Chatbots in the tourism industry: the effects of communication style and brand familiarity on social presence and brand attitude

Charlotte, C.M.J., van Hooijdonk
Utrecht University, Department of Language, Literature,
and Communication
c.m.j.vanhooijdonk@uu.nl

Christine, C.C., Liebrecht
Tilburg University, Department of Communication and
Cognition, Tilburg Center for Cognition and
Communication
c.c.liebrecht@tilburguniversity.edu

ABSTRACT

Text-based chatbots are increasingly being implemented in the tourism sector to supplement online customer service encounters. However, customers often perceive conversations with chatbots as unnatural and impersonal. Therefore, we investigated whether a humanlike communication style enhances users' chatbot and brand perceptions. Two experiments were conducted in which the effects of informal language (vs. formal language) and invitational rhetoric (present vs. absent) were examined separately. In both experiments, participants engaged in conversations with a customer service chatbot in the tourism sector after which they evaluated social presence and attitude towards the brand. Also, brand familiarity was included as a factor in both experiments as users' brand familiarity affects their perceptions of the communication style in human-to-human interaction. The results showed chatbots using informal language or invitational rhetoric increase one's brand attitude via social presence. Moreover, brand familiarity only moderated the findings when the chatbot used invitational rhetoric: participants who were familiar with the brand experienced more social presence when the chatbot messages contained invitational rhetoric. We conclude that the perceived humanness of chatbots can be increased by adopting a communication style consisting of informal language and invitational rhetoric. Implications for the design and evaluation of chatbot messages are discussed.

CCS CONCEPTS

• **Human-centered computing**; • **Human computer interaction (HCI)**; • **Empirical studies in HCI**;

KEYWORDS

Communication style, Brand familiarity, Social presence, Brand attitude

ACM Reference Format:
Charlotte, C.M.J., van Hooijdonk and Christine, C.C., Liebrecht. 2021. Chatbots in the tourism industry: the effects of communication style and brand familiarity on social presence and brand attitude. In *Adjunct Proceedings of the 29th ACM Conference on User Modeling, Adaptation and Personalization*

1 INTRODUCTION

The adoption of text-based chatbots by customers depends on several factors, such as the presence of humanlike characteristics in chatbot conversations [24, 31]. In literature these characteristics are seen as a key feature of chatbots [28]. According to the Computers Are Social Actors paradigm (CASA; [25]) people apply the social norms and rules in human communication mindlessly to their interactions with computers. This behavior is triggered by social cues, such as a humanlike communication style [6]. Applying the CASA paradigm to chatbot communication implies that a chatbot with a humanlike communication style in written messages stimulates users to perceive it as a social entity to which they react similar to as in human-to-human interaction.

Recently, experimental studies have been conducted in which the impact of different communication styles of text-based chatbots were examined on users' chatbot and brand perceptions [1, 9, 17, 19]. From a theoretical point of view, adopting a humanlike communication style in chatbot messages could enhance the perception of social presence (i.e., "the degree of salience of the other person in the interaction", Short et al., p. 6 [29]), which in turn generates positive customers' evaluations. Different elements can be used to create a humanlike communication style: informal language, such as sound mimicking and emoticons, as well as invitational rhetoric, such as offering an apology, showing sympathy or empathy, and joking [14, 15, 18, 32]. Arguably, users perceive a chatbot conversation differently depending on its communication style.

The current study aims to unravel the effects of the chatbot's communication style in written messages in one particular context: the tourism sector. We conducted two experimental studies in which the effects of informal language (vs. formal language) and invitational rhetoric (present vs. absent) were examined separately. Next to that, we examined whether participants' brand familiarity affects their perceptions of the chatbot's communication style. In human-to-human interaction it was found that the adoption of informal language is detrimental for brands if customers are not familiar with them [10]. By implementing this factor in chatbot research, we investigate whether this social norm also applies for human-to-chatbot communication. In sum, we propose the following research question: To what extent do elements of informal language or invitational rhetoric in chatbot messages and participants' brand familiarity influence social presence and brand attitude?

2 THEORETICAL FRAMEWORK

2.1 Chatbots' communication style

Recently, scholars started to conduct experimental studies in which oftentimes so-called humanlike chatbots are compared with machinelike chatbots. One way to make chatbots appear more humanlike is by adopting a humanlike communication style. For example, Liebrecht and van Hooijdonk [20] argue that chatbot developers could learn from human customer service employees in creating more personal and engaging chatbot messages. Specifically, the strategies of the Conversational Human Voice (i.e, CHV; [14, 15]) could be implemented in written chatbots' messages which consist of message personalization, informal language, and invitational rhetoric [18]. Liebrecht and van der Weegen [19] conducted an experiment in which participants conversed with either a humanlike chatbot or a machinelike chatbot. The written messages of the humanlike chatbot contained the three CHV strategies whereas machinelike chatbot's messages did not. The results showed participants' brand attitude was higher after interacting with the humanlike chatbot, which was mediated by social presence [19]. However, all CHV strategies were used which makes it unclear which strategy caused the effects. In this paper, we focus on the effects of informal language and invitational rhetoric separately.

2.2 Informal language

Research on the effects of (in)formal language in chatbots' messages on social presence and brand attitude showed mixed findings. According to Mc Arthur [23] an informal language style is regarded as "common, non-official, familiar, casual, and often colloquial, and contrasts in these senses with formal" (p. 77). Araujo [1] conducted an experiment in which participants interacted with either a humanlike chatbot that used informal language, or a machinelike chatbot that used formal language, although the details of linguistic manipulations are not specified. No direct effect of (in)formal language on brand attitude was found, nor was this effect mediated by social presence [1]. By contrast, Liebrecht et al. [17] did find an effect of the use of (in)formal language on brand attitude, which was mediated by social presence. Participants experienced more social presence when they interacted with the chatbot that used informal language, which positively affected brand attitude. The scholars manipulated (in)formal language by using both non-verbal cues (e.g., emoticons) and verbal cues (e.g., contractions and shortenings) in written chatbot messages. Arguably, the mixed findings can be explained by different operationalizations of (in)formal language. This communication style can be operationalized in various ways [10, 18], such as punctuation, contractions, emoticons, and sound mimicking.

2.3 Invitational rhetoric

Besides informal language, the effects of invitational rhetoric in written chatbot's messages have been investigated. Invitational rhetoric refers to the extent to which the communication style stimulates customers to engage in a conversation and creates mutual understanding between them (cf. [8]). In a literature review on linguistic elements of CHV, the following elements for invitational rhetoric are distinguished: joking, showing sympathy/empathy,

apologizing, well-wishing, acknowledging, and stimulating dialogue [18]. Research showed chatbots are rated as more humanlike when their messages contain elements of invitational rhetoric which in turn positively affects various attitudinal and behavioral outcomes [2, 3, 5, 7, 13, 16, 21].

The positive effects of chatbots using humor, expressing sympathy or empathy, and offering apologies can be attributed to the tendency people have to infer chatbots have emotions, preferences, or a personality [7]. Jokes in chatbot's messages may stimulate the perception of a personal, natural, and engaging communication style. Research shows participants evaluated a humorous chatbot as more humanlike and more likable compared to a non-humorous chatbot [5]. Furthermore, by expressing sympathy or empathy a chatbot signals it understands users' emotions and feels along with them. For example, Liu and Sundar found participants favored messages of a health advice chatbot that contained expressions of sympathy and empathy over messages containing unemotional advice [21]. Lastly, a chatbot can apologize about making an error, which makes users continue to interact with the chatbot [16] and reduce users' frustration [13].

The other elements of invitational rhetoric seem to relate to the conversational character of chatbots. Acknowledging and well-wishing are cues which may lead people to infer that chatbots know the unwritten rules for interacting with others [7]. By acknowledging a chatbot shows its appreciation for the users' input. Participants rated a chatbot that expressed thankfulness as more attractive [3]. Research also shows users rated the chatbot as more reliable, competent, and knowledgeable when it used leave-takings [2]. Finally, the use of stimulating dialogue may lead people to infer chatbots are animate in some way [7].

2.4 Brand familiarity

Although informal language and invitational rhetoric in chatbot communication can have positive effects on social presence and brand attitude, these strategies may also backfire when users perceive them as inappropriate. According to Role Theory [27], the evaluation of interaction depends on the appropriateness of the behavior of the communication partners with regard to their social roles. According to the CASA paradigm, people respond similar to chatbots as to human beings [25], and thus one could assume brand familiarity moderates the effect of informal language and invitational rhetoric in chatbot messages on social presence and brand attitude. However, prior research shows brand familiarity did not moderate the effect of the chatbot's communication style on brand attitude [17, 19]. A possible explanation could be that a chatbot's informal communication style is considered appropriate as brands increasingly use informal language in their online communication [4]. Arguably, customers are accustomed to brands' use of informal language, but this might not be the case for invitational rhetoric. Thus, joking and expressing sympathy or empathy might be seen as inappropriate when customers are unfamiliar with the brand, but this has not been examined yet.

2.5 Hypotheses

Experiment 1 investigated the effects of chatbots' (in)formal responses and participants' brand familiarity on brand attitude via

Chatbots in the tourism industry: the effects of communication style and brand familiarity on social presence and brand attitude

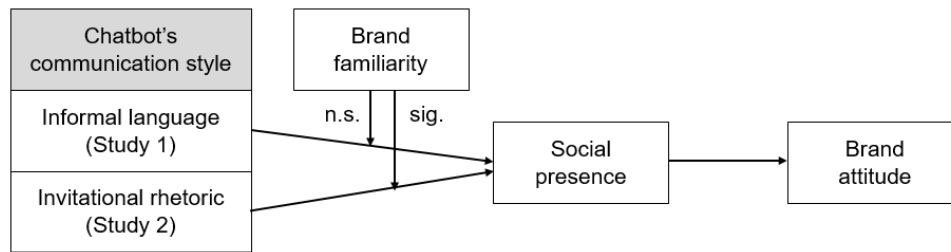UMAP '21 Adjunct, June 21–25, 2021, Utrecht, Netherlands

Figure 1: Conceptual model of Study 1 and Study 2.

social presence. Our expectations are reflected in Hypothesis 1: Social presence mediates the positive relation between chatbots' use of informal language and brand attitude, but brand familiarity does not moderate this relation. In experiment 2, the effects on brand attitude via social presence were examined for chatbots' responses with and without invitational rhetoric and participants' brand familiarity. Our expectations are reflected in Hypothesis 2: Social presence mediates the positive relation between chatbots' use of invitational rhetoric and brand attitude, and brand familiarity moderates this relation. The conceptual model of the studies is shown in Figure 1

3 EXPERIMENT 1: INFORMAL LANGUAGE AND BRAND FAMILIARITY

3.1 Design and procedure

The experiment had a 2 (Communication style: Informal vs. Formal) x 2 (Brand: Familiar vs. Unfamiliar) between-subject design. Participants were randomly assigned to one of the four text-based chatbot conditions and were instructed to interact with a chatbot using four scenarios in which they had to book hotels or flights for city trips. Afterwards, brand attitude and social presence were measured in an online survey.

3.2 Participants

Initially, 108 Dutch participants (77 women) took part in the experiment and were recruited via network sampling. Most participants successfully completed three or more chatbot conversation scenarios (90.7%). Ten participants were removed from the dataset because they completed less than three chatbot conversation scenarios successfully. The final sample was composed of 71.4% women and the average age was 31.1 years (SD = 13.0). Most participants were highly educated (47.0% had an academic education) and interacted with chatbots before (83.7%). The participants in the four conditions were comparable concerning age ($Welch's F$ (3,51.71) = .78, p = .51), gender (χ^2 (3) = 1.25, p = .74), and educational level (χ^2 (21) = 21.12, p = .45).

3.3 Chatbots and communication style

The chatbots were developed using Flow.ai, a platform with which chatbot conversation flows for customer service can be developed and implemented (https://flow.ai.. For each scenario, a conversation flow was created and trained on the most likely responses participants would give. After the development of these basic chatbots,

the four conditions were created in which the communication style and brand differed.

The operationalization of (in)formal language was derived from [10, 17, 19] using both non-verbal and verbal cues. The total number of chatbot utterances was 47 and 133 informal language manipulations were added to these utterances, i.e., on average each utterance contained about three manipulations. Table 1 shows translated examples of the Dutch manipulations. A manipulation check confirmed that the participants in the informal chatbot condition rated the communication style as more informal than the participants in the formal chatbot condition (on a 7-point scale: M = 6.06, SD = 1.35 vs. M = 3.89, SD = 1.59, t (88.66) = 7.21, p < .001).

3.4 Brand familiarity

Brand familiarity was manipulated using an existing (familiar) or fictitious (unfamiliar) brand [10, 17, 19]. TUI was selected as the familiar brand and FlexFlight as the unfamiliar brand. Each scenario contained a description of the brand, either as the biggest travel agency in the Netherlands (TUI) or as a new travel agency (FlexFlight). The chatbots' header and avatar contained the logo of either TUI or FlexFlight.

3.5 Measures

All variables were measured on 7-point Likert scales (1= strongly disagree, 7= strongly agree). Brand attitude was measured on a five-item scale and was based on [19]. The items were: "the brand is communicative", "respectful", "empathetic", "committed", and "friendly". The items constituted a reliable scale (α = .87, M = 5.09, SD = 1.02). Social presence was measured with five items used from [33]. The items were: "I felt a sense of human contact", "felt personal", "felt social", "felt warm", and "the chatbot seems to have a human sensitivity". The reliability of the scale was excellent (α = .94, M = 4.30, SD = 1.51).

3.6 Results

H1 proposed social presence would be a mediator in the relationship between the chatbot's communication style and brand attitude and that participants' brand familiarity did not moderate the relation. A moderated mediation analysis was performed in SPSS using Hayes' Process Model 8 [12]. Figure 2 summarizes the results. The analysis revealed a direct effect of the chatbot's communication style on social presence (b = 1.89, SE = .37, 95% BCa CI [1.17, 2.62]). Participants experienced more social presence in the informal language condition. Brand familiarity did not impact the relation between

Table 1: Manipulations of (in)formal language.

| Linguistic element	Frequency	Example informal language	Example formal language
Non-verbal cues			
Emoticons	21	☺	-
Capital letters	6	YES, YEAH	-
Sound mimicking	9	Woohoo, Joehoe	-
Punctuation	8	!!, . . .	!
Verbal cues			
Active vs. passive sentences	44	On which date do you want to depart?	What is the date of the departure?
Addressing	45	Do you [informal you] want to book this flight?	Do you [formal you] want to book this flight?
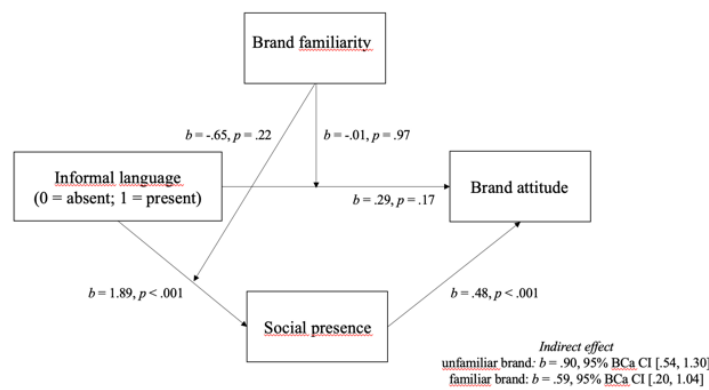
Figure 2: Mediation of the effect of the chatbot's communication style (i.e., formal vs. informal language) on brand attitude via social presence with brand familiarity as moderator.

the chatbot's communication style and social presence ($b = -.65$, $SE = .52$, 95% BCa CI [-1.69, .39]). Additionally, social presence had a positive effect on brand attitude ($b = .48$, $SE = .05$, 95% BCa CI [.37, .58]), whereas the communication style had no effect on brand attitude ($b = .29$, $SE = .21$, 95% BCa CI [-.12, .71]). Brand familiarity did not impact the relation between the chatbot's communication style and brand attitude ($b = -.01$, $SE = .26$, 95% BCa CI [-.54, .52]). Furthermore, an indirect effect of communication style via social presence was found for the unfamiliar ($b = .90$, $SE = .20$, 95% BCa CI [.54, 1.30] and familiar brand ($b = .59$, $SE = .22$, 95% BCa CI [.19, 1.04]), but the pairwise contrast between the brand familiarity conditions was not significant (95% BCa CI [-.79, .18]). These results confirm H1.

4 EXPERIMENT 2: INVITATIONAL RHETORIC AND BRAND FAMILIARITY

4.1 Design and procedure

Experiment 2 was similar to experiment 1, but included the factor Invitational Rhetoric (absent vs. present) instead of Informal Language. The second factor was Brand Familiarity (familiar vs. unfamiliar). Participants were randomly assigned to one of the four chatbot conditions and interacted with a text-based chatbot based

on the same scenarios as experiment 1. Afterwards, brand attitude and social presence were measured.

4.2 Participants

Initially, 107 Dutch participants (61 women) took part in the experiment. Most participants successfully completed three or more chatbot conversation scenarios (93.5%). Six participants were removed from the dataset because they completed less than three chatbot conversation scenarios successfully. The final sample was composed of 59.4% women and the average age was 28.1 years ($SD = 12.4$). Most participants were highly educated (52.5% had an academic education) and interacted with chatbots before (78.2%). The participants in the four conditions were comparable concerning age (Welch's $F (3,50.97) = 2.38$, $p = .08$), gender ($\chi^2 (3) = 2.34$, $p = .51$), and educational level ($\chi^2 (15) = 10.52$, $p = .79$).

4.3 Chatbots' communication style and brand familiarity

The chatbots used in Experiment 1 served as a blueprint for Experiment 2. The operationalization of invitational rhetoric was based on a selection of different linguistic elements from Liebrecht et al. [18]able 2 shows the manipulations. The total number of

Chatbots in the tourism industry: the effects of communication style and brand familiarity on social presence and brand attitude

UMAP '21 Adjunct, June 21–25, 2021, Utrecht, Netherlands

Table 2: Manipulations of invitational rhetoric.

| Linguistic element	Frequency	Example invitational rhetoric	Example no invitational rhetoric
Joking	8	London! Give our regards to the Queen ☺ What's the departure date?	What's the departure date?
Showing sympathy/empathy	5	That's a pity! What's the destination of the flight?	What's the destination of the flight?
Stimulating dialogue	2	Let us know how you experienced your chat with the chatbot	-
Well-wishing	4	Have a nice trip!	The booking is completed
Thanking	2	Thanks for your booking!	The booking is completed
Apologizing	4	Sorry, your response is not recognized.	Your response is not recognized.
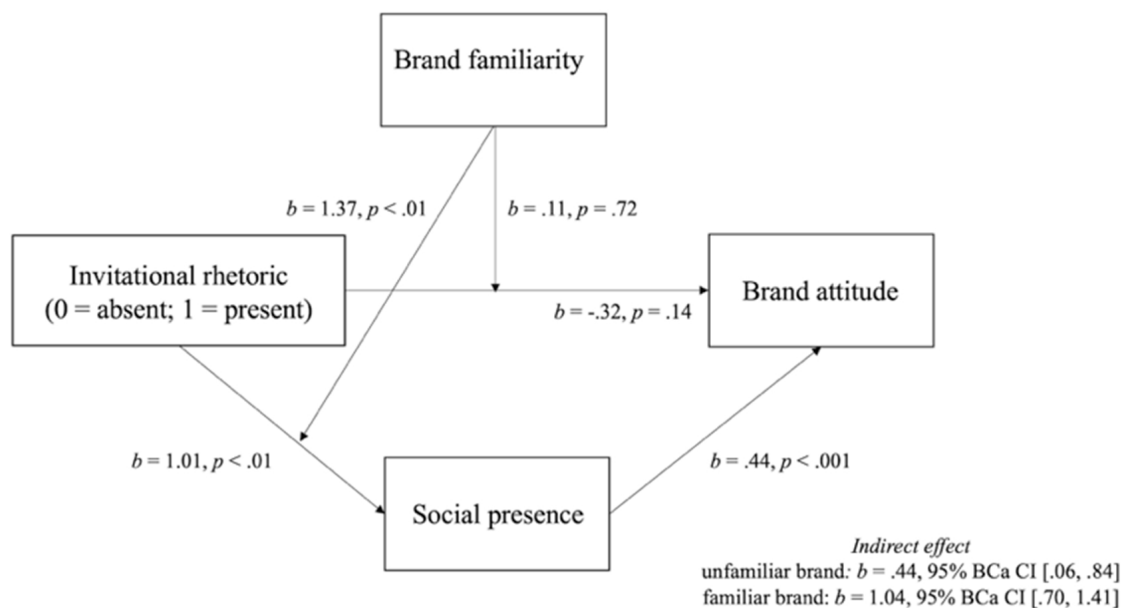
Figure 3: Mediation of the effect of the chatbot's communication style (i.e., invitational rhetoric: absent vs. present) on brand attitude via social presence with brand familiarity as moderator.

chatbot utterances was 51 and contained 25 invitational rhetoric manipulations. A manipulation check confirmed participants rated the perceived CHV higher after using a chatbot with invitational rhetoric than using a chatbot without invitational rhetoric (3 items on a 7-point scale, $\alpha = .77$, $M = 5.27$, $SD = .99$ vs. $M = 2.60$, $SD = 1.14$, $t(96.48) = 11.60$, $p < .001$).

4.4 Measures

Variables were measured on 7-point Likert scales (1= strongly disagree, 7= strongly agree). Brand attitude was measured on an eight-item scale based on [19]. The items were: "the brand is communicative", "uninterested" (reversed item), "respectful", "arrogant" (reversed item), "empathetic", "committed", "likable", and "friendly". The items constituted a reliable scale ($\alpha = .86$, $M = 4.98$, $SD = .94$). Social presence was measured with the same five items as in

Experiment 1. The reliability of the scale was excellent ($\alpha = .94$, $M = 3.88$, $SD = 1.59$).

4.5 Results

H2 proposed social presence would be a mediator in the relationship between the chatbot's communication style (i.e., invitational rhetoric: absent vs. present) and brand attitude and participants' brand familiarity moderated the relation. A moderated mediation analysis was performed in SPSS using Hayes' Process Model 8 [12]. Figure 3 summarizes the results. The analysis showed a direct effect of the chatbot's communication style on social presence ($b = 1.01$, $SE = .38$, 95% BCa CI [.26, 1.76]). Participants experienced more social presence when the chatbot messages contained invitational rhetoric. Brand familiarity had a positive impact on the relation between the chatbot's communication style and social presence ($b = $

1.37, $SE = .52$, 95% BCa CI [.34, 2.41]). Additionally, social presence had a positive effect on brand attitude ($b = .44$, $SE = .06$, 95% BCa CI [.33, .55]), whereas the communication style did not ($b = -.32$, $SE = .21$, 95% BCa CI [-.74, .11]). Brand familiarity did not impact the relation between the chatbot's communication style and brand attitude ($b = .11$, $SE = .29$, 95% BCa CI [-.48, .69]). Furthermore, a positive effect of communication style via social presence was found for the unfamiliar ($b = .44$, $SE = .20$, 95% BCa CI [.06, .84]) and familiar brand ($b = 1.04$, $SE = .18$, 95% BCa CI [.70, 1.41]). The pairwise contrast between the brand familiarity conditions was significant (95% BCa CI [.15, 1.11]). These results confirmed H2.

5 CONCLUSION AND DISCUSSION

The presence of a humanlike communication style in chatbot communication is considered to be important in customers' chatbot adoption [24, 30]. To gain insights into the effects of a humanlike communication style, we conducted two experiments in which the use of informal language and invitational rhetoric in text-based chatbot messages were examined, specifically for a chatbot that assisted users in (re)booking flights and hotels. Our research revealed the adoption of informal language as well as invitational rhetoric positively impacts users' brand attitude via perceptions of social presence. However, users' brand familiarity should be taken into account when adopting invitational rhetoric: invitational rhetoric in chatbot's messages increases the perception of social presences for users who are familiar with the brand. Arguably, users who are unfamiliar with the brand might consider elements, such as joking and expressing sympathy or empathy, as inappropriate.

These findings contribute to the existing knowledge on chatbots' communication styles. First, in line with Liebrecht et al. [17], but contradictory to Araujo [1], we consolidated the positive effects of informal language in chatbot messages. Second, the experiments show it is relevant to examine strategies of a humanlike communication style separately. Both informal language and invitational rhetoric were used in the research of Liebrecht and van der Weegen [19], and although the mediating effects via social presence are in accordance with their findings, our results showed the moderated impact of brand familiarity only depends on the use of invitational rhetoric. Arguably, a chatbot's informal communication style is presumably considered appropriate as brands -at least in in the tourism industry- increasingly use informal language in online communication [4].

These results deepen insights on the CASA paradigm [25] and Role Theory [27] since it seems that the evaluation of chatbot interactions depends on the appropriateness of partners' communication style with regard to their social roles. Our research shows that both communication styles positively impact users' perceptions, at least if the chatbot conversation was successful. This raises the question, whether these findings hold in case of miscommunication, chatbot errors, or a failed service recovery. Possibly, users' forgiveness regarding the chatbot is higher if the conversation itself was personal and engaging.

A limitation of the current research is that the chatbot using invitational rhetoric also contained an element of informal language (i.e., emoticons). This non-verbal cue was added to indicate a humorous chatbot message. Moreover, the chatbots using informal language and invitational rhetoric also contained minor elements of personalization (compare: 'On which date do you want to depart?' vs. 'What is the date of the departure?'), personal pronouns are considered to be a subcategory of Personalization, the third strategy of CHV [14, 15]. These limitations could indicate that the CHV strategies are closely related. Future research should therefore investigate to what extent CHV strategies are perceived as separated concepts, and how they contribute to the communication style of chatbots in different settings.

REFERENCES

[1] 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. Hum. Behav., 85, (2018), 183-189

[2] Cassell, J. and Bickmore, T. External manifestations of trustworthiness in the interface. Commun ACM, 43, 12, (2000), 50-56.

[3] Derrick, D. C. and Ligon, G. S. The affective outcomes of using influence tactics in embodied conversational agents. Comput. Hum. Behav., 33, (2014), 39-48.

[4] Dijkmans, C., Kerkhof, P. and Beukeboom, C. Adapting to an emerging social media landscape: The rise of informalization of companycommunication in tourism. In Neidhardt, J. and Wörndl, W. eds., Information and Communication Technologies in Tourism 2020: Springer, Cham, (2020), 3-14.

[5] Dybala, P., Ptaszynski, M., Rzepka, R. and Araki, K Humoroids: conversational agents that induce positive emotions with humor. In AAMAS'09 Proceedings of the 8th International Conference on Autonomous Agents and Multiagent Systems. ACM, 2009,1171-1172.

[6] Feine, J., Gnewuch, U., Morana, S. and Maedche, A. A taxonomy of social cues for conversational agents. International Journal of Human-Computer Studies, 132, (2019). 138-161.

[7] Fogg, B. J. Persuasive technology: using computers to change what we think and do. ACM New York, NY, USA, 2002

[8] Foss, S. K. and Griffin, C. L. Beyond persuasion: A proposal for an invitational rhetoric. Communications Monographs, 62, 1 (2019), 2-18.

[9] Go, E. and Sundar, S. S. Humanizing chatbots: The effects of visual, identity and conversational cues on humanness perceptions. Comput. Hum. Behav., 97, (2019), 304-316.

[10] Gretry, A., Horváth, C., Belei, N. and van Riel, A. C. "Don't pretend to be my friend!" When an informal brand communication style backfires on social media. Journal of Business Research, 74, (2017), 77-89.

[11] Hatwar, N., Patil, A. and Gondane, D. AI based chatbot. International Journal of Emerging Trends in Engineering and Basic Sciences, 3, (2016), 85-87.

[12] Hayes, A. F. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. Guilford publications, 2016.

[13] Hone, K. Empathic agents to reduce user frustration: The effects of varying agent characteristics. Interact Comput, 18, (2006). 227-245.

[14] Kelleher, T Conversational voice, communicated commitment, and public relations outcomes in interactive online communication. J. Commun., 59, (2009), 172-188.

[15] Kelleher, T. and Miller, B. M. Organizational blogs and the human voice: Relational strategies and relational outcomes. Journal of computer-mediated communication, 11, (2006), 395-414.

[16] Klein, J., Moon, Y. and Picard, R. W This computer responds to user frustration: Theory, design, and results. Interact Comput., 14, (2020), 119-140.

[17] Liebrecht, C., Sander, L. and van Hooijdonk, C Too Informal? How a Chatbot's Communication Style Affects Brand Attitude and Quality of Interaction. In Conversations 2020: 4th International Workshop on Chatbot Research and Design 2020, 16-31.

[18] Liebrecht, C., Tsaousi, C. and van Hooijdonk, C Linguistic elements of conversational human voice in online brand communication: Manipulations and perceptions. Journal of Business Research, 132, (2021), 124-135.

[19] Liebrecht, C. and van der Weegen, E. Menselijke chatbots: een zegen voor online klantcontact?: Het effect van conversational human voice door chatbots op social pesence en merkattitude. Tijdschrift voor Communicatiewetenschap, 47, (2019), 217-238.

Chatbots in the tourism industry: the effects of communication style and brand familiarity on social presence
and brand attitude

UMAP '21 Adjunct, June 21–25, 2021, Utrecht, Netherlands

[20] Liebrecht, C. and van Hooijdonk, C. Creating humanlike chatbots: what chatbot developers could learn from webcare employees in adopting a conversational human voice. In *Conversations 2019*: *International Workshop on Chatbot Research and Design. 2019*, 51-64.

[21] Liu, B. and Sundar, S. S Should machines express sympathy and empathy? Experiments with a health advice chatbot. Cyberpsychology, Behavior, and Social Networking, 21, 10, (2018), 625-636.

[22] Lukanova, G. and Ilieva, G Robots, artificial intelligence, and service automation in hotels. In *Robots, artificial intelligence, and service automation in travel, tourism and hospitality.* Emerald Publishing Limited, 2019.

[23] McArthur, T. The Oxford companion to the English language. Oxford University Press, 1992.

[24] Melián-González, S., Gutiérrez-Taño, D. and Bulchand-Gidumal, J. Predicting the intentions to use chatbots for travel and tourism. Current Issues in Tourism, 24, (2021), 192-210.

[25] Nass, C., Steuer, J. and Tauber, E. R. Computers are social actors. In *Proceedings of the SIGCHI conference on Human factors in computing systems*, 1994, 72-78.

[26] Pillai, R. and Sivathanu, B. Adoption of AI-based chatbots for hospitality and tourism. International Journal of Contemporary Hospitality Management, 32, (2020), 3199-3226.

[27] Sarbin, T. R. and Allen, V. L. Role theory. In *Handbook of social psychology.* Reading, Addison-Wesley,1968.

[28] Shawar, B. A. and Atwell, E. Chatbots: are they really useful? Ldv forum, 22, (201), 29-49.

[29] Short, J., Williams, E. and Christie, B. *The social psychology of telecommunications.* Toronto; London; New York: Wiley, 1976.

[30] Ukpabi, D. C., Aslam, B. and Karjaluoto, H. Chatbot adoption in tourism services: A conceptual exploration. In Ivanov, S. and Webster, C. eds.*Robots, artificial intelligence, and service automation in travel, tourism and hospitality.* Emerald Publishing Limited, 2019.

[31] Ukpabi, D. C. and Karjaluoto, H. What drives travelers' adoption of user-generated content? A literature review. Tourism management perspectives, 28, (2018), 251-273.

[32] Van Noort, G., Willemsen, L. M., Kerkhof, P. and Verhoeven, J. W Webcare as an integrative tool for customer care, reputation management, and online marketing: A literature review. In *Integrated communications in the postmodern era.* Springerm, 2015, 77-99.

[33] Verhagen, T., Van Nes, J., Feldberg, F. and Van Dolen, W Virtual customer service agents: Using social presence and personalization to shape online service encounters. Journal of Computer-Mediated Communication, 19, (2014), 529-545.