Wirtschaftsinformatik 2021 Proceedings

Track 11: Human Computer Interaction

Do you Feel a Connection? How Human-like Design of Conversational Agents Influences Donation Behavior

Johannes Bührke
Universität Göttingen

Alfred Benedikt Brendel
Technische Universität Dresden

Sascha Lichtenberg
Universität Göttingen

Stephan Diederich
Universität Göttingen

Stefan Morana
Universität des Saarlandes

Do you Feel a Connection? How the Human-like Design of Conversational Agents Influences Donation Behavior

Johannes Bührke[1], Alfred Benedikt Brendel[2], Sascha Lichtenberg[1], Stephan Diederich[1] and Stefan Morana[3]

[1] University of Goettingen, Chair of Information Management, Göttingen, Germany
{johannes.buehrke, stephan.diederich}@stud-goettingen.de
{sascha.lichtenberg}@uni-goettingen.de
[2] Technische Universität Dresden, Chair of Business Informatics, esp. Intelligent Systems and Services, Dresden, Germany
{alfred_benedikt.brendel}@tu-dresden
[3] Saarland University, Junior Professorship of Digital Transformation and Information Systems, Saarbrücken, Germany
{stefan.morana}@uni-saarland.de

Abstract. *Conversational agents (CAs) are rapidly changing the way humans and computers interact. Through developments in natural language processing, CAs are increasingly capable of conducting human-like conversations with users. Furthermore, human-like features (e.g., having a name or an avatar) lead to positive user reactions as if they were interacting with a real human conversational partner.*
CAs promise to replace or supplement traditional interactions between humans (e.g., counseling, interviews). One field of CA-human interaction that is not yet fully understood in developing human-like CAs is donating to a good cause. Notably, many charities rely on approaching people on the streets to raise funds.
Against this background, the questions arise: How should a CA for raising funds for non-profit organizations be designed and how does human-like design of a CA influence the user's donation behavior. To explore these two questions, we conducted a 2x2 experiment with 134 participants.

Keywords: Conversational Agents, human-like design, social cues, donation behavior, charity

1 Introduction

Since the 1960s, the development of CAs (e.g., chatbots) has been continuously improved in technological aspects to enhance the way users interact with the information and communication interface [1]. Over the past years, the focus on human-like communication, enabled by real-time natural language processing, has increased rapidly [2]. Specifically, in the context where traditional interfaces could not

16th International Conference on Wirtschaftsinformatik,
March 2021, Essen, Germany

successfully replace or supplement human-to-human interactions (for instance, many aspects of customer service), CAs offer a new and potentially more efficient way to satisfy user demands and requests [3]. For example, Google's CA "Duplex" offers users a natural conversation atmosphere through voice support for service encounters (e.g., scheduling appointments) [4].

While improving CAs technology, such as natural language processing and machine learning continuously [5], understanding and enhancing the user experience remains a complex area [6]. For instance, the effective design and handling of open conversations remain open [7]. In this context, previous research has identified that designing CAs with social cues (e.g., having a name, avatar, greeting users) can change the users perception [8, 9], leading to social responses (e.g., reacting to the CAs similar to a human) [10, 11]. These responses can be positive (e.g., increasing enjoyment [12]) or negative (leading to a feeling of eeriness and uncanniness), depending on various factors, including the context and user expectations [13, 14]. Hence, an emerging body of research has been broadened to understand the interrelation of CA design and the various factors influencing perception and user reaction [8, 15].

One context of traditional human-to-human interaction is raising funds for charity. Many charities have volunteers engaging individuals on the streets, asking for donations [16]. Personal dispositions, such as altruism, empathy, and enjoyment, are important factors in a person's decision to donate [17, 18]. Furthermore, a personal aspect of having a human ask for donations increases the success rate significantly compared to flyers or letters [19]. For humans, persuasion is the bread and butter of daily interaction, and humans are arguably considered the strongest persuaders [20].

However, due to the constantly improving CA technology and human-computer interaction, in this context, CAs could potentially provide a new and additional way to ask for donations while maintaining the human-like feeling during the interaction. To the best of our knowledge, there is currently no evidence on how such a CA needs to be designed. Against this background, this study investigates the effects of a human-like CA design on the user's donation behavior to a charity organization with the following research question:

> **RQ:** *How does the human-like design of a CA influence the user's donation behavior to a charitable organization?*

We address this research question using an online experiment in a user self-information context. Our paper is structured as follows: First, we continue by providing a theoretical research background for our study. In the next step, using CA design theories and the underlying research in donation behavior, we develop our hypotheses to analyze the effects of human-like CA design on the actual donation behavior. We then present our research design, followed by analyzing our results regarding perceived humanness, perceived social presence, and the individual donation behavior. Finally, we discuss theoretical and practical implications for the design of CAs, outline the limitations of our study, and state future research opportunities.

2 Theoretical Research Background

The interaction between CAs and users is driven by natural language speaking software, supporting the CAs capabilities [21]. In contrast to an impersonal graphical user interface, the information exchange in the human-CA interaction is followed by the principle of human-to-human interaction [1, 2]. At present, CAs have become a widespread and commonly known software artifact to society's everyday life [2], communicating via spoken language like virtual personal assistants [22] or written text defined as chatbots or dialogue systems [23]. CAs can be physically embodied (e.g., Robot "Pepper") [24], interactive digital embodied (e.g., Microsoft dynamic Avatar) [25], or static digital embodied (e.g., chatbot) [26]. The application context can serve general-purposes or be used in specific areas [21], such as in private life and the professional business context. Examples of the use of CAs in different areas include customer service [8, 24, 27], human resources [28], learning context [29], or data analysis [30]. Our study focuses on text-based CAs in the context of a charity customer self-service information.

In the 1960s, Weizenbaum [31] was the first to program a text-based CA in the form of a chatbot called ELIZA, which compared users' statements with certain patterns and responded to them according to technical rules. Since then, human-computer interaction has emergently improved and is still enhancing to achieve more convenient interfaces suited to the customers' demand [32]. Today, CAs offer convenient access to information and manage customer requests [27] using machine learning to improve their natural language speaking capabilities continuously [21]. At the same time, interest in CA research is steadily increasing [33], as is the number of emerging corporate CAs [34] and solutions for designing chatbot applications [35]. Companies from different industries introduced text-based CAs to automate tasks and support customers with information 24/7 the week. CAs provide a high efficiency [36] and reduced labor effort for the operator [5]. Due to technical improvement, CAs might overcome the basic human performance quality of today [5].

2.1 Design of Conversational Agents

Despite the recent adoption of CAs in our personal and business interactions, social cues affect user perception and behaviors are still inconsistent [22]. The successful design remains a major challenge to satisfy high user expectations, for example, through problems in adaptive interaction behavior [37]. Failures are caused by technical aspects, for example, natural language and architecture issues. Also, processing problems (e.g., limited vocabulary) and errors associated with the CA-human relation take a substantial part of user dissatisfaction [38]. Although present studies mostly focus on technical aspects, there is a knowledge gap about the CA-human interaction existing [6, 23]. Due to the limited capabilities of CAs, errors occur that are negatively affecting the perception of users also lead to a negative attitude towards the long-term use of CAs [38]. The design and development of these capabilities remain a complex area to be explored and improved by theoretical and practical research to provide an optimal user experience. In their contribution to the International Journal of Human

Computer Studies in 2019, Feine et al. [9] provide a systematic overview of relevant categories of social cues that can contribute to CAs design. The social cues identified can be categorized along four dimensions, verbal (e.g., praise, excuse) [26], visual (e.g., gender, avatar) [39], auditory (e.g., the gender of voice) [40], and invisible (e.g., response time) [11].

2.2 Social Response Theory and Social Presence in the Context of CA

CAs implemented with social cues [26] transfer behavioral and social signals while interacting within a user interface [41]. The interaction begins to feel more human-like, similar to a natural communication between two people [15, 42]. This paradigm is reported by the research of Nass et al. [41], who identified that human-like CA characteristics trigger social responses by users, better known as the Computers Are Social Actors (CASA) paradigm. The paradigm states that humans tend to mindlessly respond socially to anything that displays human-like characteristics (e.g., technology, animals) [15, 41]. Consequently, the paradigm is used to understand user behavior and perception of CA-human interaction better [8].

Another theoretical concept that is considered in the context of CAs is social presence. Social presence can be described as the sense or a feeling of a human contact embodied in a system [43]. Therefore, in our study, social presence describes how a CA is perceived as real to a certain extent.

Despite the absence of a real human interlocutor in user interaction with a CA, studies have shown that social presence can be increased by adding social cues [44]. One way to do this is by adding personal greetings [45] or human images [46]. Nevertheless, how the user perceives a CA is not only dependent on the variation of social cues [22], as the user perception can also be influenced by factors such as gender [21] and appearance [47].

Considering these two perspectives, social response and social presence, Seeger et al. [26] provide a design framework that characterizes three different dimensions of social cues to elicit positive user perception. The proposed design framework consists of human identity (e.g., such as name, gender avatar) [48], non-verbal cues (e.g., dynamic delayed responses) [11], and verbal cues (e.g., express emotions) [49]. Besides stimulating social presence positively, social cues are attested to positively contribute to traits such as perceived humanness [8], trust [50], and empathy [51].

2.3 Donating to Charity

There are various forms of donations, ranging from voluntary work, blood donations to monetary donations [18]. According to research by Hoolwerf and Schuyt [52], more than 87.5 billion euro were donated in Europe in 2013. In addition, more than 418 billion dollars were given to charity in the US [53]. Both studies indicate that donations and charity make up a large part of the international economy, which has grown steadily in recent years [52, 53]. However, the underlying reasons why someone would donate, and the amount donated depends on various factors.

In this relation, research has identified factors including personal dispositions (e.g., altruism, empathy, enjoyment) [17, 18], the demographics of a person (e.g., age, income, children) [54], the image of an organization [17], and the perceived relationship with the charity [55]. The donors' perception in the donation interaction process also plays an important role for or against a donation [55]. In particular, prior work has shown that human-like design (e.g., using social cues) can influence people's judgments and behaviors [56, 57].

In this context, Zhou et al. [55] investigated that enhancing money with social cues in an interaction (e.g., asking for a "one Hamilton" instead of $10) had a positive effect on donation behavior. The focus on social cues displayed by a human-like CA during a user interaction could also play a valuable role in the individual's donation behavior since CAs' social cues can induce the users' perception positively (e.g., trust, satisfaction) [8, 11]. Since many different studies have been conducted to understand the individuals' tendency for or against a donation [17, 18, 54], up until now, a knowledge gap exists where donation behavior is affected by the user interaction with a human-like CA. Our study investigates the context of CA-human interaction, especially with the background of social cues (e.g., human-like design) to fill this gap.

3 Research Model and Hypothesis

To better understand the interaction between the human-like design of a CA and the individual's donation behavior, we conducted a two-conditions online CA experiment, with two differently designed instances from the same chatbot (see Figure 1).

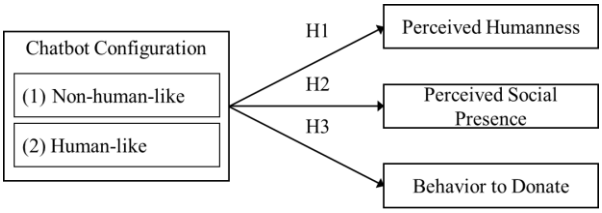

Figure 1. *Research Model*

Consistent with the research of Seeger et al. [26] (CA design framework) and Feine et al. [9] (social cue taxonomy), we define our CA design based on their findings to social cues in CA-human interaction. The experiment context provided the user with a self-information service encounter providing real information about a charitable organization. After interacting with the CA service encounter, the user was kindly given the opportunity to donate to charity.

3.1 Perceived Humanness

According to the social response theory [15], the human-like design offers the potential to contribute to the humanness of CAs. We base our CA design on various social cue elements; for example, we equipped the human-like CA with a Name and 2D avatar,

implemented self-reference (e.g., using 'I' and 'me'), and applied dynamic response times [8, 9, 26]. Based on the social response theory [15, 58], we expect various social cues to increase human-like perception. Therefore, we postulate the following hypothesis:

H1: The human-like design of a CA leads to a positive effect on the perceived humanness.

3.2 Perceived Social Presence

Social presence describes the feeling of human contact in a mediated interaction [43] and the degree to which a conversation partner is perceived as a real person [44]. In the present research, the increased perceptions of social presence can be explained by social signals, and social presence could be created without actual human contact [43] (e.g., image). In correlation to human-like design elements, one can assume that social cues provide the user with a sense of human contact. Therefore, we postulate the following hypothesis:

H2: The human-like design of a CA leads to a positive effect on the perceived social presence.

3.3 Donation Behavior

Previous research has identified that a CA's human-like design does not only have a positive influence on user perception (e.g., trust, empathy), but also on perceiving a CA more human-like and socially present (e.g., human contact, personalness, warmth, sensitivity) [8]. As identified by Zhou et al. [55], social cues can be positively associated with the users' perception in a donation context and elicit an individual's donation behavior.

This phenomenon could help us to better understand if the human-like design of a chatbot, using social cues, can also affect the donation behavior. By applying existing knowledge of social cues in the donation context to the CA-human interaction, we postulate the following hypothesis:

H3: The human-like design of a CA leads to a positive effect on donation behavior.

4 Research Design

To test our hypotheses, we conducted an online experiment with a between-subjects design based on Boudreau, Gefen, and Straub [59] to avoid carryover effects. To analyze the context of donation behavior, we developed an intuitive chatbot-based self-information service encounter interface. The experiment took place in April 2020 for three weeks.

On average, the participation time per experiment took around five minutes. The study had an initial sample size of n = 149. After filtering out 15 invalid surveys, 134 data sets were analyzed. The study's participants' ages ranged from 17 to 58 years (M= 24.8 years, SD= 5,76), with a rate of 49% female and 50% male. 1% of the participants made no statement regarding their gender. The participants were recruited through personal networks and social media.

4.1 Data Collection Procedure and Sample

Before starting the experiment, participants received a briefing document explaining the CA interaction structure and context. Subsequently, the tasks related to the service meeting were explained and illustrated. Each participant received similar information to ensure that the participants had the same level of knowledge [60]. Then, comprehensive questions about the experimental context had to be answered to confirm the user's understanding. After the successful completion of the questions, a link to the experiment was provided. The provided link randomly assigned the participants to one of the two possible chatbot instances to guarantee a non-biased and random assignment. After completing the experimental service encounter interaction, the participants were requested to participate in our survey.

In order to interact with the user in a way that resembles a real human-to-human dialogue in a donation context, the experimental user task consisted in gaining information about different areas of the fields of activity of a non-profit organization first. Only after the users had gathered knowledge about the organization and its activities, the chatbot made a request for a user's donation. Additionally, to provide the user with a true relation to this experiment, we have decided to refer to a real-world charity. The charity organization was selected randomly from several charity organizations (e.g., German Red Cross, Caritas International, United Nations International Children's Emergency Fund (UNICEF)). Based on a lottery, the UNICEF organization was selected and then integrated into the CA test scenario with real information. The experimental service encounter included six steps:

(1) Welcome and introduction of the chatbot instance, stating UNICEFs corporate reason (e.g., objective United Nations Children's Fund that is active worldwide).
(2) The chatbot offered six different categories (e.g., targets, emergency assistance, child protection) to receive information for (participants had to gather information from at least three of them).
(3) After stating the possibility of receiving information from at least three different categories, the participants were asked whether they would like to continue (i.e., gathering information for the remaining categories) or to end the interaction.
(4) Each participant was offered to participate in a raffle for an online shopping voucher worth €5 (6 vouchers were raffled).
(5) The chatbot then offered the participant the opportunity to donate the value of the voucher to UNICEF.
(6) The chatbot instances were confirming the completion of the experiment with a link to the quantitative survey.

4.2 Control and Treatment Configurations

For our experiment, we implemented two CA instances of the same chatbot: one chatbot instance was designed with social cues (see Figure 3), and the other instance had little to no social cues (see Figure 2). Both CA were implemented into a straightforward web interface to provide direct access. The interface allowed for participation via computers and smartphones. Moreover, the CA instances were trained to understand typing errors and variations of different wordings of the same statement.

Conducting the human-like chatbot instance, we considered three types of social cue dimensions (e.g., using human identity, verbal cues, and non-verbal cues) [9, 26] in order to establish positive effects on perceived humanness, social presence, and donation behavior. Our charity-based chatbot represented a female customer service agent named Lena, situated with a comic avatar within the chatbot interface in perspective to the dimension of human identity.

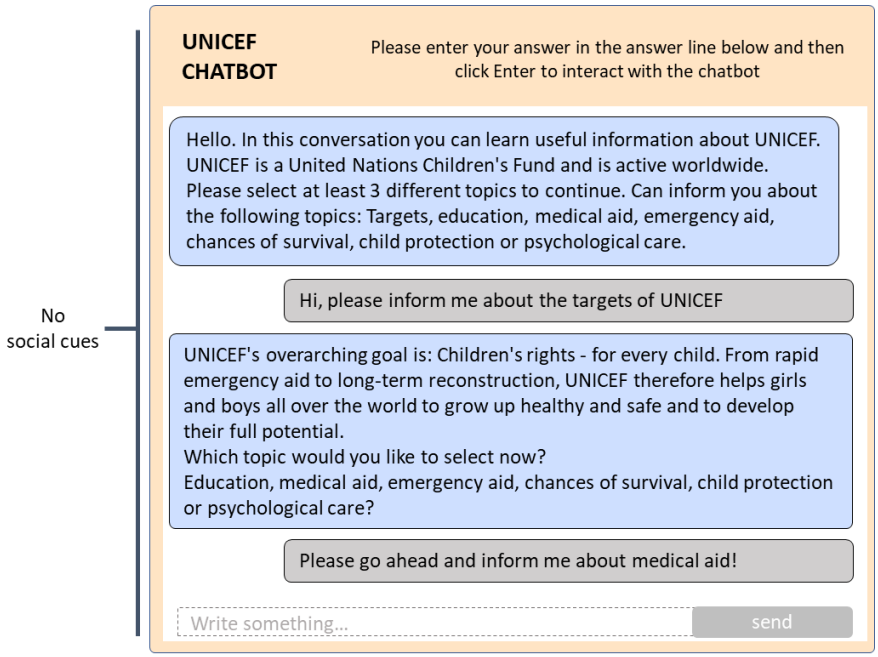

Figure 2. Web interface with control treatment (translated to English)

In addition, Lena's verbal cues were implemented by self-references such as, "I am very pleased about your interest in UNICEF" and emotional expressions like "great, I'm glad to hear that." Furthermore, to use non-verbal cues with chatbots, we equipped the human-like instance with emojis and dynamic response delays (using a visual indicator that the chatbot is writing).

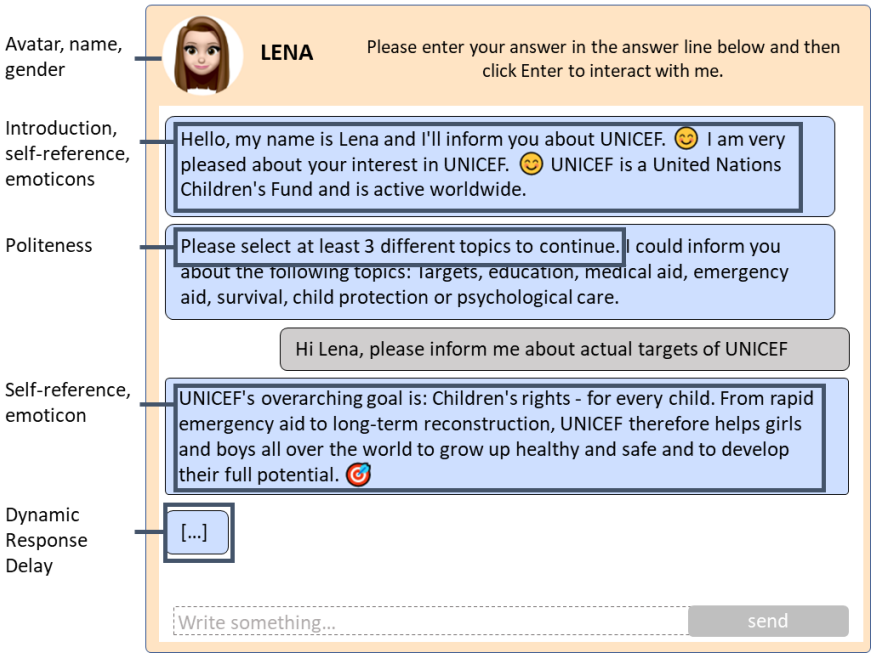

Figure 3. Web interface with human-like design (translated to English)

4.3 Measures

After the participants completed the chatbot interaction, an online survey was conducted regarding the CA's perceived humanness and perceived social presence. We adapted measurement instruments previously established and applied in CA research [61], [43]. We measured perceived humanness on a 9-point semantic Likert-scale, while for perceived social presence, we conducted a 7-point Likert scale.

However, for measuring the donation behavior [55], we used a single-scale item to conduct a manipulation check based on a nominal scale. To verify the factor loadings to each construct and its items, we conducted a confirmatory factor analysis (CFA). In this regard, only elements with a factor loading higher than the threshold value of .60 have been considered [62]. All constructs were further evaluated and supported by Cronbach's Alpha (α) and the composite reliability (CR). Referring to Urbach and Ahlemann [63], both values require a minimum level larger than 0.80, and the average variance extracted (AVE) requires at least a value of 0.50. Our constructs met all of these requirements (see Table 1).

As suggested by DiStefano [64], weighted sum scores were then calculated to create a metric variable for perceived humanness and perceived social presence. Table 1 summarizes the three constructs, including Cronbach's alpha (α), composite reliability (CR), and average variance (AVE) extracted, as well as the items, measured factor loadings, and sources.

Constructs and Items	Loadings	Source
Perceived humanness **(α = .861, CR = .894, AVE = .587)** [metric scale] extremely inhuman-like – extremely human-like extremely unskilled – extremely skilled extremely unthoughtful – extremely thoughtful extremely impolite – extremely polite extremely unresponsive – extremely responsive extremely unengaging – extremely engaging	 .810 .769 .688 .717 .705 .889	[61]
Perceived social presence **(α = 928, CR = .944, AVE = .771)** [metric scale] I felt a sense of human contact with the system. I felt a sense of personalness with the system. I felt a sense of sociability with the system I felt a sense of human warmth with the system. I felt sense of human sensitivity with the system.	 .924 .790 .864 .911 .899	[43]
Donation Behavior **(α = 1.00, CR = 1.00, AVE = 1.00)** [nominal scale] Would you like to donate the money to charity?	 1.000	[55]

α = Cronbach's Alpha, CR = Composite Reliability, AVE = Average Variance Extracted

Table 1. *Items, measures, factor loadings, and sources*

5 Results

After collecting the survey data, we analyzed the data through descriptive statistics. We applied a t-test for measuring our metric variables (perceived humanness, perceived social presence) and a Fisher's exact test for the single nominal scale item of donation behavior to obtain answers to our three hypotheses. Furthermore, we carried out our analyzes by using SPSS version 26.

		Condition		**t-value**	**p-value**
		Control (n=58) [non-human-like]	Treatment (n=76) [human-like]		
Perceived Humanness	Mean SD SE	4.50 1.45 0.19	5.51 1.51 0.17	*(df132)* *3.61*	0.000
Perceived Social Presence	Mean SD SE	1,90 1.26 0.16	2.70 1.43 0.16	*(df129)* *3.11*	0.002

SD = Standard deviation, SE = Standard error

Table 2. *Descriptive statistics and t-test results*

The homogeneity of variance was successfully proven to the construct of perceived humanness by conducting a Levene-test [65] ($F(132)=0.989$, $p=0.000$). For perceived social response, we utilized the Welch-test because the homogeneity of variance was not successfully proven [66] ($F(132)=0.989$, $p=0.033$). Afterward, we tested for a significance between the non-human-like control group and the human-like treatment group. For both hypotheses (H1+H2), we found significance (see Table 2).

		Donation behavior		Overall sum
		No	Yes	
Human-like treatment	Yes	23	53	76
	No	15	43	58
Overall sum		38	96	134

Table 3. *2x2 Table – Human-like treatment x Donation behavior*

Our data indicate that social cues to influence perceived humanness (H1) can be supported. Second, regarding perceived social presence (H2), our analysis reveals that there is a significance considering the control and treatment conditions too. Hence, we can attest that our CA treatments have been developed accordingly to influence perceived humanness and perceived social presence significantly, as illustrated in table 4. In order to find evidence for our third hypothesis concerning the construct of behavior donation, Fisher's exact test [67] was conducted to examine the control and treatment groups. Table 3 illustrates the human-like treatment of a CA in correlation with the construct of donation behavior. Since the p-value of Fisher's exact test is higher than 0.05 (0.669), we do not have sufficient evidence for a significant association between human-like treatment and the participants' donation behavior. Hence, we cannot support H3 (see Table 4).

Hypothesis	**Result**
H1: The Human-like design of a CA leads to a positive effect on the perceived humanness.	Supported
H2: The Human-like design of a CA leads to a positive effect on the perceived social presence.	Supported
H3: The Human-like design of a CA leads to a positive effect on donation behavior.	Not Supported

Table 4. *Results for hypothesis*

6 Discussion

Our study aimed to examine the effect of human-like CA design on the individual's donation behavior. Thereby, perceived humanness, perceived social presence, and the individual's donation behavior was analyzed. We show that the participants perceived

the different CA treatments regarding perceived humanness and perceived social presence as hypothesized across our two experimental treatments. Our results provided no support for our hypothesis regarding human-like CA design on donation behavior. Consequently, participants who had experienced a human-like chatbot instance did not decide to donate more often than participants who interacted with the less human-like chatbot. In contrast to the findings of Zhou et al. [55], who examined a strong correlation of donation behavior by donating money with social cues, we were unable to find similar results for the context of CAs. This outcome is consistent with research on CAs in other contexts, such as the perception of human-like typing errors [68] and self-introduction of CA [69]. Understanding the interaction between humans and CA in the right way remains complex.

Even though this study did not find any significance for the donation behavior through human-like design, it can be reported that a remarkable 70% of the participants chose to donate. The share of online donations has rapidly increased over the past years (60% since 2012), with a value of $31 billion in 2017 [19], rendering CAs as a valuable opportunity to expand the success in online donations further. Therefore, our study is a good starting point for future research to conduct a more in-depth investigation of CAs effective design for gathering donations. For instance, adding persuasive messages [70, 71] to the interaction could increase an individual's donation behavior. We propose that future research explore the benefits of CA human-like design [e.g., 5, 15] in the area of donation further, for example, through a cooperative study with a real organization that has implemented CA already.

Since we consider our experimental conduction as a constraint, our study is not free of further limitations. Even if illustrating that our control and treatment group are designed in the right way (e.g., non-human like and human-like), the design of human-computer interaction remains a complicated task. Thus, the results of our study may depend on the social cues designed [26]. Therefore, a further variation of different social cues that customer interaction is confronted with might cause a different contribution to donation behavior. Furthermore, research into human-to-human interaction (e.g. persuasion strategies of volunteers on the street) is essential to improve the future design of CAs and to better understand the influence of human-like CAs on donation behavior for the future.

7 Conclusion

Our research contributes to human-computer interaction by providing knowledge to CA design effects in a donation context. Our study has shown that the human-like design of a CA, using social cues, does not necessarily lead to an increase in donations. While our results show a positive significance on social cues to perceived humanness and social presence, the results do not suggest a significant effect of human-like CAs design on a user's donation behavior. Overall, our study provides future research with a base to improve the design of CAs for gathering donations, directing research to extend beyond inducing the perception of humanness and social presence.

Acknowledgements

We would like to thank Ho Ching Florence Tran for her support during this research project.

References

1. Berg, M.M.: Modelling of Natural Dialogues in the Context of Speech-based Information and Control Systems. Kiel, Germany. (2014).
2. Mctear, M., Callejas, Z., Griol, D.: Conversational Interfaces: Past and Present. Gehalten auf der Mai 20 (2016). https://doi.org/10.1007/978-3-319-32967-3_4.
3. Maedche, A., Legner, C., Benlian, A., Berger, B., Gimpel, H., Hess, T., Hinz, O., Morana, S., Söllner, M.: AI-Based Digital Assistants. Bus. Inf. Syst. Eng. 1–28 (2019).
4. Leviathan, Y., Matias, Y.: Google Duplex: an AI system for accomplishing real-world tasks over the phone, https://bit.ly/38csuBn, accessed on 2020/08/10.
5. Larivière, B., Bowen, D., Andreassen, T.W., Kunz, W., Sirianni, N.J., Voss, C., Wünderlich, N. V., De Keyser, A.: "Service Encounter 2.0": An investigation into the roles of technology, employees and customers. J. Bus. Res. 79, 238–246 (2017).
6. Grudin, J., Jacques, R.: Chatbots, humbots, and the quest for artificial general intelligence. In: Conference on Human Factors in Computing Systems - Proceedings (2019). https://doi.org/10.1145/3290605.3300439.
7. Luger, E., Sellen, A.: „Like having a really bad pa": The gulf between user expectation and experience of conversational agents. Conf. Hum. Factors Comput. Syst. - Proc. 5286–5297 (2016). https://doi.org/10.1145/2858036.2858288.
8. Araujo, T.: Living up to the chatbot hype: The influence of anthropomorphic design cues and communicative agency framing on conversational agent and company perceptions. Comput. Human Behav. 85, 183–189 (2018).
9. Feine, J., Gnewuch, U., Morana, S., Maedche, A.: A Taxonomy of Social Cues for Conversational Agents. Int. J. Hum. Comput. Stud. Stud. 132, 138–161 (2019). https://doi.org/10.1016/j.ijhcs.2019.07.009.
10. Von Der Pütten, A.M., Krämer, N.C., Gratch, J., Kang, S.H.: „It doesn't matter what you are!" Explaining social effects of agents and avatars. Comput. Human Behav. 26, 1641–1650 (2010).
11. Gnewuch, U., Morana, S., Adam, M.T.P., Maedche, A.: Faster Is Not Always Better: Understanding the Effect of Dynamic Response Delays in Human-Chatbot Interaction. In: Proceedings of the European Conference on Information Systems (ECIS). S. 1–17. , Portsmouth, United Kingdom (2018).
12. Diederich, S., Brendel, A.B., Kolbe, L.M.: Designing Anthropomorphic Enterprise Conversational Agents. Bus. Inf. Syst. Eng. (2020). https://doi.org/10.1007/s12599-020-00639-y.
13. Tinwell, A., Sloan, R.J.S.: Children's perception of uncanny human-like virtual characters. Comput. Human Behav. 36, 286–296 (2014).

14. Mori, M., MacDorman, K.F., Kageki, N.: The Uncanny Valley. IEEE Robot. Autom. Mag. 19, 98–100 (2012).
15. Nass, C., Moon, Y.: Machines and mindlessness: Social responses to computers. J. Soc. Issues. 56, 81–103 (2000).
16. Meijers, M.H.C., Verlegh, P.W.J., Noordewier, M.K., Smit, E.G.: The dark side of donating: how donating may license environmentally unfriendly behavior. Soc. Influ. (2015). https://doi.org/10.1080/15534510.2015.1092468.
17. Bennett, R.: Factors underlying the inclination to donate to particular types of charity. Int. J. Nonprofit Volunt. Sect. Mark. (2003). https://doi.org/10.1002/nvsm.198.
18. Verhaert, G.A., Van den Poel, D.: Empathy as added value in predicting donation behavior. J. Bus. Res. (2011). https://doi.org/10.1016/j.jbusres.2010.12.024.
19. Nonprofits Source: The Ultimate List Of Charitable Giving Statistics For 2018, https://nonprofitssource.com/online-giving-statistics/#:~:text=Overall giving increased 4%25 last,donated money to nonprofit organizations. accessed on 2020/08/10.
20. IJsselsteijn, W., De Kort, Y., Midden, G., Eggen, B., Van Den Hoven, E.: Persuasive technology for human well-being: Setting the scene. In: Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) (2006). https://doi.org/10.1007/11755494_1.
21. Nunamaker, J.F., Derrick, D.C., Elkins, A.C., Burgoon, J.K., Patton, M.W.: Embodied Conversational Agent-Based Kiosk for Automated Interviewing. J. Manag. Inf. Syst. 28, 17–48 (2011).
22. Schuetzler, R.M., Grimes, G.M., Giboney, J.S.: An Investigation of Conversational Agent Relevance, Presence, and Engagement. In: Proceedings of the Americas Conference on Information Systems (AMCIS). S. 1–10. New Orleans, USA (2018).
23. Følstad, A., Brandtzæg, P.B.: Chatbots and the new world of HCI. Interactions. 24, 38–42 (2017).
24. Stock, R.M., Merkle, M.: Customer Responses to Robotic Innovative Behavior Cues During the Service Encounter. In: Proceedings of the International Conference on Information Systems (ICIS). S. 1–17. San Francisco, USA (2018).
25. Groom, V., Nass, C., Chen, T., Nielsen, A., Scarborough, J.K., Robles, E.: Evaluating the effects of behavioral realism in embodied agents. Int. J. Hum. Comput. Stud. 67, 842–849 (2009).
26. Seeger, A.-M., Pfeiffer, J., Heinzl, A.: Designing Anthropomorphic Conversational Agents: Development and Empirical Evaluation of a Design Framework. In: Proceedings of the International Conference on Information Systems (ICIS). S. 1–17. San Francisco, USA (2018).
27. Gnewuch, U., Morana, S., Maedche, A.: Towards Designing Cooperative and Social Conversational Agents for Customer Service. In: Proceedings of the International Conference on Information Systems (ICIS). S. 1–13. Seoul, Korea (2017).
28. Liao, Q.V., Hussain, M.M., Chandar, P., Davis, M., Crasso, M., Wang, D.,

Muller, M., Shami, N.S., Geyer, W.: All Work and no Play? Conversations with a Question-and-Answer Chatbot in the Wild. In: Proceedings of the ACM CHI Conference on Human Factors in Computing Systems. S. 1–13. Montréal, Canada (2018).
29. Fridin, M., Belokopytov, M.: Acceptance of socially assistive humanoid robot by preschool and elementary school teachers. Comput. Human Behav. (2014). https://doi.org/10.1016/j.chb.2013.12.016.
30. Fast, E., Chen, B., Mendelsohn, J., Bassen, J., Bernstein, M.: Iris: A Conversational Agent for Complex Tasks. In: Proceedings of the ACM CHI Conference on Human Factors in Computing Systems. S. 1–12. Denver, USA (2017).
31. Weizenbaum, J.: ELIZA—a computer program for the study of natural language communication between man and machine. Commun. ACM. 9, 36–45 (1966).
32. Ben Mimoun, M.S., Poncin, I., Garnier, M.: Case study-Embodied virtual agents: An analysis on reasons for failure. J. Retail. Consum. Serv. 19, 605–612 (2012). https://doi.org/10.1016/j.jretconser.2012.07.006.
33. Diederich, S., Brendel, A.B., Kolbe, L.M.: On Conversational Agents in Information Systems Research: Analyzing the Past to Guide Future Work. In: Proceedings of the International Conference on Wirtschaftsinformatik. S. 1550–1564 (2019).
34. Kraus, R.: Facebook is really proud of its 300,000 business bots, despite claiming it will put 'people first', https://bit.ly/2TUGM19, accessed on 2020/08/07.
35. Diederich, S., Brendel, A.B., Kolbe, L.M.: Towards a Taxonomy of Platforms for Conversational Agent Design. In: Proceedings of the International Conference on Wirtschaftsinformatik (2019).
36. Wünderlich, N. V., Paluch, S.: A Nice and Friendly Chat With a Bot: User Perceptions of AI-based Service Agents. In: Proceedings of the International Conference on Information Systems (ICIS). S. 1–11. Seoul, Korea (2017).
37. Morana, S., Friemel, C., Gnewuch, U., Maedche, A., Pfeiffer, J.: Interaktion mit smarten Systemen – Aktueller Stand und zukünftige Entwicklungen im Bereich der Nutzerassistenz. Wirtschaftsinformatik Manag. 5, 42–51 (2017).
38. Brandtzæg, P.B., Følstad, A.: Chatbots: Changing User Needs and Motivations. Interactions. 25, 38–43 (2018).
39. Leathers, D.G., Eaves, M.: Successful nonverbal communication: Principles and applications. Routledge (2015).
40. Nass, C., Moon, Y., Green, N.: Are machines gender neutral? Gender-stereotypic responses to computers with voices. J. Appl. Soc. Psychol. (1997). https://doi.org/10.1111/j.1559-1816.1997.tb00275.x.
41. Nass, C., Steuer, J., Tauber, E.R.: Computers are social actors. In: Proceedings of the ACM CHI Conference on Human Factors in Computing Systems. S. 204. Boston, USA (1994).
42. Feine, J., Morana, S., Gnewuch, U.: Measung Service Encounter Satisfaction with Customer Service Chatbots using Sentiment Analysis. In: Proceedings of the International Conference on Wirtschaftsinformatik. S. 0–11 (2019).
43. Gefen, D., Straub, D.: Gender Differences in the Perception and Use of E-Mail:

An Extension to the Technology Acceptance Model. Manag. Inf. Syst. Q. 21, 389–400 (1997).
44. Gunawardena, C.: Social presence theory and implications of interaction and collaborative learning in computer conferencing. Int. J. Educ. Telecommun. (1995). https://doi.org/10.1111/j.1541-0420.2011.01694.x.
45. Gefen, D., Straub, D.: Managing User Trust in B2C e-Services. e-Service J. 2, 7–24 (2003).
46. Cyr, D., Head, M., Larios, H., Pan, B.: Exploring Human Images in Website Design: A Multi-Method Approach. Manag. Inf. Syst. Q. 33, 539 (2009).
47. Baylor, A.L.: Promoting motivation with virtual agents and avatars: Role of visual presence and appearance, (2009).
48. Cowell, A.J., Stanney, K.M.: Manipulation of non-verbal interaction style and demographic embodiment to increase anthropomorphic computer character credibility. Int. J. Hum. Comput. Stud. 62, 281–306 (2005).
49. Wang, N., Johnson, W.L., Mayer, R.E., Rizzo, P., Shaw, E., Collins, H.: The politeness effect: Pedagogical agents and learning outcomes. Int. J. Hum. Comput. Stud. 66, 98–112 (2008).
50. Seeger, A.-M., Pfeiffer, J., Heinzl, A.: When Do We Need a Human? Anthropomorphic Design and Trustworthiness of Conversational Agents. In: Special Interest Group on Human-Computer Interaction. S. 1–6 (2017).
51. Diederich, S., Janßen-Müller, M., Brendel, A.B., Morana, S.: Emulating Empathetic Behavior in Online Service Encounters with Sentiment-Adaptive Responses: Insights from an Experiment with a Conversational Agent. In: Proceedings of the International Conference on Information Systems (ICIS). S. 0–17. Munich, Germany (2019).
52. Hoolwerf, B., Schuyt, T.: Giving in Europe - The current state of research on household donations, corporations, foundations and charity lotteries to charitable organisations in Europe. Eur. Res. Netw. Philanthr. 280 (2013).
53. Giving USA: Giving USA 2019: The Annual Report on Philanthropy for theYear 2018, https://bit.ly/3p127Ej, accessed on 2020/07/30.
54. Sargeant, A.: Charitable Giving: Towards a Model of Donor Behaviour. J. Mark. Manag. (1999). https://doi.org/10.1362/026725799784870351.
55. Zhou, X., Kim, S., Wang, L.: Money Helps When Money Feels: Money Anthropomorphism Increases Charitable Giving. J. Consum. Res. 45, 953–972 (2018). https://doi.org/10.1093/jcr/ucy012.
56. Aggarwal, P., McGill, A.L.: Is that car smiling at me? Schema congruity as a basis for evaluating anthropomorphized products. J. Consum. Res. 34, 468–479 (2007).
57. Chandler, J., Schwarz, N.: Use does not wear ragged the fabric of friendship: Thinking of objects as alive makes people less willing to replace them. J. Consum. Psychol. 20, 138–145 (2010).
58. Reeves, B., Nass, C.: The Media Equation: How People Treat Computers, Television and New Media Like Real People and Places. The Center for the Study of Language and Information Publications (1996).
59. Boudreau, M.C., Gefen, D., Straub, D.W.: Validation in information systems research: A state-of-the-art assessment. MIS Q. Manag. Inf. Syst. 25, 1–16 (2001).

60. Dennis, A.R., Valacich, J.S.: Conducting Experimental Research in Information Systems. Commun. Assoc. Inf. Syst. 7, 1–41 (2001).
61. Holtgraves, T.M., Ross, S.J., Weywadt, C.R., Han, T.L.: Perceiving artificial social agents. Comput. Human Behav. 23, 2163–2174 (2007).
62. Gefen, D., Straub, D.: A Practical Guide To Factorial Validity Using PLS-Graph: Tutorial And Annotated Example. Commun. Assoc. Inf. Syst. 16, 91–109 (2005). https://doi.org/10.17705/1cais.01605.
63. Urbach, N., Ahlemann, F.: Structural Equation Modeling in Information Systems Research Using Partial Least Squares. J. Inf. Technol. Theory Appl. 11, 5–40 (2010).
64. DiStefano, C., Zhu, M., Mîndrilă, D.: Understanding and using factor scores: Considerations for the applied researcher. Pract. Assessment, Res. Eval. 14, (2009).
65. Kubinger, K.D., Rasch, D., Moder, K.: To the legend of the pre-requisites of t-tests for non-dependent samples. Psychol. RUNDSCHAU. 60, 26–27 (2009).
66. Ruxton, G.D.: The unequal variance t-test is an underused alternative to Student's t-test and the Mann–Whitney U test. Behav. Ecol. 17, 688–690 (2006).
67. Yates, F.: Tests of significance for 2× 2 contingency tables. J. R. Stat. Soc. Ser. A. 147, 426–449 (1984).
68. Westerman, D., Cross, A.C., Lindmark, P.G.: I Believe in a Thing Called Bot: Perceptions of the Humanness of "Chatbots". Commun. Stud. 70, 295–312 (2019). https://doi.org/10.1080/10510974.2018.1557233.
69. Hendriks, F., Ou, C.X.J., Khodabandeh Amiri, A., Bockting, S.: The Power of Computer-Mediated Communication Theories in Explaining the Effect of Chatbot Introduction on User Experience. Proc. 53rd Hawaii Int. Conf. Syst. Sci. (2020). https://doi.org/10.24251/hicss.2020.034.
70. Diederich, S., Lichtenberg, S., Brendel, A.B., Trang, S.: Promoting Sustainable Mobility Beliefs with Persuasive and Anthropomorphic Design: Insights from an Experiment with a Conversational Agent. In: Proceedings of the International Conference on Information Systems (ICIS). S. 0–17. Munich, Germany (2019).
71. Lehto, T., Oinas-Kukkonen, H., Drozd, F.: Factors affecting perceived persuasiveness of a behavior change support system. In: International Conference on Information Systems, ICIS 2012 (2012).