



UvA-DARE (Digital Academic Repository)

Persuasive agents

Unraveling the persuasive potential of conversational agents

Ischen, C.

Publication date

2022

[Link to publication](#)

Citation for published version (APA):

Ischen, C. (2022). *Persuasive agents: Unraveling the persuasive potential of conversational agents*. [Thesis, fully internal, Universiteit van Amsterdam].

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, P.O. Box 19185, 1000 GD Amsterdam, The Netherlands. You will be contacted as soon as possible.

CHAPTER 6



**General discussion
and conclusion**

Conversational agents are widely implemented by commercial organizations. Due to their natural way of facilitating consumer-brand interactions, they are seen as a promising way to communicate (branded) content to users. However, empirical research has largely neglected to investigate whether these new types of technology meet the expectations around this persuasive potential. To address this knowledge gap, this dissertation provides insights into the extent to which conversational agents influence persuasion outcomes in a brand communication context, the underlying mechanisms explaining these effects, and the short- and long-term dynamics of these effects.

By doing so, this dissertation provides a theoretical synthesis of persuasive communication and human-machine communication theory. In line with classical persuasion theories (Friestad & Wright, 1994; McGuire, 1989; Vakratsas & Ambler, 1999), it focuses on an extensive set of affective, cognitive, and behavioral persuasive outcomes. It accounts for the subjectivity of emerging technologies, i.e., sees conversational agents as a communication entity (Guzman, 2018) and applies a holistic approach by comparing different agent forms (i.e., different levels of human-like cues, voice- versus text-based agents), as well as conversational agents in comparison to interactive websites. It utilizes concepts commonly studied in human-machine communication that are related to a conversational agent as a new communication entity (i.e., human-likeness, privacy concerns, intrusiveness, trust) and towards the interaction with the agent (i.e., enjoyment, perceived interactivity, cognitive processing) and examines them as mechanisms explaining persuasiveness of conversational media technologies.

Six main conclusions are drawn from the findings of this dissertation that will be explained in detail in the following sections. In short, findings show that conversational agents have similar effects on affective ('what users feel'), and behavioural ('what users do') persuasive outcomes in comparison to interactive websites; also, different agent forms (i.e., different levels of human-like cues, voice- versus text-based agents) exert similar effects on affective and behavioural persuasive outcomes. It further reveals that conversational agents are not always conveying a more human-like appeal, as interactive websites might be equally able to induce perceptions of human-likeness. Moreover, this dissertation provides evidence for the importance of perceptions of the entity (i.e., privacy concerns, trust) and responses to the interaction (i.e., enjoyment, perceived interactivity, cognitive processing), that can explain the persuasiveness of conversational agents. It also shows that a persuasive potential can not only unfold in the short, but possibly also in the long-term.

Conclusion 1: Conversational agents have largely the same effects on affective, cognitive, and behavioral persuasive outcomes as interactive websites; different agent forms also influence these outcomes to a similar extent.

Reflecting on the overall persuasiveness of conversational technologies, this dissertation provides the conclusion that conversational agents can be **persuasive agents** especially by influencing affective outcomes (and partially also behavioral outcomes), but they are overall not more or less persuasive than interactive websites. The same applies to different agent forms (different levels of human-like cues, voice-versus text-based agents) as they exert similar effects on affective, cognitive, and behavioral outcomes. Only brand memory as a cognitive persuasive outcome is higher when communicating via text than via voice.

By systematically testing affective, cognitive, and behavioral persuasive outcomes, multiple empirical studies in this dissertation (chapter 2, chapter 3, chapter 4) support this conclusion. A summary of these findings can be found in Table 1.

This dissertation confirms that conversational agents have a persuasive potential in line with other media. The findings support existing literature which has shown that conversational agents can in general lead to positive attitudinal and behavioral outcomes in a recommendation context (Benbasat & Wang, 2005; Sundar et al., 2016). It furthermore adds to research that has studied conversational agents and websites (Sundar et al., 2016) or different agent forms such as voice- and text-based agents (Cho et al., 2019) by applying a persuasion perspective and showing that for persuasive outcomes, effects of text-based conversational agents are largely comparable to other interactive media, or to other agent forms (i.e., voice-based agents). The findings regarding brand memory extend research on embodied agents (Berry et al., 2005) by showing that, overall, a voice modality is less beneficial for enhancing memory compared to text.

Table 1 Summary of findings regarding affective, cognitive, and behavioral persuasive outcomes of conversational agent (CA) interactions

		Persuasive outcomes	
		Affective	Cognitive
		Behavioral	
Chapter 2	Users show the same degree of (positive) attitudes towards the recommendation, the communicator, and the brand when interacting with a CA and when interacting with an interactive website.	Users do mostly not (intent to) follow a recommendation when it is given by a CA and not by an interactive website (recommendation adherence).	
Chapter 3	Users show the same degree of (positive) attitudes towards the communicator when interacting with a CA (including different levels of human-like cues) and when interacting with an interactive website.	Users do mostly not (intent to) follow a recommendation when it is given by a CA (including different levels of human-like cues) and not by an interactive website (recommendation adherence). Users feel equally comfortable to self-disclose personal information to a CA (including different levels of human-like cues) and to an interactive website.	
Chapter 4	Users show the same degree of (positive) attitudes towards the brand when interacting with a text-based CA in comparison to a voice-based CA.	Users are equally likely to consider a brand for purchase when interacting with a text-based CA in comparison to a voice-based CA. Users remember more branded content when interacting with a text-based CA in comparison to a voice-based CA. Users identify a persuasive or selling intent to the same extent when interacting with a text-based CA in comparison to a voice-based CA (persuasion knowledge).	

Conclusion 2: Conversational agents are not perceived as more human-like than interactive websites (and voice-based conversational agents are even perceived as less human-like than text-based agents), but human-likeness can enhance persuasiveness in the context of conversational agents.

The findings regarding perceived human-likeness as an underlying mechanism for persuasive effects of conversational agents are two-fold. This dissertation provides evidence that conversational agents are often not perceived as more human-like than interactive websites and that voice-based agents are even perceived as less human-like than text-based agents. Moreover, this dissertation shows that perceived human-likeness can enhance persuasive outcomes in the context of conversational agents, which helps to articulate the underlying processes by which conversational agents can influence persuasive outcomes. In the following, these two aspects are discussed in further detail.

Firstly, the findings of chapter 2 and chapter 3 show that websites and conversational agents are evaluated as more machine- rather than human-like, yet users attribute some social or human-like characteristics to both technologies and perceive both as social communication partners. Chapter 3 further adds to this finding by showing that – contrary to expectations – conversational agents without particular human-like cues are perceived as less human-like than websites. Furthermore, this dissertation contradicts the expectation that voice as a human characteristic gives a conversational agent a more human-like appeal (see e.g., Cho et al., 2019). Chapter 4 reveals that text-based agents are perceived as more human-like than voice-based agents, which implies, in line with social information processing theory (Walther, 1992; Walther et al., 2015) that voice in some cases might make the non-human nature of an agent more apparent to its users.

These findings are interesting in light of the central body of research on the Computers Are Social Actors (CASA) paradigm which showed that humans apply the same social rules towards a machine or technology as they do towards another human being (Nass et al., 1995; Nass & Moon, 2000; Reeves & Nass, 1996). Findings of this dissertation confirm that users do apply these rules towards conversational technology, and they also do so towards other types of interactive technologies (i.e., websites). However, these findings challenge one of the key assumptions in existing conversational agent literature that has driven most of research and technological development in the field: The assumption that this type of technology (imbued with as many human-like cues as possible) is perceived as more human-like than other media types. Even though this dissertation confirms previous research showing that (the

cumulation of) human-like cues can enhance perceptions of human-likeness (Araujo, 2018; Go & Sundar, 2019; Y. Kim & Sundar, 2012), it also shows that interactive websites are equally able to create a human-like appeal, and that certain human characteristics such as voice can even lead to more machine-like attributions.

Gambino and colleagues (2020) recently argued for an extension of CASA. They propose that instead of applying human-human social scripts to interactions with technologies like conversational agents, humans “may develop and apply human-media social scripts to these interactions” (Gambino et al., 2020, p. 71). In other words, the same way humans mindlessly apply pre-existing mental models about human-human interactions, they apply mental models about interactions with technology. The findings of this dissertation tie well into this proposal. Evaluating several types of media with the same extent of human-likeness might be an indicator that users have already formed human-media scripts centered around the social characteristics of technologies that they apply when interacting with contemporary (interactive as well as conversational) media. Future research should explore the nature of these unique human-media scripts in more detail and incorporate them into conversational agent research, so as to build even more robust frameworks for studying human-machine communication.

Secondly, this dissertation provides evidence that perceived human-likeness is an explanatory mechanism for persuasive outcomes in the context of conversational agents, especially when comparing different conversational agent forms, i.e., conversational agents with different human-like cues, or voice- versus text-based agents. Chapter 3 shows that specific human-like cues such as visual, identity, or conversational cues can increase the perceived human-likeness of a conversational agent; this, in turn, positively influences affective (i.e., attitudes towards the agent) and behavioral (i.e., recommendation adherence, information disclosure) persuasive outcomes. Chapter 4 shows that a text-based agent perceived as more human-like (than a voice-based agent) in turn positively influences affective (i.e., attitudes towards the brand) and behavioral (i.e., purchase intentions) persuasive outcomes. This means that, despite having largely the same effects on persuasion outcomes when compared to interactive websites, or when comparing different agent forms (as discussed in the first key finding), a conversational agent, *when* perceived as human-like, possesses a persuasive potential.

These findings make a valuable contribution to both, persuasive communication, and human-machine communication. They corroborate previous research in persuasive communication on, for example, brand relationship theory (van Noort & Willemsen, 2012) by showing that conversational agents can lead to positive brand responses when they engage in “human-like” relationships with consumers, similar to interpersonal relationships. They also add to previous work on conversational agents (Go & Sundar,

2019) by showing that perceived human-likeness can positively influence affective and behavioral brand-related outcomes.

Conclusion 3: Conversational agents can be perceived as a communication entity that is not privacy-invading and trusted, which positively influences persuasive outcomes.

This dissertation goes beyond human-likeness as the only possible explanatory mechanism for persuasive effects of conversational agents. It tests several other *perceptions of a conversational agent as an entity*: privacy concerns and intrusiveness as mechanisms possibly diminishing, and trust as a mechanism enhancing the persuasiveness of a conversational agent. Findings show that the persuasive potential of conversational agents regarding affective (i.e., attitudes towards the brand) and behavioral outcomes (i.e., purchase intentions, recommendation adherence, information disclosure) can be explained by (diminished) privacy concerns and trust.

Chapter 3 provides some evidence for privacy concerns as an underlying mechanism explaining the persuasiveness of conversational agents, and it suggests that human-likeness perceptions play a role for the extent to which different agent forms are perceived as privacy invading. Chapter 3 shows that human-likeness serves as a mediator between different agent forms (i.e., different levels of human-like cues) and privacy concerns. Even though effects are small, findings suggest that an agent with human-like cues is perceived as more human-like than an agent without these cues, leading to less privacy concerns, and consequently higher behavioral persuasiveness in form of recommendation adherence and information disclosure. Chapter 3 also shows that conversational agents (with little human-like cues) are perceived as less invasive of users' privacy than interactive websites, in turn, translating into higher recommendation adherence and information disclosure. Chapter 2 however shows that interactive websites and conversational agents are perceived as equally intrusive.

These findings enrich the academic discourse around the topic of privacy. They tie into previous research showing that concerns around privacy are common amongst users of conversational agents (Følstad et al., 2018), by providing some evidence that conversational agents can be less privacy invading by having a human-like appeal, and that under certain conditions they are not perceived as privacy invading as interactive websites. One explanation might be that users can experience a close bond with a conversational agent (Birbaum et al., 2016) or rely on it more because it appears as a social and friendly communication partner.

The findings regarding trust as a mechanism support this conclusion. This dissertation shows conversational agents function as a trusted communication partner, which enhances conversational agent persuasion. Chapter 5 examines trust in a conversational agent and affective (i.e., attitudes towards the brand) and behavioral (i.e., purchase intentions) persuasive outcomes at multiple time points. It reveals that, within all these time points, trust in a conversational agent is positively related to affective (i.e., attitudes towards the brand) and behavioral (i.e., purchase intentions) outcomes. Hence, trust can be confirmed as an underlying mechanism explaining persuasive outcomes (in the short-term).

These findings add to the emerging body of literature on conversational agent trust (Aoki, 2020; Youn & Venus Jin, 2021) by showing that users can have trusting relationships with conversational agents. They support the notion of a conversational agent as a communication entity (Guzman & Lewis, 2020) by showing that users apply concepts such as trust to a conversational agent as their communication partner.

Conclusion 4: A conversational agent is perceived as more enjoyable and interactive than a website; and while enjoyment exhibits positive effects on persuasion, the effects of interactivity are mixed.

While perceived human-likeness, privacy concerns, perceived intrusiveness, and trust are examined as perceptions of the conversational agent as an entity, this dissertation considers a second set of underlying mechanisms related to *responses to the interaction*. This dissertation provides insights into enjoyment and perceived interactivity as underlying mechanisms explaining persuasive outcomes.

Firstly, chapter 2 of this dissertation shows that interacting with a conversational agent is more enjoyable than using an interactive website. This chapter also shows that interacting with a conversational agent is perceived as more interactive than with a website, i.e., the communication is perceived as more reciprocal.

These findings add to research on responses to conversational agent interactions. While previous studies have already been pointing towards the central role of enjoyment (Lee & Choi, 2017; Zarouali et al., 2018) and interactivity (Sundar et al., 2016), this dissertation shows that both can be enhanced by conversational agents in comparison to interactive websites.

Secondly, while conversational agents can be persuasive by being enjoyable to interact with, the effects of interactivity are mixed. Chapter 2 reveals that user enjoyment subsequently translates into higher affective (i.e., attitudes towards recommendation, communicator, and brand) and behavioral (i.e., recommendation

adherence) persuasive outcomes. Perceived reciprocal (two-way) communication has mixed effects on persuasion outcomes. It positively influences attitudes towards the communicator (i.e., the conversational agent), but negatively influences attitudes towards the brand recommended in the interaction.

By testing enjoyment and interactivity (and cognitive processing as discussed in conclusion 5) as specific responses to the interaction, this dissertation contributes to existing frameworks in the field of human-machine communication. It follows and adds to Sundar's (2020) framework for studying the effects of Human-AI interactions (HAI) by examining experiential perceptions. By doing so, it corroborates previous findings on the effects of enjoyment (Lee & Choi, 2017; Zarouali et al., 2018) and message interactivity (and contingency; Sundar et al., 2016) on affective outcomes. This dissertation provides empirical evidence for these mechanisms to be important for the understanding of conversational agents when comparing them to interactive websites, or when comparing different agent forms. Although this dissertation does not explicitly test all mechanisms in all contexts, it contributes to an even more systematic conceptualization of mechanisms important within existing frameworks.

Conclusion 5: The interaction with a voice-based conversational agent is more demanding than the interaction with a text-based conversational agent, which increases users' understanding of persuasive intents.

This dissertation sheds light into cognitive load as an explanatory mechanism for persuasive outcomes following from conversational agents that differ in their modality, i.e., voice- versus text-based agents. Findings show that communicating with a conversational agent via voice is more demanding for users than communicating via text, and subsequently, this influences how users cope with persuasive intents coming from conversational agents.

Firstly, chapter 4 reveals that voice as a communication modality induces higher cognitive load than text as a communication modality. Hence, users invest more cognitive effort into an interaction with a voice-based than into an interaction with a text-based conversational agent.

This finding adds to cognitive load theory (Leahy & Sweller, 2011) and literature on multimedia effects (Schmidt-Weigand et al., 2010) by showing that voice- and text-modality differ in their cognitive load also in the context of conversational agents. Text allows users to go back and forth in the interaction, which potentially makes it a less demanding communication modality in comparison to voice.

6

Secondly, even though indirect effects are small, chapter 4 shows that this cognitive investment makes users potentially more aware that a conversational agent is trying to persuade them (i.e., persuasion knowledge), which subsequently positively influences cognitive outcomes (i.e., brand memory), and negatively influences affective (i.e., attitudes towards the brand), and behavioral (i.e., purchase intentions) persuasion outcomes.

These findings add to persuasion knowledge theory (Friestad & Wright, 1994) by showing that contrary to expectations, users are more aware of persuasion and understand a persuasive intent better if the cognitive load is higher, which subsequently influences how much (branded) content they remember, how they feel about the brand recommended, and in how far they intent to purchase a recommended product. Furthermore, findings contribute to the emerging research stream on voice-based virtual assistants such as smart speakers (Cho & Sundar, 2020; Wang & Sundar, 2020) by making an explicit modality comparison. This extends previous research on smart speaker advertising that has pointed towards the importance of interactivity when using a voice modality (D. Kim et al., 2018). The findings of this dissertation suggest that actively interacting is probably even more important in the more demanding modality of voice instead of text, to enhance brand memory, but also to make users more aware of possible persuasive attempts.

Conclusion 6: Affective and behavioral persuasive outcomes as well as trust in conversational agents remain relatively stable over time.

This dissertation explores not only short-, but also long-term persuasive effects of conversational agents. While the persuasive effects and mechanisms presented in the previous five conclusions shed some light into the short-term effects of conversational agents, this dissertation also examines long-term effects of conversational agents on affective (i.e., attitudes towards the brand) and behavioral (i.e., purchase intentions) persuasive outcomes, and test the effects of trust as a mechanism explaining these outcomes over time.

Chapter 5 examines affective and behavioral persuasive outcomes at three time points over the course of three weeks. It shows that attitudes towards the brand as well as purchase intentions remain moderately high and, despite a small increase, stable over the course of three weeks. The same applies for trust in the conversational agents: levels of trust are moderately high and do not increase or decrease over the course of three weeks. Furthermore, chapter 5 reveals some delayed effects of trust on persuasiveness. The levels of trust users built after two weeks of interactions positively

influence how they feel about the brand the week after. No longitudinal effects of trust on behavioral (i.e., purchase intentions) persuasive outcomes are found.

While some previous research on social conversational agents has proposed a novelty effect by for example showing that processes such as social attractiveness decrease over time (Croes & Antheunis, 2021), this dissertation comes to a different conclusion. Even though trust and brand related outcomes did not increase, this dissertation provides some evidence for the occurrence of a maintenance effect of persuasiveness and conversational agent trust, meaning that brand related outcomes and trust do also not decrease over time. Whether the contradicting results depend on the context (social conversational agents versus conversational agents in a brand-related context) or whether there are additional moderating variables that explain responses to conversational agents over time remain open questions that deserve further scholarly attention.

Methodological strengths and limitations

While the studies in this dissertation benefit from the strong methodological approach of using conversational agents that were specifically developed to allow for “real” user interactions, some overall methodological limitations must be considered that provide suggestions for future conversational agent research. These are related to the experimental design as well as to commonly used measurements in the field.

Conversational agents in experimental designs

The experimental approach used in this dissertation provides the opportunity to fully examine the conversational aspect of technologies. This dissertation implemented conversational agents specifically designed for experimental purposes (Araujo, 2020). Using this approach has three advantages for studying conversational agent persuasion compared to earlier approaches.

Firstly, previous research has mostly relied on vignette studies or scenario-based experiments (e.g., Aoki, 2020) in which participants are exposed to different conversational agent dialogues. In such designs participants do not interact with the agent themselves. By allowing user interactions, this dissertation explicitly investigates the central role for *interacting* with a conversational agent as a new communication entity and shows that responses to the interaction such as enjoyment are important explanatory mechanisms for persuasiveness of conversational technology.

Secondly, research has used existing conversational agents, i.e., social agents like Kiku (formerly known as Mitsuku, e.g., Croes & Antheunis, 2021). The approach

used in this dissertation adds to this research by providing a relatively natural setting for a conversational agent interaction and at the same time being able to manipulate controlled experimental conditions (over time). It allowed to specifically design persuasive messages in the brand communication context. It also allowed to apply a holistic approach and comparing the persuasiveness of conversational agents to interactive websites, and comparing different agent forms (i.e., different levels of human-like cues, voice- versus text-based agents).

Thirdly, previously studies have used a Wizard-of-Oz approach (e.g., Ho et al., 2018, in which participants are told they interact with an agent, even though they interact with a human research assistant, Dahlbäck et al., 1993). The approach used in this dissertation has the advantage to be able to assess actual interactions with state-of-the-art conversational agents that resemble agents used for brand communication.

Despite the methodological strengths, as in most research, a purely experimental approach comes with certain limitations. While still allowing for a controlled setting, future research could make conversational agent research more ecologically valid, for example, by finding ways to implement conversational agents on different platforms instead of using them in an online survey environment. In addition, one remaining issue is the forced exposure in an experimental setup, especially when studying long-term effects of conversational agents. Chapter 5 shows that the participants included in the final sample were very consistent in interacting with the conversational agent over a three-week period. Even though participation rates are relatively high, it is unknown whether this is because participants are motivated to continue interacting or whether it is merely the incentivizing structure of the experiment that maintained their high interest. Finding new ways to motivate and engage participants over a longer period gives an interesting challenge for longitudinal conversational agent research, so as to gain a more thorough understanding of the dynamics of social and persuasive responses over time.

Conceptualizing human-likeness in human-machine communication

A further consideration centers around the conceptualization of *perceived human-likeness*. Human-likeness of technology is one of the central mechanisms in the field of human-machine communication; however, its conceptualization comes with difficulties. Literature often distinguishes between the concept of social presence, i.e., perceiving a medium as a “real” communication partner failing to notice the role of technology (Xu & Lombard, 2017) and anthropomorphism. Anthropomorphism can either be “mindful”, i.e., the more direct evaluation of a communication partner to be human- or machine-like, or “mindless”, i.e., attributing human-like characteristics such as socialness or friendliness to a communication partner (Y. Kim & Sundar, 2012). As discussed in chapter

2, even though conceptually different, existing self-reported measurements might not be sufficiently able to capture this difference. The items as used in the study presented in chapter 2 show very high correlations amongst the measurements. To address this, chapter 4 follows the approach by Cho et al. (2019) to assess the concept of human-likeness with items reflective of social presence and anthropomorphism, thus combining measurements of the two.

An additional issue comes with the operationalization of mindless anthropomorphism by its focus on merely “positive” assessments such as sociability or friendliness. To address this shortcoming, future research should assess human-like attributions in a broader way, meaning to also measure “negative” attributes, for example being selfish or unreliable. This would further extend the notion of human-likeness (and machine-likeness) which has such a high importance in the field of human-machine communication by finding measurements that are fully reflective of the concept.

Practical implications

Companies increasingly invest in conversational technologies for interacting with their consumers. Against this backdrop, this dissertation shows that conversational agents – even though to a certain extent perceived differently than other media types – overall are as persuasive in influencing feelings and behaviors as other interactive types of online brand communication. This conclusion is interesting, considering the hype around conversational technologies. In sum, agents with the current levels of technological advancements do not largely change the overall effects of brand communication. This does not mean that marketers, brand communicators, regulators, and policy makers should stop paying attention to emerging and conversational media technologies. This dissertation provides three implications for practice.

Implication 1: Marketers should understand conversational agents as communication entities and equip them with characteristics that are human-like and trustworthy.

A conversational agent can function as a communication partner instead of only being a marketing tool. This dissertation shows that when users apply characteristics such as human-likeness and trustworthiness to conversational agents, they most likely feel more positive towards them and the (branded) messages they communicate. Hence, marketers should pay attention to equip a conversational agent with characteristics that emphasize their human-likeness and trustworthiness.

Marketers might consider investing in technologies with a “human touch”, as perceived human-likeness is one of the key mechanisms in this dissertation explaining favorable affective and behavioral outcomes. However, they are advised to carefully assess which elements are perceived as human-like, as conversational agents are not always able to convey a human-like appeal. While a human-like name, visual appearance, or simple linguistic cues like, for example, the acknowledgment of a user’s response might enhance human-likeness of a conversational agent, this dissertation also reveals that simply using voice as a presumably human cue might not suffice, as it might prompt users to identify the non-human nature of their interaction partner.

Furthermore, especially practitioners investing in conversational technology for consumers to interact with over a longer period want to make sure to enhance the trustworthiness of an agent, as this dissertation reveals the importance of trust for persuasion in the short- and partially in the long-term. This can be achieved by including elements that signalize, for example, that the conversational agent has their users’ best interest in mind, but also that it has competence to help its users.

Implication 2: Creating interactions with conversational agent that are fun, interactive, and cognitively engaging does not only benefit marketers, but can empower consumers.

Not only the perceptions of conversational agents as communication entities influence their persuasiveness, but also how users respond to the interaction with them. Creating a conversational experience that is fun, interactive, and cognitively engaging can benefit marketers, and moreover, contribute to consumer empowerment in two ways.

Firstly, actively engaging consumers (instead of letting them peripherally consume branded content) can be good way to make them aware of the commercial nature of an interaction. This is important, as consumers should be able to “identify how, when, and why marketers try to influence them” (Friestad & Wright, 1994, p. 1) in order to make an informed decision. This dissertation suggests that conversational agents by being interactive (and to a certain extent cognitively demanding) can make consumers more critical towards branded messages.

Secondly, to empower consumers also means to create a pleasant and enjoyable marketing environment that can facilitate consumer satisfaction (Wright et al., 2006). Conversational agents can promote these environments, as this dissertation reveals that conversational agents are more enjoyable and interactive than, for example, websites, which positively influences how users feel towards the agent.

In sum, even though a conversational agent is dialogical and to a certain extent interactive by nature, practitioners want to focus on the development of conversational technologies that are engaging and fun to use, which might be the integration of small social cues and reciprocal design elements, for example, including questions about their users' wishes or preferences.

Implication 3: Privacy and data protection should remain critical issues for practitioners and regulators, especially in relation to conversational agents

It is important for practitioners and regulators to pay special attention to possible privacy concerns. Modern conversational agents use machine learning and natural language processing techniques which learn from the user data provided. Moreover, this dissertation shows that conversational agents possibly induce lower privacy concerns than other online media such as interactive websites. Users might therefore feel freer to share – and possibly consent to the use of – personal or private information. Conversational agents can thus be (mis)used by (commercial) organizations to (overtly and covertly) gain access to user data. These are important concerns to be considered by legislators in the development of ethical and legal frameworks regarding AI driven technologies and privacy.

The findings around privacy concerns provided in this dissertation contribute to existing debates on automated decision making that have centered around the importance of human agency. Users need to be equipped with sufficient knowledge to comprehend and interact with automated systems, as to limit the potential for unfair manipulation or deception (European Commission High-Level Expert Group in Artificial Intelligence, 2019). Fairness and transparency are core principles in the General Data Protection Regulation (GDPR, Article 5.1a) and the EU Ethics Guidelines for Trustworthy AI. The latter explicitly states that "AI systems should not represent themselves as humans to users; humans have the right to be informed that they are interacting with an AI system" (European Commission High-Level Expert Group in Artificial Intelligence, 2019, p. 18). Following these guidelines, one strategy to empower users of conversational agents would be to not only explicitly inform users about the non-human, but also the persuasive nature of the conversation.

Looking ahead: conversation agent persuasion beyond brand communication

Overall, this dissertation provides insights into the persuasive potential of conversational agents in a brand communication context. It concludes that, up to this date, conversational agents do not fully live up to their persuasive potential yet, but under certain circumstances they can be **persuasive agents** by influencing how users feel about, think about and act towards them, the messages they provide, and brands being advertised in their messages.

Examining the brand communication context is a vantage point to gain more knowledge on the persuasiveness of conversational agents. This dissertation calls for persuasiveness to be seen broader than only in relation to brands. Looking ahead, several other areas of persuasive communication deserve scholarly attention, as persuasion can also play an important role in other critical domains in which conversational agents are implemented, for example in health communication (e.g., for promoting a healthier lifestyle), in political communication and journalism (e.g., for the provision of political news content), or in education (e.g., for creating stimulating learning environments). Furthermore, the persuasiveness of conversational agents can be utilized in the practice of academic research. Recent studies have shown that conversational agents can be a useful tool in survey research (Xiao et al., 2019) to elicit self-disclosure (Ischen et al., 2021). Gaining an even deeper understanding of the persuasive impact of conversational agents thus opens new pathways for conversational agent research in a wide array of domains.

REFERENCES

- Aoki, N. (2020). An experimental study of public trust in AI chatbots in the public sector. *Government Information Quarterly*, 37(4), 101490. <https://doi.org/10.1016/j.giq.2020.101490>
- Araujo, T. (2018). Living up to the chatbot hype: The influence of anthropomorphic design cues and communicative agency framing on conversational agent and company perceptions. *Computers in Human Behavior*, 85(August 2018), 183–189. <https://doi.org/10.1016/j.chb.2018.03.051>
- Araujo, T. (2020). Conversational Agent Research Toolkit: An alternative for creating and managing chatbots for experimental research. *Computational Communication Research*, 2(1), 35–51. <https://doi.org/10.5117/ccr2020.1.002.arau>
- Benbasat, I., & Wang, W. (2005). Trust In and Adoption of Online Recommendation Agents. *Journal of the Association for Information Systems*, 6(3), 72–101. <https://doi.org/10.17705/1jais.00065>
- Berry, D. C., Butler, L. T., & De Rosis, F. (2005). Evaluating a realistic agent in an advice-giving task. *International Journal of Human Computer Studies*, 63(3), 304–327. <https://doi.org/10.1016/j.ijhcs.2005.03.006>
- Birnbaum, G. E., Mizrahi, M., Hoffman, G., Reis, H. T., Finkel, E. J., & Sass, O. (2016). What robots can teach us about intimacy: The reassuring effects of robot responsiveness to human disclosure. *Computers in Human Behavior*, 63(October 2016), 416–423. <https://doi.org/10.1016/j.chb.2016.05.064>
- Cho, E., Molina, M. D., & Wang, J. (2019). The Effects of Modality, Device, and Task Differences on Perceived Human Likeness of Voice-Activated Virtual Assistants. *Cyberpsychology, Behavior and Social Networking*, 22(8), 515–520. <https://doi.org/10.1089/cyber.2018.0571>
- Croes, E. A. J., & Antheunis, M. L. (2021). Can we be friends with Mitsuku? A longitudinal study on the process of relationship formation between humans and a social chatbot. *Journal of Social and Personal Relationships*, 38(1), 279–300. <https://doi.org/10.1177/0265407520959463>
- Dahlbäck, N., Jönsson, A., & Ahrenberg, L. (1993). Wizard of Oz studies – why and how. *Knowledge-based systems*, 6(4), 258-266.
- European Commission High-Level Expert Group in Artificial Intelligence (2019). *Ethics guidelines for trustworthy AI*.
- Følstad, A., Nordheim, C. B., & Bjørkli, C. A. (2018). What Makes Users Trust a Chatbot for Customer Service? An Exploratory Interview Study. In *Internet Science. INSCI 2018. Lecture Notes in Computer Science* (Vol. 11193). Springer. https://doi.org/10.1007/978-3-030-01437-7_16

- Friestad, M., & Wright, P. (1994). The Persuasion Knowledge Model : How People Cope with Persuasion Attempts. *Journal of Consumer Research*, 21(1), 1–31. <https://doi.org/10.1086/209380>
- Go, E., & Sundar, S. S. (2019). Humanizing chatbots: The effects of visual, identity and conversational cues on humanness perceptions. *Computers in Human Behavior*, 97(August 2019), 304–316. <https://doi.org/10.1016/j.chb.2019.01.020>
- Guzman, A. L. (2018). What is Human-Machine Communication, Anyway? In A. L. Guzman (Ed.) *Human-Machine Communication: Rethinking Communication, Technology, and Ourselves* (p. 1–28). Peter Lang Publishing.
- Guzman, A. L., & Lewis, S. C. (2020). Artificial intelligence and communication: A Human–Machine Communication research agenda. *New Media & Society*, 22(1), 70–86.
- Ho, A., Hancock, J., & Miner, A. S. (2018). Psychological, relational, and emotional effects of self-disclosure after conversations with a chatbot. *Journal of Communication*, 68(4), 712–733. <https://doi.org/10.1093/joc/jqy026>
- Ischen, C., Butler, J., & Ohme, J. (2021). Self-Disclosure of Unaccepted News Exposure to a Chatbot. *Paper Presented at the 71st Annual International Communication Association (ICA) Conference*.
- Kim, D., Park, K., Park, Y., Ju, J., & Ahn, J. H. (2018, June). Alexa, tell me more: The effect of advertisements on memory accuracy from smart speakers. In *22nd Pacific Asia Conference on Information Systems (PACIS 2018)* (pp. 204). Association for Information Systems.
- Kim, Y., & Sundar, S. S. (2012). Anthropomorphism of computers: Is it mindful or mindless? *Computers in Human Behavior*, 28(1), 241–250. <https://doi.org/10.1016/j.chb.2011.09.006>
- Leahy, W., & Sweller, J. (2011). Cognitive load theory and the effects of transient information on the modality effect. *Applied Cognitive Psychology*, 25(6), 943–951. <https://doi.org/10.1007/s11251-015-9362-9>
- Lee, S. Y., & Choi, J. (2017). Enhancing user experience with conversational agent for movie recommendation: Effects of self-disclosure and reciprocity. *International Journal of Human Computer Studies*, 103(January 2017), 95–105. <https://doi.org/10.1016/j.ijhcs.2017.02.005>
- Schmidt-Weigand, F., Kohnert, A., & Glowalla, U. (2010). A closer look at split visual attention in system- and self-paced instruction in multimedia learning. *Learning and Instruction*, 20(2), 100–110. <https://doi.org/10.1016/j.learninstruc.2009.02.011>
- Sundar, S. S. (2020). Rise of Machine Agency: A Framework for Studying the Psychology of Human–AI Interaction (HAI). *Journal of Computer-Mediated Communication*, 25(1), 74–88. <https://doi.org/10.1093/jcmc/zmz026>

- Sundar, S. S., Bellur, S., Oh, J., Jia, H., & Kim, H. S. (2016). Theoretical Importance of Contingency in Human-Computer Interaction: Effects of Message Interactivity on User Engagement. *Communication Research*, 43(5), 595–625. <https://doi.org/10.1177/0093650214534962>
- van Noort, G., & Willemsen, L. M. (2012). Online Damage Control: The Effects of Proactive Versus Reactive Webcare Interventions in Consumer-generated and Brand-generated Platforms. *Journal of Interactive Marketing*, 26(3), 131–140. <https://doi.org/10.1016/j.intmar.2011.07.001>
- Walther, J. B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. *Communication Research*, 19(1), 52–90.
- Walther, J. B., van Der Heide, B., Ramirez, A., Burgoon, J. K., & Peña, J. (2015). Interpersonal and Hyperpersonal Dimensions of Computer-Mediated Communication. In S. S. Sundar (Ed.), *The Handbook of the Psychology of Communication Technology* (Vol. 32, pp. 1–22). John Wiley & Sons. <https://doi.org/10.1002/9781118426456.ch1>
- Wright, L. T., Newman, A., & Dennis, C. (2006). Enhancing consumer empowerment. *European Journal of Marketing*, 40(9–10), 925–935. <https://doi.org/10.1108/03090560610680934>
- Xiao, Z., Zhou, M. X., Liao, Q. V., Mark, G., Chi, C., Chen, W., & Yang, H. (2019). Tell Me About Yourself: Using an AI-Powered Chatbot to Conduct Conversational Surveys with Open-ended Questions. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 27(3), 1-37. <https://doi.org/10.1145/3381804>
- Xu, K., & Lombard, M. (2017). Persuasive computing: Feeling peer pressure from multiple computer agents. *Computers in Human Behavior*, 74(September 2017), 152–162. <https://doi.org/10.1016/j.chb.2017.04.043>
- Youn, S., & Venus Jin, S. (2021). “In A.I. We Trust?” The Effects of Parasocial Interaction and Technopian versus Luddite Ideological Views on Chatbot-Based Customer Relationship Management in the Emerging “Feeling Economy.” *Computers in Human Behavior*, 119(June 2021), 106721. <https://doi.org/10.1016/j.chb.2021.106721>
- Zarouali, B., van den Broeck, E., Walrave, M., & Poels, K. (2018). Predicting Consumer Responses to a Chatbot on Facebook. *Cyberpsychology, Behavior, and Social Networking*, 21(8), cyber.2017.0518. <https://doi.org/10.1089/cyber.2017.0518>