chatbot personality research. We used either the submission year or the day it was available for viewing at its online source. This table highlights the novelty of our field as all papers found were submitted or published within the last 6 years.

Of these 14 papers, table 1 shows that most papers found were either published or submitted for publishing in 2023. As we travel further back from our current year, we see fewer papers on chatbot personality research.

Chatbot Role	Papers Found	Papers Used
Counselor/Friend	9	8
Aide/Assistant	9	5
Leisure/Entertainment	6	5
Customer Service	6	6
Total	18	14

Table 2: Papers found on counselor and customer service chatbots were more likely to include testing of chatbot personality within their research. Additionally, customer service and entertainment were categories in which we found the least amount of papers. We conclude this is due to counselor chatbots being a more established field of development within chatbot research than assistant or entertainment chatbots.

Table 2 shows the distribution of our papers relative to our 4 main chatbot categories. The table highlights that more papers were available in counselor chatbots and more research in customer service chatbots included personality testing. We attribute this difference to the long-standing im-

portance of considering chatbot personality in customer service.

4.1 General Chatbot Personality Preference

One of the first categories we looked into was general chatbot preference for users. This category contains research on user preference of chatbot type, ignoring the user and chatbot identities. We found papers that review and analyze this generalized preference of the user in this way.

One initial finding was that people prefer anthropomorphic chatbots with a female or neutral gender (Mehra, 2021). The humanness of a chatbot often brings comfort to the user as skepticism can develop if the conversations come off as too robotic. Additionally, we found that the majority of users like agreeable, friendly chatbots (Kuhail et al., 2022) (Ruane et al., 2021). This finding is consistent across the board as most of our research papers identified these two traits as the user preference. Finally, we found that a minority of users prefer professional, more formal chatbots (Kuhail et al., 2022) (Ruane et al., 2021). It was also found that more introverted users tended to prefer a more introverted chatbot, while users who were more extroverted inclined toward more extroverted chatbots.

4.2 Preference by User Type

A second category of research we found looked into chatbot personality preference by user type. This section, while not paper-heavy, contains papers isolating various types of user identity and analyzing how they affect user preference in chatbot type. These identity factors include race, gender, age, religion, personality type, and more. Within this category we lightly researched both user gender and age, and how they affect user preference.

4.2.1 User Gender

Within user gender we found 2 initial conclusions. Traditionally men prefer to speak with female chatbots. On the contrary, most women prefer neutral-gendered chatbots except in the case of counseling from chatbots, in which case they prefer women. All of this research was found from KangMinjeong (2018)’s paper which was a general study into chatbot personality based on Chatbot role.

4.2.2 User Age

For our research into user preference in age we used the same paper by [KangMinjeong \(2018\)](#) because of a lack of other research on this user identity type.

User Age Range	Chatbot Adjective Preference
20-30	Fun
30-50	Emphatic
50-70	Honorific
60-70	No Preference

Table 3: This table shows the main chatbot personality adjectives preferred by different age ranges. "Fun" refers to chatbots that are entertaining and engaging. "Emphatic" chatbots are clear and direct, possibly even more formal than normal. "Honorific" chatbots give proper respect to the user, using phrases like 'sir' or 'ma'am' and not doubting the user. The age range from 60-70 did not have any specific preference for chatbot personality.

Table 3 shows the types of chatbots preferred by differently-aged users. We can see clearly that different age ranges have different preferences in chatbot communication. [KangMinjeong \(2018\)](#) also noted that younger age ranges were more likely to engage in chatbot communication for entertainment, which is supplemented by their preference for "fun" chatbots.

4.3 Preference by Chatbot Role

Our third and most extensive category of research was into personality preference in chatbots as identified by their role. The exact qualifiers of these roles for each type are explained in section 3.2: Chatbot Categories.

4.3.1 Counselor/Friend

Within the field of counselor chatbots, [KangMinjeong \(2018\)](#) shows us that universally, a female-gender and chatbot-age of 30s or older is preferred. These chatbots are also preferred to be agreeable ([KangMinjeong, 2018](#)), ([Yorita et al., 2019](#)) and extroverted ([Ruane et al., 2021](#)), ([Kuhail et al., 2022](#)). We conclude this is to encourage conversation and communication between the counselor and the user. Additionally, they are requested to have a dynamic Personality ([Yorita et al., 2019](#)), ([Nadarzynski et al., 2019](#)), meaning one that adapts to better complement user input.

Counselor chatbots were also commonly requested to be capable of emotional adaptivity ([Galitsky, 2021](#)), ([Haque and Chowdhury, 2023](#))

and anthropomorphism ([Sadek et al., 2023](#)). We conclude these traits, that humanize the chatbot, may make it easier for users to traverse the boundary of trust and skepticism that usually accompanies sharing personal information with technology.

4.3.2 Aide/Assistant

[KangMinjeong \(2018\)](#) reports the preference for an assistant chatbot to be female or neutral-gendered with an age range in the 30s. It is also often requested to be both agreeable ([Kuhail et al., 2022](#)) and engaging ([Luo et al., 2022](#)) with a dynamic Personality ([Jin and Eastin, 2023](#)), as well. These adjectives match the first few also requested for the counselor chatbot, and indicate a trend of users wanting to encourage communication with chatbots.

Users also wanted efficiency ([Chen et al., 2020](#)), persuasion skills ([Luo et al., 2022](#)), clear communication ([Chen et al., 2020](#)), ([Kuhail et al., 2022](#)) independence, and dominance ([KangMinjeong, 2018](#)) in their assistant chatbots. We conclude these traits combine to allow a chatbot to complete tasks quickly and resourcefully, without requiring too much direction from the user. In addition, we conclude persuasion, particularly, and dominance create a false sense of confidence in chatbots that force them to convince the user that it's work is to standard.

4.3.3 Leisure/Entertainment

Consistently, [KangMinjeong \(2018\)](#) reports that female or neutral-gendered chatbots are preferred for leisure and entertainment tasks. Additionally, they are expected to be the same age as the user or younger ([KangMinjeong, 2018](#)). Focusing more on personality traits, leisure chatbots are preferred to be people-oriented ([KangMinjeong, 2018](#)), friendly ([Mehra, 2021](#)), agreeable ([KangMinjeong, 2018](#)), ([Ruane et al., 2021](#)), ([Kuhail et al., 2022](#)), and extroverted ([Ruane et al., 2021](#)), ([Kuhail et al., 2022](#)). These traits are partially expected for a leisure chatbot as part of its job is to communicate energetically and engagingly.

Dynamic personality ([Jin and Eastin, 2023](#)) was also requested. This is expected as most users seem to prefer this trait in all chatbots. Additionally, persuasion ([KangMinjeong, 2018](#)), ([Jin and Eastin, 2023](#)) was requested. We conclude this is because the user would want an entertainment chatbot to convince them of the fun they may have

participating in any given activity. In other words, they may need to be believable to a human user.

4.3.4 Customer Service

KangMinjeong (2018) reports a preference for female or gender-neutral chatbots in their 30s. These chatbots are also expected to be agreeable (KangMinjeong, 2018), (Kuhail et al., 2022) and anthropomorphic (Pizzi et al., 2023), (Luo et al., 2022), (Jonatan and Igor, 2023). This is likely to humanize the chatbot and make it easier to talk to.

AI Customer Service agents were also preferred to be emotionally adaptive (Galitsky, 2021) and dynamic (Luo et al., 2022), two traits we've seen before, as well as informative and competent (Pizzi et al., 2023), (Luo et al., 2022). The latter two traits may aid a customer service chatbot in efficiently completing their job as well as conveying to the user that they are as capable as a human, increasing trust. One final adjective we found for customer service chatbots is warm (Pizzi et al., 2023). This adjective seems to help users see anthropomorphise the chatbot and increase trust.

5 Conclusion

This literature review was conducted with a clear goal in mind: to aid in the development of chatbots that not only function effectively but also resonate with users on a personal level. By gathering research and data, primarily from recent years, we consolidated the main preferences for chatbot personality, diving deeper into four chatbot types: counselor chatbots, assistant chatbots, entertainer chatbots, and customer service chatbots. With this gathering of data, we hope to make it easier for developers to create a chatbot that will provide a better and more enjoyable experience for its users.

5.1 Conclusions on Personality in Chatbot Roles

- **Counselor Chatbots:** Preferred to be empathetic and trustworthy, facilitating a sense of safety and understanding.
- **Assistant Chatbots:** Valued for their efficiency and reliability, aiding users in task completion.
- **Entertainer Chatbots:** Expected to be lively and engaging, enhancing user entertainment and engagement.

- **Customer Service Chatbots:** Should exhibit a balance of professionalism and approachability, ensuring users feel supported and comfortable.

5.2 Miscellaneous Conclusions

Across all chatbot types, agreeableness and extroversion emerged as universally preferred traits (Kuhail et al., 2022) (Ruane et al., 2021) (KangMinjeong, 2018) (Yorita et al., 2019). This indicates a general user preference for chatbots that are easy to communicate with and exhibit social behaviors. Yet, the most common barrier to chatbot communication is providing the user with a sense of genuine trustworthiness and humanness.

5.2.1 Recommendations for Future Study

To continue this research, it is essential to have more data from different papers to provide a clearer understanding of what users want in their chatbots. By increasing the research included in literature reviews, we can provide a more trustworthy and reliable conclusion to the findings, giving developers more detailed insight on what users want. It might also be useful to consider older papers on human-computer interaction, which might help in understanding how user preferences have evolved over time and how they might continue to change.

5.2.2 Future Directions

We dove deep into 4 different types of chatbots, however, there are many more that exist and will exist in the future. E-commerce, sales, and shopping assistants are some of the most used chatbot types which we did not cover, but the possibilities of chatbots are seemingly endless. It is essential to have more literature reviews like this one so that the developers of new chatbots to fully understand the user's needs, and so that every chatbot type has outlined what is the user preference.

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