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Chatbot Empathy in Customer Service: When It Works and When It Backfires

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ABSTRACT

The advance of artificial intelligence technologies has enabled chatbots to be emotionally responsive. While expressing empathy constitutes a critical component of emotional responsiveness often required for human service employees, the impact of empathy expressions by service chatbots is underexamined. In this research, we investigate the effect of service chatbots' empathy expressions towards two possible sources for customers' negative emotions: negative consumption experience and chatbot failure. Drawing on the social perception literature, we propose that chatbot-expressed empathy towards negative consumption experience enhances service evaluations by increasing perceived warmth of a chatbot, but not competence. We further propose that chatbot-expressed empathy towards chatbot failure hurts service evaluations by decreasing perceived competence of a chatbot, but not warmth. Results from laboratory experiments provide suggestive evidence for our arguments. Our theoretical framework and findings illuminate the role of empathy expressed by service chatbots and offer guidance on when to deploy empathic chatbots in practice.

Keywords

Chatbot, expressed empathy, customer service, social perception, emotion source

INTRODUCTION

The effective deployment of chatbots in customer service has been an interest of both researchers and practitioners, especially on how to engender a natural conversation. More recently, the rise of emotional intelligence technology has enabled emotionally responsive chatbots (Gartner, 2022), which can detect users' affective states from various cues (such as facial expressions and linguistic cues), and then generate an adequate response, such as empathy (Prendinger and Ishizuka, 2005). Emotionally responsive chatbots are already prevalent in domains requiring emotional support, such as e-learning or healthcare, and studies in these domains have started to look into the implications of equipping chatbots with the capability of expressing empathy (Guo and Goh, 2015; Morris, Kouddous, Kshirsagar, and Schueller, 2018).

Our focus is on the impact of chatbot-expressed empathy in customer service. Empathy refers to one's action of understanding and sharing another person's affective states, thus having the same emotional experience as the other (de Vignemont and Singer, 2006). The experience and subsequent expression of empathy can facilitate social communication and affect interpersonal outcomes (de Vignemont and Singer, 2006). In the traditional service industry, emotional responsiveness, especially empathy, is also an essential capability of human employees (Parasuraman, Zeithaml, and Berry, 1991). Thus, empathic employees are likely to lead to successful service delivery due to their tendency to engage in customer-oriented behaviors (Stock and Hoyer, 2005; Wieseke, Geigenmüller, and Kraus, 2012). Recognizing such importance, service practitioners have started to deploy empathic machines, especially in the hospitality industry (de Kervenoael, Hasan, Schwob, and Goh, 2020). The application of empathic chatbots is likely to expand as well because of the rapid adoption of chatbots in customer service and their potential strength in forming a relationship with customers (Huang and Rust, 2021).

The deployment of empathic chatbots is based on the premise that empathy during human-AI interactions would be similarly beneficial. However, little research has empirically tested whether the benefit indeed persists. The focus of the related studies has been confined to customers' perceived empathy of anthropomorphized chatbots rather than the impact of chatbot-expressed empathy (de Kervenoael et al., 2020; Luo, Tong, Fang, and Qu, 2019). Given the recent debate about the emergence of a 'sentient' AI and the need to study how people react an AI's emotional capabilities (Cosmo, 2022), more investigations are needed to explore the promise of empathic chatbots.

In this paper, we examine the impact of chatbot-expressed empathy on service evaluations. Building on the social perception literature, we argue that empathic responses from a chatbot can influence customers' perceptions of the chatbot's warmth and competence, which in turn influence service evaluations. More importantly, we propose that the effect of chatbot-expressed empathy depends on the source of customers' negative emotions. Specifically, when chatbots express empathy in response to customers' negative consumption experience, the empathy will enhance the perception of warmth (but not competence), thus enhancing service evaluations. On the other hand, when conversational breakdowns occur due to a chatbot failure, chatbot-expressed empathy may fail to enhance perceived warmth and undermine perceived competence,

thus hurting service evaluations. Through two laboratory experiments, we find partial supports for our hypotheses.

THEORETICAL DEVELOPMENT

The Role of Expressed Empathy in Customer Service

The most recent effort to conceptualize empathy defines it as an individual's (the observer) affective response towards an emotional expression of another (the expresser), which results in an affective state congruent to the observer's perception and understanding of the expresser's affective state (Cuff, Brown, Taylor, and Howat, 2016).

As the basis of human interactions, empathy can facilitate social communication and affect interpersonal outcomes (de Vignemont and Singer, 2006). In particular, the expression of empathy is a fundamental component of the entire empathic process because it enables a person who expresses his or her affective state to perceive an empathizer's empathy (Barrett-Lennard, 1981). In customer service, empathy has an important role as it is one of the five dimensions of service, which can drive customers' perceptions of service (Parasuraman, Berry, and Zeithaml, 1991). Thus, empathy has become an essential capability of human service employees, especially toward customers' negative emotional states and has long been advocated as a major strategy for service recovery (Stock and Hoyer, 2005). These beneficial consequences of service employees showing empathy toward customers pose an intriguing question: will such benefits persist if empathy is expressed by service chatbots that are increasingly replacing human employees?

Empathy-expressing Chatbots in Customer Service

Despite the essential role of empathy in human-driven service interactions, research on the impact of chatbot-expressed empathy is nascent. Some recent studies have examined perceived empathy as a mediator to explain customers' evaluations of service chatbots and service outcomes (Luo et al., 2019; de Kervenoael et al., 2020). Although they illustrate the importance of perceiving empathy from service chatbots, we know little about the impact of chatbots' explicit expression of empathy.

Empathy-expressing chatbots have been studied in non-business contexts, but the findings are mixed. Empathic chatbots could be beneficial in specific contexts where people need emotional support, such as for socially excluded people or in healthcare settings (de Gennaro, Krumhuber, and Lucas, 2020; Morris et al., 2018). However, recognizing users' emotions and expressing empathy are often perceived as invasive due to the uncanny valley and users' perceptions of the lost autonomy or control over the machine (Andalibi and Buss, 2020; Stein and Ohler, 2017). These conflicting results suggest that a chatbot's empathy expression may not always be desirable.

Chatbot-expressed Empathy, Chatbot Perception, and Service Evaluation

We first explore the role of chatbot-expressed empathy when empathy is expressed toward a customer's (usually negative) emotion that has been evoked due to service issues. To do so, we build on the social perception literature. In a social relationship, people evaluate others along the two broad dimensions of warmth and competence (Fiske, Cuddy, and Glick, 2007). Warmth tends to be associated with traits that portray an individual's intent (e.g., friendliness, sincerity), whereas competence tends to be associated with traits that portray an individual's ability (e.g., efficacy, capability). Warmth and competence perceptions are regarded as the most important factors determining one's judgment of others and corresponding behavioral and relationship outcomes (Fiske et al., 2007). Although warmth and competence perceptions have been primarily applied to human relationships, they can also be applied to the relationship between humans and machines. Computers-are-social-actors (CASA) paradigm posits that individuals' interactions with computers are fundamentally social, and they can result in social responses or behaviors (Nass, Steuer, and Tauber, 1994). Similarly, customers interacting with a service chatbot may apply an evaluative process frequently applied to humans.

There has been extensive evidence about the association between empathy and warmth from the prior literature. One's empathy conveys that he or she is understanding and supporting the other, which is a defining trait of warmth (Fiske et al., 2007). In customer service, empathy from a human employee also signals care towards customers (Parasuraman et al., 1991), thus enhancing the perception of the employee's warmth. We argue that empathy from a service chatbot can also increase the perception of the chatbot's warmth. Since empathy is deemed as an attribute unique to humans, enabling chatbots to express empathy can anthropomorphize them (Epley, Waytz, and Cacioppo, 2007). Several research have shown that anthropomorphizing entities, such as brand, robot, and money, enhance people's perception of their warmth (Kim, Schmitt, and Thalmann, 2019; Zhou, Kim, and Wang, 2018). Similarly, a chatbot's expression of empathy can increase the perception of the chatbot's warmth.

On the other hand, a chatbot's expression of empathy is less likely to have an impact on the perception of the chatbot's competence. Because empathy is an essential quality of human service employees (Parasuraman et al., 1991), empathy can influence the perception of human employees' competence. In contrast, empathy is not an essential quality of chatbots because people do not expect machines to experience any emotion (Gray and Wegner, 2012). Since customers do not deem empathy as a necessary ability for a chatbot, the chatbot's empathy expression should not influence the perception of the chatbot's competence. Therefore, we propose:

Hypothesis 1: When customers are emotional because of service-related issues, a) chatbot-expressed empathy

increases a customer's perception of the chatbot's warmth, but b) it has no effect on perceived competence.

When evaluating a service, the perception of service quality is a crucial component as it provides a comprehensive summary of service outcome, interaction, and environment (Cronin, Brady, and Hult, 2000). Because the performance and attributes of a service provider contribute to the perception of service quality (Parasuraman et al., 1991), the warmth perception of a service provider (a chatbot) in our context will contribute to the perception of service quality in a positive direction.

Meanwhile, another essential measure for service is satisfaction with service. The perception of service quality and satisfaction have been shown to jointly influence various downstream consequences (Cronin et al., 2000; Gotlieb, Grewal, and Brown, 1994). In particular, the perception of service quality can predict satisfaction because satisfaction is determined by the extent to which service quality meets customers' expectations (Gotlieb et al., 1994). Thus, we propose:

Hypothesis 2: Greater perception of a chatbot's warmth a) enhances a customer's perception of service quality, which in turn b) leads to higher satisfaction with service.

Chatbot-expressed Empathy After Chatbot Failure

Based on the prior findings related to empathy-expressing chatbots in non-business settings (e.g., Stein and Ohler, 2017), chatbot-expressed empathy may not always be beneficial. For instance, when a chatbot's competence has already been undermined, empathy expression may have a backfiring effect. The most common instance of a chatbot's competence being undermined is a conversational breakdown resulting from chatbot failures.

Conversational breakdowns during the interaction with chatbots are a common phenomenon due to the imperfect natural language processing technology and increasing sophistication in users' requests (Ashktorab, Jain, Liao, and Weisz, 2019; Simonite, 2017). One of the primary reasons for conversational breakdowns is a chatbot's failure to decipher a user's input message (Ashktorab et al., 2019). Customers will associate such failure with the chatbot's competence because fluent and efficient service delivery is regarded as a primary task of chatbots (Meuter, Ostrom, Roundtree, and Bitner, 2000).

Some recent research has examined several recovery strategies after the breakdowns, including chatbot's empathy expression (Benner, Elshan, Schöbel, and Janson, 2021; Choi, Mattila, and Bolton, 2020). Because empathy expression has also been one of the most effective recovery strategies deployed by human employees after a service failure (Wieseke et al., 2012), it has also been speculated as a potential remedy for the failures in chatbot-driven service interactions (Benner et al., 2021).

However, a chatbot's expression of empathy after conversational breakdowns can be viewed as a cover-up for its incompetence due to the enhanced perception of inauthenticity. The inauthenticity of chatbot-expressed empathy can be driven by the conventional wisdom that chatbots lack emotional capabilities (Gray and Wegner, 2012). The perception of such inauthenticity will be especially high when customers doubt the real motive behind empathy expression (e.g., concealing the chatbot's incompetence). Accordingly, empathy expression may fail to enhance perceived warmth and also backfire by further undermining perceived competence. Thus, we propose:

Hypothesis 3: After conversational breakdowns, a) chatbot-expressed empathy decreases a customer's perception of the chatbot's competence, but b) it has no effect on perceived warmth.

The judgment of competence for a service chatbot should also have direct implications for service evaluations. A decrease in perceived competence of the chatbot should be regarded as a lack of ability to resolve a service issue and further insinuate the failure of successful service delivery. Indeed, prior literature in customer service and marketing has found consistent evidence for the impact of the perceived competence of a service employee on service evaluations (e.g., Li, Chan, and Kim, 2018). Similarly, we argue that reduced perceived competence of a service chatbot will create a negative perception of the service.

Hypothesis 4: Lower perception of a chatbot's competence a) hurts a customer's perception of service quality, which in turn b) leads to lower satisfaction with service.

STUDY 1

In this study, we first illuminate the effect of chatbot-expressed empathy in response to a customer's negative consumption experience on service evaluations. To do so, we manipulated the presence of empathy expression in a between-subjects design. During the study, participants interacted with a service chatbot to resolve a hypothetical service issue and answered questions about their perceptions toward the service and the chatbot.

Stimulus Materials

We used a predesigned script to isolate the effect of chatbot-expressed empathy and minimize the influence of potential confounding conversational elements. The predesigned script enabled participants across conditions to receive the same message from the chatbot, except for the presence of empathy expression.

Based on the conceptualization of empathy (Cuff et al., 2016), we manipulated the presence of empathy expression by inserting sentences in which the chatbot expresses its experience of the emotion a participant may feel (e.g., "I really feel your frustration"). In the empathy-present condition, the chatbot expressed empathy after the participants described a service issue and after the chatbot figured out why the issue had occurred. The entire chat script can be found in Table 1.

Empathy-absent	Empathy-present
Hello. This is Taylor, and I am a bot created by the customer service department. I am handling your request today. What brings you here?	Hello. This is Taylor, and I am a bot created by the customer service department. I am handling your request today. What brings you here?
Participant's message	*Participant's message*
I can help you with that. Could you tell me your order number below?	I really feel your frustration. I can help you with that. Could you tell me your order number below?
Participant's message	*Participant's message*
Alright. Please give me a moment.	Alright. Please give me a moment.
I found out that the driver who was assigned to your order did not show up. I found another driver who can pick up your food and deliver it in about thirty minutes. Would you like to proceed with your order, or cancel it and get a refund?	I found out that the driver who was assigned to your order did not show up. I genuinely feel your disappointment. I found another driver who can pick up your food and deliver it in about thirty minutes. Would you like to proceed with your order, or cancel it and get a refund?
Participant's message	*Participant's message*
I have processed your request. Please contact us again if you need further assistance. Bye.	I have processed your request. Please contact us again if you need further assistance. Bye.

Table 1. Predesigned Chat scripts for Study 1

Procedure and Measures

One hundred and eleven subjects (51 female) from a U.S. university participated in the study in exchange for course credit. Participants were randomly assigned to either the empathy-absent or -present condition. The cover story described a hypothetical but realistic service issue that can be encountered in online food delivery services. We chose the specific setting because this enables us to easily evoke negative emotions from the participants. A service agent's expression of empathy (even when the agent is a human) would be natural only if a customer feels emotions, and then the agent shares the same emotions. For the service issue, we used one of the most common issues that occurs in online food delivery services: delivery delay. The scenario described a situation in which the participant desperately wanted food and thus, placed a delivery order, but the food had not arrived after waiting for a long time. Participants were asked to chat with a service chatbot and resolve the delivery issue. After the cover story, participants saw the introductory message that they were being connected to a bot created by the customer service department. The chat started on a new screen.

After the chat ended, the participants answered questions related to their perception of the service and the chatbot. To measure perceived service quality and satisfaction with service, we adapted existing scales from the prior literature (Cronin et al., 2000). Perceived service quality was measured using three items (e.g., "poor / excellent"). Satisfaction with the service was measured using three questions (e.g., "Overall, how satisfied or dissatisfied did your experience with the service agent leave you feeling? extremely dissatisfied / extremely satisfied").

To measure the participants' perceptions of the chatbot's competence and warmth, we presented a list of common characteristics people have (six related to competence and six related to warmth) and asked the participants to evaluate the chatbot based on each characteristic (e.g., "not at all capable / extremely capable"; "not at all warm / extremely warm") (Fiske et al., 2007).

To verify the effectiveness of our manipulation, we used three items from prior literature on the perceived empathic concern (e.g., "the chatbot understands my feeling… strongly disagree / strongly agree") (Goldstein, Vezich, and Shapiro, 2014). All questions were measured on seven-point scales.

Results

Ninety-five subjects passed the two attention checks and thus were used in the following analyses. We first confirmed the success of our manipulation by finding that the participants perceived greater empathy from the empathy-present chatbot compared to the empathy-absent chatbot (M_{absent} = 3.33 vs. $M_{present}$ = 5.41, SDs = 1.74, 1.38, $t(93) = 6.45$, $p < .001$).

Next, through a one-way ANOVA with the presence of expressed empathy included as a between-subjects factor, we found that chatbot-expressed empathy had a marginally significant, positive effect on perceived service quality (M_{absent} = 5.26 vs. $M_{present}$ = 5.78, SDs = 1.55 and 1.22, $F(1, 93) = 3.253$, $p = .075$) and satisfaction with the service (M_{absent} = 5.36 vs. $M_{present}$ = 5.83, SDs = 1.54 and 1.15, $F(1, 93) = 2.843$, $p = .095$).

To test if the mediation through the perception of the chatbot's warmth, but not competence, as proposed in Hypotheses 1 and 2, we used a custom model from PROCESS macro with a bootstrapped sample of 5,000 (Hayes, 2013) (see Figure 1). First, results revealed a significant, positive effect of chatbot-expressed empathy on the perception of the chatbot's warmth ($\beta = .64$, $t(94) = 2.473$, $p = .015$) and a marginally significant, positive effect on the perception of the chatbot's competence ($\beta = .43$, $t(94) = 1.761$, $p = .082$). These results provide support for H1a but not H1b. Then, we found that increased perceptions of both competence and warmth enhanced perceived service quality ($\beta = .62$, $t(94) = 4.025$, $p < .001$; $\beta = .29$, $t(94) = 1.989$, $p = .050$). We also discovered that greater perceived service quality leads to higher

satisfaction (β = .49, $t(94)$ = 5.911, p < .001). These results support Hypothesis 2.

Most importantly, the test of indirect effects revealed a significant, positive indirect effect of chatbot-expressed empathy through the participants' perception of the chatbot's warmth and service quality on satisfaction (β = .091, SE = .057, 95% CI = [.005, .222]). Meanwhile, we found a marginal support for the indirect effect through the participants' perception of the chatbot's competence and service quality on satisfaction (β = .13, SE = .099, 90% CI = [.009, .326]). Overall, these results provide a partial support for our theorizing, such that chatbot-expressed empathy affects customers' service evaluations by enhancing their perception of the chatbot's warmth, but less so through the chatbot's competence.

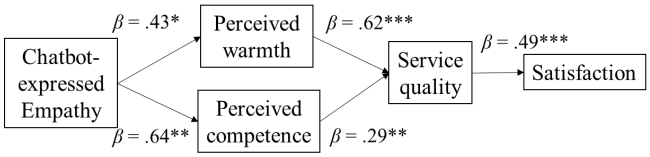

Figure 1. Study 1 Parallel-serial Mediation Analysis
Note: * p < .1; ** p < .05; *** p < .001

STUDY 2

This study aims to examine the role of chatbot-expressed empathy when the chatbot's competence deteriorates. The most common instance of the chatbot's incompetence is a conversational breakdown due to the chatbot's inability to understand a user's message (Ashktorab et al., 2019). Thus, in this study, we presented a scenario in which conversational breakdowns occurred during the interaction with a service chatbot and manipulated the presence of empathy expression.

Stimulus Materials, Procedure, and Measures

One hundred and twelve subjects (54 female) from a U.S. university participated in the study in exchange for course credit. Similar to Study 1, participants were randomly assigned to either the empathy-absent or the empathy-present condition. Whereas we used a similar cover story and chat script as Study 1, the major differences in this study include the existence of conversational breakdowns and the timing of empathy expression. Conversational breakdowns occurred during the interaction as the chatbot said that it did not understand the participant's message. After each instance of a conversational breakdown, the chatbot expressed empathy to those in the empathy-present condition, but not to those in the empathy-absent condition. Then, the participants in both conditions had to rephrase what they had said previously to proceed. Table 2 shows the complete chat script.

After the chat ended, the participants reported their perception of service quality, satisfaction with service, perceptions of the chatbot's competence and warmth, and perceived empathy as in the prior study.

Empathy-absent	Empathy-present
Hello. This is Taylor, and I am a bot created by the customer service department. I am handling your request today. What brings you here?	Hello. This is Taylor, and I am a bot created by the customer service department. I am handling your request today. What brings you here?
Participant's message	*Participant's message*
I do not understand what you said. Can you please try again?	I do not understand what you said. I really feel your frustration for this. Can you please try again?
Participant's message	*Participant's message*
I can help you with that. First, could you tell me your order number?	I can help you with that. First, could you tell me your order number?
Participant's message	*Participant's message*
Got it. Please allow me few seconds for pulling up your order.	Got it. Please allow me few seconds for pulling up your order.
I checked your order. There has been a system error, and no driver was assigned to your order. We found a nearest driver, and your food can be picked up within five minutes. What would you like to do next? We can proceed with your order or cancel it.	I checked your order. There has been a system error, and no driver was assigned to your order. We found a nearest driver, and your food can be picked up within five minutes. What would you like to do next? We can proceed with your order or cancel it.
Participant's message	*Participant's message*
I cannot figure out what your message means. Could you respond to the question again?	I cannot figure out what your message means. I feel your irritation because of this. Could you respond to the question again?
Participant's message	*Participant's message*
I will process your request. Please hold on for a moment.	I will process your request. Please hold on for a moment.
[Slight delay]	[Slight delay]
I have processed your request. Please contact us again if you need further assistance. Bye.	I have processed your request. Please contact us again if you need further assistance. Bye.

Table 2. Predesigned Chat scripts for Study 2

Results

We first conducted the manipulation check using 98 subjects after filtering based on the two attention checks. We found that those interacting with the empathy-expressing chatbot perceived greater empathy than those interacting with the empathy-absent chatbot (M_{absent} = 2.93 vs. $M_{present}$ = 3.54, SDs = 1.45, 1.73, $t(96)$ = 1.90, p = .060).

Next, contrary to Study 1, results from a one-way ANOVA revealed a marginally significant, negative effect of chatbot-expressed empathy on perceived service quality (M_{absent} = 3.66 vs. $M_{present}$ = 3.09, *SD*s = 1.49, 1.59, $F(1, 96) = 3.334$, $p = .071$) and satisfaction (M_{absent} = 4.18 vs. $M_{present}$ = 3.65, *SD*s = 1.41, 1.66, $F(1, 96) = 2.843$, $p = .095$).

To test H3 and H4, we used a custom model from PROCESS macro with a bootstrapped sample of 5,000 as in Study 1 (Hayes, 2013) (see Figure 2). We first discovered a marginally significant negative effect of chatbot-expressed empathy on the perception of the chatbot's competence (β = -.26, $t(96) = -1.922$, $p = .058$), but no effect on the perception of the chatbot's warmth (β = .059, $t(96) = .455$, $p = .7$). Then, we found that reduced perception of competence led to lower perception of service quality (β = .76, $t(96) = 5.998$, $p < .001$), which led to lower satisfaction (β = .80, $t(96) = 11.903$, $p < .001$). However, we did not find any effect of perceived warmth on perceived service quality (β = .019, $t(96) = .137$ $p = .9$).

The test of indirect effects further supplements our findings by showing a marginally significant, negative mediating effect of the participants' perception of the chatbot's competence (β = -.16, *SE* = .088, 90% CI = [-.318, -.0255]). In contrast, we did not observe any mediating effect through the perception of the chatbot's warmth (β = .0009, *SE* = .011, 90% CI = [-.0197, .170]). The findings altogether support our hypotheses.

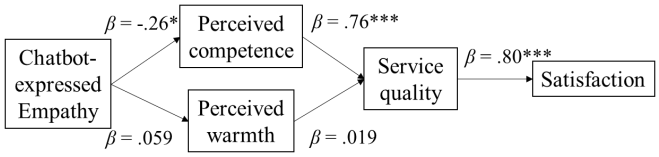

Figure 2. Study 2 Parallel-serial Mediation Analysis
Note: * p < .1; *** p < .001

GENERAL DISCUSSION AND CONCLUSION

Based on the social perception literature (Fiske et al., 2007), we proposed that chatbot-expressed empathy may be beneficial or harmful depending on the source of customers' emotions. When the source is negative consumption experience, we argued that the chatbot's expression of empathy will enhance service evaluations due to an increased perception of the chatbot's warmth but not competence. However, our findings revealed that the chatbot's expression of empathy increased the perception of both warmth and competence. Such findings insinuate that empathy expression may be expected from service chatbots and thus, considered as an essential capability as for human service employees. On the other hand, when conversational breakdowns occur due to chatbot failures, we argued that the chatbot's expression of empathy will backfire by undermining the perception of the chatbot's competence. Our findings supported these claims.

Our work extends the literature of customer service and human-AI interaction by understanding of how customers perceive the emotional capabilities of a service chatbot. Our findings indicate the applicability of our understanding of the role of empathy expression beyond interpersonal relationships and also the boundary conditions for the impact of chatbot-expressed empathy. We also contribute to the emerging literature on chatbot failures (e.g., Choi et al., 2020) by questioning prior literature's suggestion of using empathy expressions as a remedy for conversational breakdowns (Benner et al., 2021).

Our work also provides valuable guidance for customer service practitioners interested in deploying emotionally responsive chatbots. Emotionally responsive chatbots have been the focus of interest, with the hope of engendering interactions that resemble human-to-human interactions. However, our findings indicate that practitioners should not haphazardly equip chatbots with empathy-expressing capabilities and avoid deploying them when chatbots' competence is questionable. Practitioners may design emotionally responsive chatbots that are context-aware and express empathy only when appropriate and in the absence of competence-undermining instances. Companies can also selectively deploy empathy-expressing capabilities for expressing empathy only towards customers' negative experience that is beyond chatbots' control.

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