Stephan Olk, Dieter K. Tscheulin and Adnan Zogaj

Crisis communication via COVID-19 Chatbots – Effects of communication style on public management objectives

Chatbot; COVID-19; Crisis management; Risk communication; Stereotype content model

Effective communication during public health emergencies is critical to handling a crisis. In uncertain times, those in charge are faced with the challenge of providing citizens with sufficient information on the one hand and avoiding panic reactions on the other hand. Due to the high demand for information, organizations and public administrations are increasingly using chatbots in order to implement their crisis strategies. The present study investigates the effects of a chatbot's communication style on the objectives of crisis management using the example of the COVID-19 pandemic. Based on the stereotype content model, this study empirically shows that the combination of the goal frame and the use of emojis has an impact on citizens' responses to chatbot communication. The implications for effective risk communication and limitations are discussed.

I. Introduction

On 30 January 2020, the WHO declared a global health emergency following the rapid global spread of the novel coronavirus (COVID-19) (WHO 2020a). While governments and health organizations were trying to execute their pandemic plans and communicate crisis directives to citizens, citizens were experiencing growing worries and fears due to the considerable uncertainty. Against this background, governments and organizations face the challenge of designing their communications in such a way that sufficiently high levels of transparency and trust in authorities are ensured so that citizens follow the policies. In addition, they are aiming to reduce the risk of panic reactions, such as panic buying (Cowper 2020; Legido-Quigley et al. 2020).

In response to the high demand for information, numerous IT companies have developed chatbots to answer individual questions about COVID-19 and its consequences (e.g., IBM 2020; Microsoft 2020). Chatbots are computer-controlled automated dialogue systems that enable text-based communication with a virtual agent (Przegalinska et al. 2019). In March 2020, the WHO announced the launch of its chatbot with the aim "to get accurate information about COVID-19 to people in multiple languages" (WHO 2020b). As the pandemic progressed, many governments also used chatbots to provide relevant information to the public (e.g., the governments of India (Singh 2020), Singapore (Priya 2020), and the UK (Baraniuk 2020)). Additionally, in Germany, numerous organizations (e.g., Deutsches Rotes Kreuz 2020; Paracelsus Kliniken 2020; Universitätsmedizin Mainz 2020) and public administrations (e.g., Kreis Soest

2020; Landratsamt Ortenaukreis 2020; Stadt Rosenheim 2020) have expanded the range of information given by COVID-19 chatbots due to the strongly growing and individual information demands.

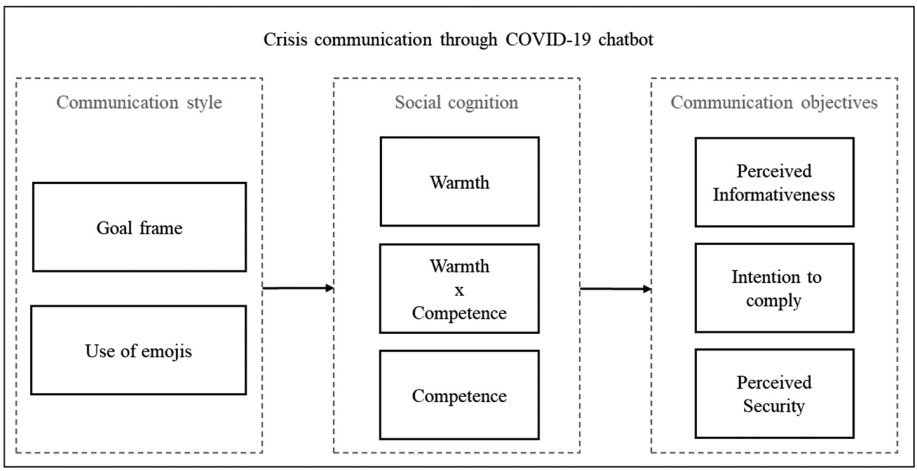
However, regarding the use of chatbots for crisis communication, two major uncertainties arise. First, although crisis communications have long been a research subject (Benson 1988; Coombs/Holladay 1996) and the progress of the systematization and theoretical development has yielded many practical implications for crisis management (Coombs 2010), there are important gaps in the knowledge about citizens' intrapersonal processing of crisis messages (Avery/Park 2016). Second, academics are right at the beginning of researching the effects of chatbots on users' processing. While the beginnings of human-machine conversation go back to the 1960 s (Weizenbaum 1966) and the number of chatbots in the service sector has increased rapidly over the last five years (Luo et al. 2019), fundamental questions regarding the effectiveness of chatbot conversations remain unanswered (Przegalinska et al. 2019). These uncertainties become even more important against the background of the above described tension between information transfer and avoiding panic during a global health emergency. This raises the question regarding how crisis communication via chatbots can be designed to achieve the objectives of crisis management.

Thus, the present study aims to shed light on the effectiveness of crisis communication through chatbots during a global health emergency using the example of the current COVID-19 pandemic. Using the stereotype content model, we analyze how chatbot's communication style (i.e., goal frame and use of emojis) can result in different social cognitions of warmth and competence and how these communication styles affect the objectives of crisis management (i.e., perceived information quality, intention to comply with crisis directives and feelings of security). Thus, the current study contributes to the crisis communication literature and to the research on human-machine-interaction by examining the application and effectiveness of a COVID-19 chatbot. We show that social cognition is also relevant in chatbot interactions and demonstrate how it can be leveraged for crisis management.

II. Conceptual background and hypotheses

In the following, we argue how a COVID-19 chatbot's communication style (i.e., goal frame and use of emojis) affects citizens' social cognition and their responses to crisis communication (Fig. 1). For this purpose, we first discuss the stereotype content model and review its underlying principles regarding the social cognition (i.e., warmth and competence) of interaction partners. Then, we deduce why the goal framing of achieving a desirable state and the use of emojis should be associated more with warmth and less with competence compared to the goal framing of avoiding an undesirable state and the nonuse of emojis (i.e., H1a, b and H2a, b). Based on these assumptions, we then address the question of whether the communication style of a chatbot should generate a perception of warmth or a perception of competence in order to achieve the objectives of crisis management (i.e., H3a-c).

Figure 1: Conceptual model



Source: Own representation

1. Stereotype content model and social cognition of chatbots

When people are finding their bearings in social interactions, they assess their interaction partners with regard to their personal characteristics. However, since time and cognitive resources are scarce, these assessments often focus on fundamental characteristics that finally lead to the perception of certain stereotypes (Cuddy/Glick/Beninger 2011). The stereotype content model postulates that warmth and competence are key dimensions of social cognition and this can be traced back to the essential patterns of social interaction (Fiske et al. 2002). Thus, perceived warmth is decisive for the intent action of the counterpart. It includes aspects such as friendliness, sociability and sincerity and is therefore decisive for the assessment of whether the vis-à-vis is a friend or foe. Perceived competence, on the other hand, determines the probability of realizing the intended behavior and includes aspects such as efficacy, intelligence and confidence. Research has shown not only that these two dimensions retain consistent significance across different cultures (Durante et al. 2013) but also that these dimensions have relevance beyond the assessment of personal counterparts to other interaction partners such as political candidates (Laustsen/Bor 2017), countries (Chattalas/Kramer/Takada 2008), companies (Aaker/Vohs/Mogilner 2010) or hospitals (Drevs/Tscheulin/Lindenmeier 2014).

With regard to chatbot communication, we assume that social cognition also takes place in this human-machine-interaction. We attribute this to the fact that digital social cues induce the perception of social presence (Hassanein/Head 2007), which should particularly be the case for chatbot communication simulating an interaction with another human. Furthermore, considering the relevance of social cognition in challenging situations for attitudes and behavioral intentions (Cuddy/Glick/Beninger 2011), the stereotype content model should be of particular importance in the present case. Given that confronting a pandemic is associated with high uncer-

tainty and limited knowledge (Zhang/Li/Chen 2020), we assume that social cognition plays a crucial part in crisis communication through chatbots during a global health emergency. In the following, we focus on two central communication style elements that we assume have an impact on the social cognition of chatbots.

2. Chatbot's communication style and citizens' intrapersonal processing of crisis messages

A central design element of risk communication concerns the question of the appropriate framing. The framing of crisis communication can influence the perception and reaction of citizens and is therefore of vital importance at the outbreak of a pandemic (Lee/Basnyat 2013). Thereby, those who are responsible are faced with the decision to formulate their appeals in order to increase the probability that citizens will comply with political directives. In the literature, a variety of different framing approaches can be found (for an overview, see Hallahan 1990). To get people to behave in the desired way, the goal frame (or action frame) is of primary importance. Goal framing describes the possibility to require the same behavior either by focusing on the positive consequences of the behavior or by focusing on the negative consequences of its absence (Levin/Schneider/Gaeth 1998). There are numerous studies in the field of health-related persuasive messages that analyzed the effects of goal framing on the processing and behavioral intentions of the message receivers (Gallagher et al. 2011; Haydarov/Gordon 2015; McCormick/Seta 2012; Moorman/van den Putte 2008). Findings show that under certain conditions, a loss frame achieves better results; and under other conditions, a gain frame has a stronger positive effect on recipients' responses (for a systematic review, see Covey 2014). Arbuthnott and Scerbe (2016) extend the research from the framing effects associated with personal consequences to the framing effects associated with public resources. The authors show that both recipients' attitudes and support intentions regarding policies depend on goal framing. In their study, the authors demonstrate that a loss frame leads to better results for economic and ecological issues. This provides evidence that framing effects should also be of relevance in the context of a global health emergency, which is not only about the protection of the individual but also about the protection of society, such as avoiding overburdening the health care system.

Initial research attributed the effects of goal framing on recipients' responses mainly to loss aversion and risk aversion (Covey 2014), whereas other interpersonal processes have been largely neglected (Gallagher/Updegraff 2012). However, recent research considers recipients' emotions that are triggered by goal framing and demonstrate that gain frames are associated with positive emotions such as hope and that loss frames are associated with negative emotions such as fear (Bilandzic/Kalch/Soentgen 2017; Septianto/Northey/Dolan 2019). With regard to crisis communications during a pandemic, we hypothesize that goal framing also has an influence on social cognition. We justify this with the following considerations. A pandemic is characterized by considerable uncertainty and unknown progress (Zhang/Li/Chen 2020). Thus, the announcement of a positive outcome due to political directives (i.e., gain frame) is based on the ignorance of the prevailing uncertainty. It follows that an appeal motivated by the relatively harmless overcoming of the pandemic should be associated with exaggerated optimism. This

argument is supported by the recommendation that leaders should communicate the uncertainty that a crisis entails (Seeger 2006). However, the characteristic of showing exaggerated optimism is a common human trait (Sharot/Korn/Dolan 2011). Thus, we assume that a gain frame perceived as human optimistic bias (Weinstein 1980) due to its associated exaggerated optimism leads to increased perceived humanity and sympathy and thus to greater perceived warmth among recipients. At the same time, we expect that the signal effect of human bias will reduce the perceived rationality and expertise and therefore leads to decreased perceived competence of the chatbot. Thus, H1a and H1b read as follows.

H1a: Focusing on the positive consequences of political directives increases the perception of a chatbot's warmth compared to focusing on preventing negative consequences.

H1b: Focusing on the positive consequences of political directives decreases the perception of a chatbot's competence compared to focusing on preventing negative consequences.

The second style element concerns the use of emojis. Emojis are image surrogates whose use can be seen as a reaction to the lack of nonverbal cues through text-based computer-mediated communication (Walther/D'addario 2001). In contrast to emoticons, which represent human facial expressions (e.g.,☺ , ☹), emojis also include other nonhuman symbols (e.g., 📱 , 🌎). The use of emojis has steadily increased and has gained momentum in many areas; therefore, it is not surprising that the topic has also gained substantial interest in research in recent years (Bai et al. 2019). Li/Chan/Kim (2019) were able to show that the use of human facial expressions (i.e., emoticons) in the context of service chats has a positive effect on the perceived warmth and a negative effect on the competence of the service employee. The authors attribute this to the fact that individuals use emoticons more often in private contexts (Derks/Bos/Von Grumbkow 2008) and they are associated with more warmth-related personality traits (Zhang/Erickson/Webb 2011). In addition, emphasized emotional expression should lead to less competence (Li/Chan/Kim 2019). The applicability of these considerations to emojis as a whole is supported by the results of another study from the marketing field. The study shows that emojis have a stronger positive effect on customer purchase intentions when used in the context of advertising hedonic products rather than utilitarian ones (Das/Wiener/Kareklas 2019). Since chatbots imitate human interaction partners, we hypothesize that the abovementioned arguments are also valid for communication with a chatbot. Since risk communication is accompanied by the emotionalization of the recipient (Xie et al. 2011), the described effects should be even more valid in the case of conversations with COVID-19 chatbots. Consequently, hypotheses H2a and H2b read as follows.

H2a: Using emojis in crisis communication increases the perception of a chatbot's warmth compared to not using emojis.

H2b: Using emojis in crisis communication decreases the perception of a chatbot's competence compared to not using emojis.

Regarding the effects of the two dimensions, there are varying results in the literature. Studies from the field of social psychology, for instance, conclude that warmth plays a stronger role in social cognition (Kenworthy/Tausch 2008). This is mainly attributed to the fact that intent behavior (i.e., harmful or benevolent) is more important than the probability of realizing the intent behavior (Fiske/Cuddy/Glick 2007). In contrast, early studies in the field of political science attribute a greater role to competence and justify this by using the relevance of matching com-

plex political challenges by political leaders (Funk 1997). However, the results are not unanimous in the light of recent studies. For instance, Laustsen and Bor (2017) have shown in their studies that perceived warmth plays a greater role than competence in political decisions. At the same time, Castelli et al. (2009) were able to demonstrate the negative effects of a political candidate's warmth on the probability of electoral success. A differentiated picture also emerges with regard to the results of consumer research. While empirical evidence exists that places greater relevance on warmth (Castro/Thompson/Ward 2012), the opposite can also be found (Aaker/Vohs/Mogilner 2010). A deeper insight regarding the effects of the two social cognition dimensions is provided by the study of Grandy et al. (2005), which demonstrates that warmth only has a positive effect on customer responses if the service quality is adequately high. This view is also confirmed by the findings of other studies, which show that customers' intentions to buy products from a certain brand are the highest when the brand is perceived as both competent and warm (Aaker/Garbinsky/Vohs 2012).

In the present case, we argue that the combination of the two dimensions is decisive for the effectiveness of crisis communication and justify this as follows. In times in which people are exposed to threats, they look for strong leaders who are able to reduce uncertainty through strength of character and determination (Laustsen/Petersen 2015; Williams et al. 2009). Such a charismatic leadership style is in turn characterized by a high perception of warmth and competence (Michel/Wallace/Rawlings 2013). Against the background of the COVID-19 pandemic, we assume that there is also a growing need for charismatic leadership in crisis communication. Although warmth is essential for the perception of the interaction partner (Goodwin/Piazza/Rozin 2014), people rely on experts and their knowledge in times of crisis when they are exposed to great uncertainty (Paton 2008). These considerations lead to the following hypotheses H3a-c.

> *H3:* A communication style that enhances the perception of both a chatbot's warmth and competence has a positive effect on a) perceived information quality, b) intention to comply with crisis directives and c) feelings of security compared to a communication style that focuses on one of the two dimensions.

III. Research method

1. Procedure and participants

To test our hypotheses, we used a 2 (loss vs. gain frame) x 2 (nonuse of emojis vs. use of emojis) between-subject design. For the treatments, we created four videos (each approximately 2 minutes) that show a chat between a citizen and a COVID-19 chatbot provided by a municipality (see Appendix). In each video, the citizen asked the same three questions regarding COVID-19 and the chatbot gave the same answers that we adopted from an existing COVID-19 chatbot (Kreis Soest 2020). The only distinctions we made between the four videos are the goal frame (i.e., loss vs. gain) and the use of emojis (i.e., no emojis vs. emojis). Participants were recruited via the social network Facebook and were randomly assigned to one of the four exper-

imental treatments. To prevent any technical influence on the data generated, we asked them whether the presentation of the video clips was interference-free. In addition, to guarantee the quality of the answers, we introduced two screening questions at the middle and the end of the survey. The survey took place from 26 March to 6 April 2020. During this period, the number of confirmed infected persons worldwide rose from approximately 0.5 to approximately 1.3 million (Johns Hopkins University 2020). The final sample included data from 247 subjects (M_{age} = 27.82 years, SD = 8.49; 69.2% female).

2. Measurement

All items were measured with a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). To confirm our intended manipulation, the participants responded to two items ("Does the chatbot draw attention to the negative consequences without government action or to the positive consequences due to government policies" and "The chatbot used emojis"). This was followed by the items for the constructs. To measure the perceived warmth and competence, we used two items each ("The chatbot seemed goodnatured/friendly to you" and "The chatbot seemed competent/capable to you"; Fiske/Cuddy/Glick 2007). Furthermore, we used two items from Ducoffe (1996) to measure perceived informativeness ("The chatbot provides relevant/timely information"), two items from Wilson/Hall-Phillips/Djamasbi (2015) to measure participants' intention to comply ("If I actually received this message, I would do what it requests" and "I would pledge to follow all the instructions"), and a single item based on Cruz-Milán et al. (2016) to measure perceived security ("I feel safer after the interaction with the chatbot").

IV. Results

1. Manipulation checks and validity of the measures

To confirm that our intended manipulation of the chatbot's communication style was successful, we conducted a two-by-two MANOVA (frame condition by emojis condition) on the two manipulation check items. The results showed that only the frame condition had a significant main effect on the perceived frame (M_{Loss} = 4.09, M_{Gain} = 5.44, F(243) = 43.26, $p < .01$) and only the emojis condition had a significant main effect on perceived use of emojis ($M_{No\ emojis}$ = 1.47, M_{Emojis} = 6.16, F(243) = 996.49, $p < .01$).

The means, standard deviations, and correlations of the constructs are presented in Table 1. To evaluate our measurement model, we conducted confirmatory factor analysis. The results revealed a good fit between the five factors (i.e., perceived warmth, perceived competence, perceived informativeness, intention to comply, and perceived security) and the data (CMIN/df = 1.26; CFI = .99, SRMR = .04; RMSEA = .03; PCLOSE = .75). The composite reliability measures are greater than .7, and the average variances extracted are greater than .55 and larger than the squared correlation between each pair of constructs (Fornell/Larcker 1981). The calcu-

lated Cronbach's alphas are greater than .7. In summation, the results confirm the successful manipulation as well as the reliability and the validity of our measures.

Table 1: Descriptive statistics and validity assessment

Variable	M	SD	CR	AVE	1	2	3	4	5
1. Warmth	5.3	1.34	.784	.652	.756				
2. Competence	4.5	1.34	.885	.794	.41**	.885			
3. Informativeness	4.24	1.32	.731	.576	.256**	.604**	.73		
4. Compliance	3.98	1.69	.978	.959	.022	.058	.125*	.921	
5. Security	2.81	1.44	-	-	.093	.271**	.229**	.12	-

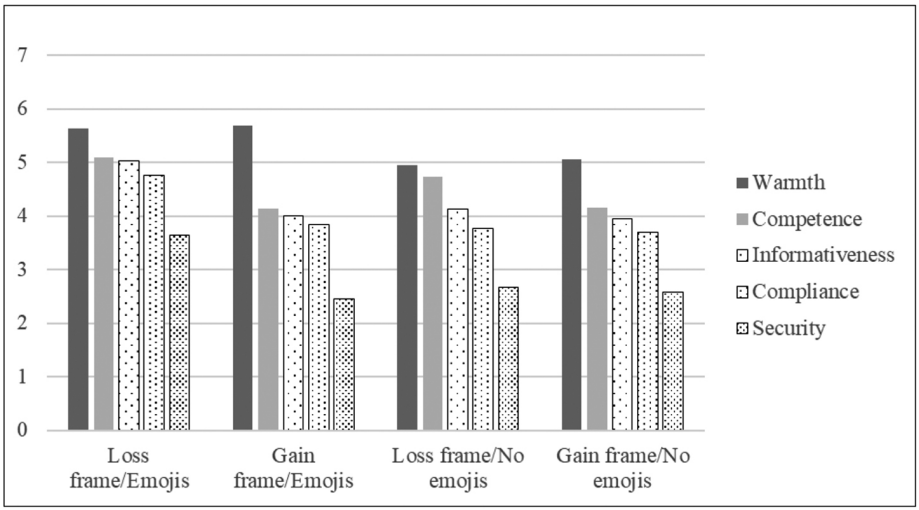
Notes: N = 247. The values along the diagonal represent the Cronbach's alphas. *p < .05, **p < .01.

Source: Own representation

2. Hypothesis testing

To test our hypotheses, we conducted a two-by-two MANOVA (frame condition by emojis condition) on participants' social cognition (i.e., perceived warmth and competence) and on all three observed target indicators of crisis communication (i.e., perceived informativeness, intention to comply, and perceived security). The analysis revealed a significant multivariate main effect for framing (Wilks's $\lambda = .85$, $F(5, 239) = 8.27$, $p < .01$, partial $\eta^2 = .15$) and the use of emojis (Wilks's $\lambda = .88$, $F(5, 239) = 7.04$, $p < .01$, partial $\eta^2 = .13$). It also revealed a significant multivariate interaction effect for framing x use of emojis (Wilks's $\lambda = .93$, $F(5, 239) = 3.65$, $p < .01$, partial $\eta^2 = .07$). Figure 2 shows the different levels of the dependent variables depending on the chatbot communication style. In the next step, we examined the univariate effects for the main and the interaction effects.

Figure 2: Effects of COVID-19 chatbot's communication style



Source: Own representation

Regarding participants' social cognition, the results revealed that using a positive goal frame has no effect on perceived warmth ($p > .5$), but does have a negative effect on perceived competence ($F(1, 243) = 21.88$, $p < .01$). Thus, H1a is not supported; however, H1b is supported. Furthermore, in support of H2a, emojis have a positive effect on perceived warmth ($F(1, 243) = 15.43$, $p < .01$). However, no significant effect could be observed on perceived competence ($p > .2$). Thus, H2b was not supported. Moreover, consistent with H3, framing x use of emojis exerts significant impacts on perceived informativeness ($F(1, 243) = 7.04$, $p < .01$), intention to comply ($F(1, 243) = 4$, $p < .05$), and perceived security ($F(1, 250) = 9.88$, $p < .01$). Pairwise comparisons revealed that the loss frame has a positive effect on perceived informativeness ($\beta = 1.03$, SE = .24, $p < .01$), intention to comply ($\beta = .92$, SE = .32, $p < .01$), and perceived security ($\beta = 1.19$, SE = .26, $p < .01$) in the case of using emojis and that emojis have a positive effect on perceived informativeness ($\beta = .91$, SE = .24, $p < .01$), intention to comply ($\beta = .99$, SE = .31 $p < .01$), and perceived security ($\beta = .99$, SE = .26, $p < .01$) in case of the loss frame. To explore the mediating role of perceived warmth and the competence of the chatbot, we conducted a conditional process analysis (Hayes 2017) with 5,000 bootstrap samples on the three target indicators of crisis communication. The results indicate that the positive effect of gain frame on perceived informativeness when using emojis is mediated through competence ($\beta = .54$, SE = .14, $p < .01$) and the positive effect of emojis on perceived informativeness when using a loss frame is mediated through perceived warmth ($\beta = .28$, SE = .1, $p < .01$), supporting H3a. The positive effects of a gain frame and emojis on intention to comply, however, are not mediated through warmth or competence ($p > .5$). Thus, H3b is not supported. Finally, the results reveal that the positive effect of a gain frame on perceived security when using emojis is mediated through competence ($\beta = .35$, SE = .1, $p < .01$) and the positive effect of emojis on per-

ceived security when using a loss frame is mediated through perceived warmth (β = .21, SE = .1, p < .01), supporting H3c.

V. Discussion

The use of chatbots for crisis communication is a cost-effective response to the increased information demand of citizens. Thus, in Germany, numerous organizations and public administrations expanded their range of information in the face of the COVID-19 pandemic. However, so far, it is unclear how citizens respond to crisis communications through chatbots and how this new form of communication affects crisis management. This study provides a first step toward answering these questions by examining the impacts of a chatbot's communication style (i.e., goal frame and use of emojis) on the objectives of crisis management (i.e., perceived information quality, intention to comply with crisis directives and feelings of security). Our results clearly show that a loss frame in combination with the use of emojis positively influences all three target indicators. Moreover, we show that the positive effect on informativeness and security can be traced back to the social cognition of high warmth and high competence. However, the positive effect on the intention to comply could not be explained by participants' social cognition. In line with previous research, we assume that the increased compliance is therefore mainly caused by the increased risk awareness due to the loss frame (Rothman/Salovey 1997).

With our findings, we contribute to the literature in several ways. First, we strengthen the knowledge of citizens' intrapersonal processing of crisis messages, which has not been very developed so far (Avery/Park 2016). We demonstrate that the style elements of crisis communication through chatbots affect social cognition, which in turn influence citizens' responses and thus crisis management objectives. Second, the present study is the first one that examined the effects of goal frames on social cognition using a chatbot's crisis communication during the COVID-19 pandemic as an example. Thereby, we deepen and widen the understanding of framing effects, which so far are mainly attributed to the loss and risk aversion of individuals (Bilandzic/Kalch/Soentgen 2017; Covey 2014). Third, this research provides the first replication study that investigates the effects of using graphic symbols as nonverbal cues on social cognition (Li/Chan/Kim 2019). Our results confirm that the use of emojis increases the perceived warmth of the interaction partner. Importantly, we expand the knowledge by confirming the results while chatting with a chatbot and in a different context. However, we cannot confirm a negative effect of using emojis on perceived competence. This might, though, be because the present case does not deal with communication between customers and companies in which the customer expects a more professional appearance (Li/Chan/Kim 2019). Thus, citizens could expect a warmer, more intimate behavior from public administrations (Drevs/Tscheulin/Lindenmeier 2014), which, as a consequence, does not reduce perceived competence. Additionally, Li/Chan/Kim (2019) were unable to demonstrate a negative effect of emoticons on perceived competence in the case of a communal-orientated relationship between customers and service employees. Fourth, in line with a long history of research (Fiske 2018), this study illustrates the relevance of the stereotype content model in a new scope. We show that social cognition can affect the success of crisis management through chatbot communication. While it can be found

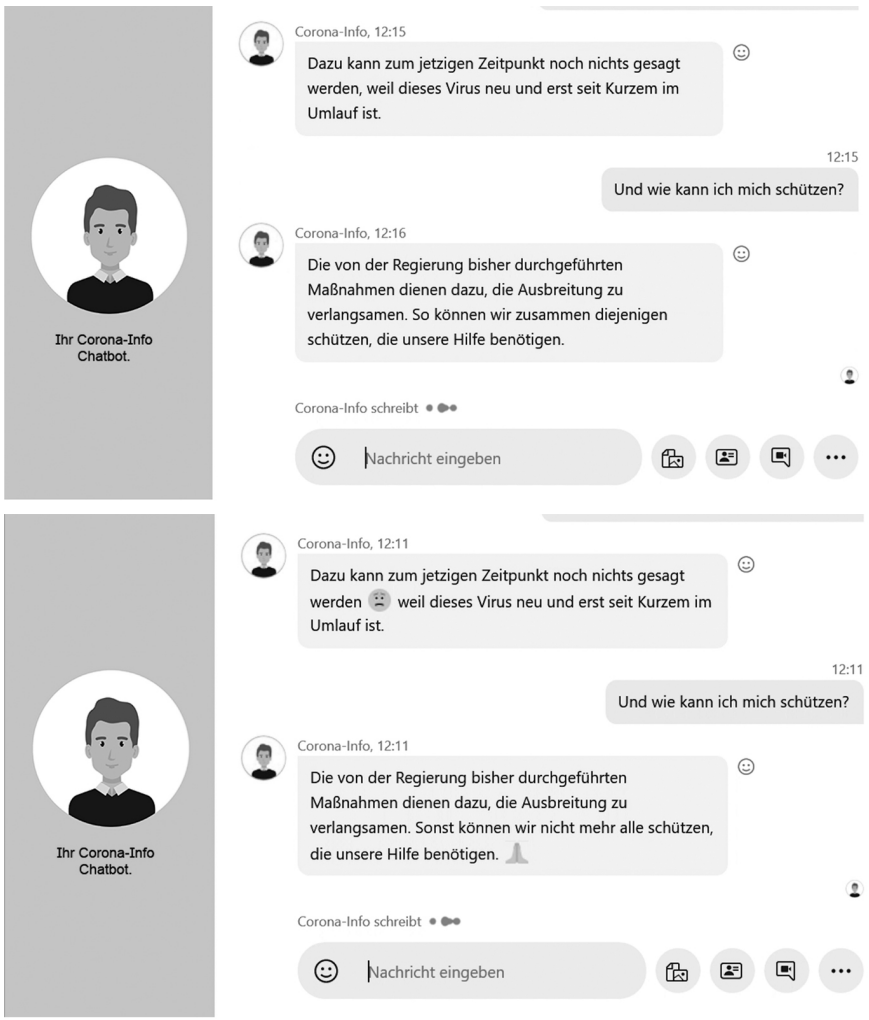
that in cases of risk communication competence is more important than warmth (Trettin/Musham 2000), we demonstrate that in the present case only the combination of high warmth and high competence leads to more desirable results. Thus, landing in the "golden quadrant" (Aaker/Garbinsky/Vohs 2012) fulfills the need for a charismatic leadership style that positively affects the objectives of crisis management.

General and specific practical implications can be drawn from our findings. First, chatbots appear to be a communication tool for crisis communication that is not rejected by citizens (perceived informativeness and intention to comply greater than 4 on seven-point Likert scales). Due to the relatively low operating costs (compared to human-human interactions) and the high level of scalability, organizations and public administrations should therefore carefully consider extending their information offering by using a chatbot as part of their crisis management. Second, crisis communication managers are advised to be aware that chatbots' communication style has a critical impact on the effectiveness of crisis communication. Generally, the communication style should lead to perceptions of high warmth and high competence in order to reduce citizens' perceived uncertainty. To be more specific, whereas the loss frame of goals increases chatbots' competence, the use of emojis increases chatbots' warmth. Importantly, in our results, the two design elements only influenced one dimension each. However, we want to stress that the respective other dimensions can also be influenced. For instance, Li/Chan/Kim (2019) show that in the case of an exchange orientated relationship between customers and service employees, the use of emoticons has a negative effect on perceived competence. If this also applies for crisis communication, communication managers are faced with trade-offs between perceptions of higher warmth and less competence or higher competence and less warmth. Therefore, we recommend evaluating the social cognition of a chatbot in advance and to closely monitor the perception during the whole crisis.

Our study entails limitations and future research avenues. First, although we were interested in creating a realistic treatment for our experiment, the effects of a chatbot's communication style on citizens' responses could differ under realistic conditions. Second, even though we acquired participants on Facebook and they are therefore among the target audience for chatbot communication, the sample is relatively young. This could imply differences in the use of and attitudes toward emojis compared to the population average. Third, in the present experiment, we used a municipality as the provider of the chatbot. However, as previous literature shows, ownership has an influence on social cognition (Drevs/Tscheulin/Lindenmeier 2014) and could thus already unilaterally influence the perception of the chatbot. Overall, there are good reasons to validate our results in a field study. Fourth, contrary to our hypotheses, the design elements influence only one dimension of social perception at a time. As mentioned above, user attitudes (e.g., norm orientation) could have an impact on the effects. Therefore, future research should analyze possible moderating effects to allow the best possible target group-specific communication style.

Appendix

Examples for the display of chatbot communication.



Source: Own representation

Zusammenfassung

Stephan Olk, Dieter K. Tscheulin und Adnan Zogaj; Krisenkommunikation mittels COVID-19 Chatbot – Auswirkungen des Kommunikationsstils auf die Ziele der öffentlichen Verwaltung

Chatbot; COVID-19; Krisenmanagement; Risikokommunikation; Stereotype Content Model

Eine effektive Kommunikation während einer Pandemie ist entscheidend für deren Bewältigung. In unsicheren Zeiten stehen Verantwortungsträger einerseits vor der Herausforderung Bürgerinnen und Bürgern ausreichend Informationen zur Verfügung zu stellen und andererseits Panikreaktionen bei diesen zu vermeiden. Zur Umsetzung ihrer Krisenstrategie setzen Organisationen und öffentliche Verwaltungen aufgrund des erhöhten Informationsbedarfs zunehmend Chatbots ein. Die vorliegende Studie untersucht die Auswirkungen des Kommunikationsstils eines Chatbots auf die Ziele des Krisenmanagements am Beispiel der COVID-19-Pandemie. Basierend auf dem Stereotype Content Model wird empirisch belegt, dass die Kombination aus der Zielformulierung und dem Einsatz von Emojis einen Einfluss auf die Reaktionen der Bürgerinnen und Bürger hat. Die für eine effektive Risikokommunikation und deren Einschränkungen aus dem Ergebnissen der Studie ableitbaren Implikationen werden diskutiert.

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