Master Thesis

The effects of anthropomorphism and personalization in the context of conversational advertising

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Abstract

Conversational advertising is a promising advertising format thanks to consumer tracking, big data, and machine learning. Their ability to respond intelligently, analyze patterns to decide when to advertise and what leaving marketers with a tremendous opportunity to reach and engage customers on a one-on-one basis at scale. Marketing academics and practitioners look into investigating various communication styles and functionality design in order to improve performance. Firms use consumers' personal data to provide personalized offers, but that increases consumers' privacy concerns. A common practice in the field of advertising and human-computer interaction is to imbue human-like characteristics to non-human entities. Previous studies have shown that anthropomorphism of a chatbot leads to lower privacy concerns. This study investigates the extent to which conversational advertisements with human-like cues that are personalized can influence advertising outcomes. Using a 2×2 survey-based experiment (N=164), the underlying hypotheses are tested through quantitative analysis. Findings indicate that the anthropomorphic design of a conversational advertisement may have adverse effects through the mediation mechanism of privacy concerns. Thus it is not possible to prove it is moderating the relationship between personalization and privacy as initially expected. Our findings hold valuable practical and theoretical implications, as well as relevant suggestions for future research.

Keywords: Converational Advertising, Personalization, Anthropomorphism, Privacy-paradox

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Introduction

1.1   Motivation

In recent years, gradual improvements in artificial intelligence and natural language processing have generated many opportunities in the field of marketing. Innovative ways of conducting marketing are imagined every day by creative companies and advertisers from all around the world. Digital tools such as conversational agents, also known as chatbots, allow marketers to offer a personalized experience to the consumers while interacting in real time.

Although chatbots have been around for 54 years (e.g., ELIZA developed by Weizenbaum (1966)), only recently they have gathered industry attention. The idea of being able to communicate with chatbots via artificial intelligence through the means of advertising appeared in 2018 when Facebook introduced Messenger advertising; advertisers could buy "Click To Message" news feed ads that initiate a conversation with their bot. In 2018 Google announced the launch of Adlingo, a new conversational marketing platform created out of Area 120 - Google's incubator with experimental ideas (Lawson, 2018). Adlingo is the first platform that allows marketers to present conversational ads outside the walls of messaging apps (i.e. Messenger) into the online advertising landscape by integrating them with Google's advertising network.

The launch of Adlingo's platform is a compelling case study that has caught my attention and sharpened my interest in researching further this topic; hence

chatbots represent the new innovative format for advertising. Chatbots could lead to a shift on how we advertise, as now brands are given a "voice" and can engage in actionable conversations with consumers at a scale without any human intervention. The ads will not only prompt costumers to visit a website but even allow them to perform actions, such as booking an appointment or buying a product through the interface. In return, firms are given valuable insights and can understand consumers' pain points. The potential of conversational advertising is evident, but in order to be successful, designers and companies must understand how to introduce these agents to consumers' best interest.

The opportunities that come from conversational advertising could also bring out further stimulant of personalization in advertising. Personalized advertising is defined as a communication strategy that consists of delivering targeted messages to individual recipients based on the recipient's characteristics and preferences (Maslowska et al., 2011). Chatbots save a vast amount of personal information and memorize what a person has said before and therefore, can incorporate previous information a user has provided into the conversation allowing for a more personalized approach. The benefits of leveraging consumers' information to deliver personalized advertisements range from perceiving the ad as more useful (O'Donnell and Cramer, 2015) to influencing purchase intention (Wessel and Thies, 2015; Haajer and Sriram, 2019).

Although personalization can help companies improve the advertising efficiency, the practice of personalization requires the gathering of an immense amount of personal information about the consumer including the location, age, gender, interests (Aguirre et al., 2015), online shopping behavior (Bleier and Eisenbeiss, 2015) and search history (Van Doorn and Hoekstra, 2013). Online personalized advertising did not only mean a transformation for the advertising sector. It also sparked a debate regarding online privacy. As they are fueled by artificial intelligence, the chatbots can leverage data to adapt to a specific user's characteristics. When users are confronted with a system that collects their data, they may perceive it as an invasion of their privacy that leads to increased privacy concerns. The trade-off in personalization and privacy concerns is called the Personalization-Privacy Para-

dox (Lee and Cranage, 2011). Therefore, this research aims to unravel to what extent it is true; to explore and understand the trade-off between different levels of personalization versus privacy concern in a conversational advertising context.

A previous study by Ischen et al. (2020), pointed that the essence of anthropomorphic cues on a chatbot can decrease to an extent user's privacy concerns and increase perceived usefulness (Epley et al., 2007). Thus, there is a need to investigate the role of anthropomorphism as a moderator to determine if it has an impact on privacy concerns when it is used in parallel with personalization.

As technology is advancing and chatbots are becoming more and more common in people's daily lives, it is essential to understand the various design features of the recommendation agents in order to improve this type of communication and increase advertising effectiveness. According to Van Vugt et al. (2010), the interface of a chatbot is a critical component that can increase the involvement and willingness of a customer to interact with the chatbot. One common variant of the design of a conversation agent is to imbue it with human-like characteristics (i.e. anthropomorphise it) (Epley et al., 2007). Anthropomorphism is a long-established construct and has been studied in various fields, including human-computer interaction and marketing. Marketers frequently want people to think of their products in human terms, and prior research has indicated that it is typical behavior for consumers to anthropomorphize their belongings (Aggarwal and McGill, 2007). Giving human characteristics to nonhuman agents can also significantly influence user interactions and behavior and increase usefulness (Epley et al., 2007). Thus, further exploration into the impact of anthropomorphism is needed to fill in the research gap.

1.2 Problem Statement and research question

The purpose of this research aims to dive into the vastly unexplored area of conversational advertising and investigate how practitioners can utilize advertising characteristics like personalization and anthropomorphism, to elucidate the ele-

ments of human-like attributes and gauge its practical relevance. Ultimately, it leads to the following research question:

> RQ: "How does personalization and anthropomorphism influence advertising effectiveness in the context of chatbot advertising?"

The importance to study how specific chatbot characteristics such as anthropomorphism cues and degree of personalization might influence the user's responses can have both theoretical and practical implications. Firstly, from the theoretical perspective it would provide us with enhanced knowledge about human-chatbot interactions and a new type of advertisement. Secondly, the knowledge gained in this area would facilitate marketers as well as chatbot developers with useful design guidelines when creating an advertising conversational agent.

1.3 Structure

The current thesis is organized as follows. In the next chapter we summarize the state-of-the-art in chatbots, the personalization-privacy paradox, anthropomorphism and the uncanny valley. From the theoretical framework, hypotheses will be developed that will help answering the research question. This is followed by Chapter 3, where we subsequently move on discussing the methods for data collection and statistical instruments. Findings are presented in Chapter 4, while Chapter 5 ends with a discussion, theoretical and managerial implications and recommendations for future research.

2

Theoretical Framework

2.1 The rise of chatbots

A chatbot is a digital solution with a considerable growth potential that serves as a conversational agent stimulating an interactive human-like conversation based on artificial intelligence (Shawar and Atwell, 2007; Gupta et al., 2015).

Chatbots can range from simple scripted and rule-based bots to advanced AI-based bots that are programmed to teach themselves from previous conversations. Historically, the introduction of the chatbot technology started with Eliza in 1966 (Weizenbaum, 1966), a virtual psychotherapist based on a simple rule-based keyword matching. The chatbot was given a script in order to keep up the conversation with its human counterpart. However, such a chatbot is not able to handle unfamiliar inputs or understand the context of the conversation. More recent conversational computing platforms (e.g., Google's Dialogflow[1]) use evolutionary algorithms to add real-time learning to the reasoning abilities, making them more sophisticated with a comprehension closer to that of humans. All these progressive developments in AI suggest that the era of conversational advertising will become the mainstream much quicker than expected.

Artificial Intelligence is a technology that resembles a human in specific areas such as language understanding, programming, and diagnostic support. AI learns from experiences that come from incoming data and basic structures. That means

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[1]`https://dialogflow.com/`

the more people interact with a chatbot backed by AI and machine learning, the "smarter" and more effective it becomes. Combining chatbots with AI, we have an independent program that responds to complex queries while offering a personalized experience according to the customer's profile.

The advantages of implementing a chatbot can be profoundly observed. A chatbot can be permanently available, has advanced linguistic features, and can be quite intelligent thanks to machine learning and AI. It makes it easier for customers to get immediate responses to their queries without spending much time being in phone queues or sending emails back and forth (Nuruzzaman and Hussain, 2018).

The application possibilities of chatbot technologies are broad and can be found in every field. Educational institutions are using chatbots in order to provide a more interactive learning experience for the students (Colace et al., 2018). A variety of companies see chatbots as a promising alternative to traditional customer service. Banking, insurance, hospitality, and other industries are deploying chatbots in order to improve customer experience (Trivedi, 2019; Nuruzzaman and Hussain, 2018; Ivanov and Webster, 2017). The use of conversational agents is present in healthcare with the intention to broaden access and meet the increasing demand by providing diagnostic suggestion based on the information provided by the users (Laumer et al., 2019), offer patients post-discharge monitoring (Piau et al., 2019) and provide mental health counseling (Cameron et al., 2017). Chatbots are also evident in many websites as recommendation agents in order to help users to purchase products and services (Majumder et al., 2018).

2.2   Personalization

As explained in Chapter 1, the technological capabilities and the advancement of AI make personalization an important element in the design of a chatbot. Chellappa and Sin (2005) mention that personalization is a competitive necessity for firms to thrive, as many firms are already using customer's personal information

to provide individualized offers. There have been numerous ways in which scholars have defined the concept of personalization at a conceptual level and the meaning varies from field to field (Fan and Poole, 2006). Personalization has a growing interest, especially in the disciplines of Information Systems (IS), computer science and marketing and in each field, there is a different emphasis on the aspects of personalization (Sunikka and Bragge, 2008).

According to Montgomery and Smith (2009), personalization describes the adaptation of products and services by the producer for the consumer while using information from the history of consumer's behavior and previous transactions. Chellappa and Sin (2005) refer to personalization as the tailoring of products and purchase experience according to the characteristics of consumers based upon their personal and preference information. For example, Amazon is leveraging the knowledge it has for each individual customer in real-time and based on previous purchases; it generates personalized recommendations. Personalization of conversational agents can be achieved implicitly based on past interactions with the user or explicitly by adapting the interaction based on input that was willingly given by the user, knowing that it will influence his or her interactions with the system (Kaptein et al., 2015).

In the context of Information Systems (IS), Fan and Poole (2006) conducted a thematic analysis on personalization from 142 sources and suggested that the definition of personalization consists of these three elements: (a) The purpose or goal of personalization, (b) What is personalized (e.g. interface, content, etc.), and (c) The target of personalization (e.g. user, consumer, etc.).

Fan and Poole's general definition of personalization as "a process that changes the functionality, interface, information access, and content, or distinctiveness of a system to increase its personal relevance to an individual" (Fan and Poole, 2006). Subsequently, Fan and Poole (2006) provide a framework that builds on previous literature and it is seen as a three-dimensional implementation choice: what to personalize, to whom to personalize and who does the personalization. This framework is summarized in Table 2.1.

Who does it?	To whom?	What?			
		Content	Functionality	User interface	Channel/Info access
Implicit	Individual				
	Categorical				
Explicit	Individual				
	Categorical				

Table 2.1: Personalization framework proposed by Fan and Poole (2006) as a three dimensional implementation choice.

Personalization requires the collection of personal information about an individual consumer to customize content targeted to that individual. According to Fan and Poole's framework, personalization can be conducted by the system (implicit) or by the user (explicit). That can be done either implicitly, by inferring information about consumers such as browsing or purchase history without their awareness or consent either explicitly, by asking consumers to disclose information about themselves (Cranor, 2003). Implicit data is usually collected via cookies – small text files delivered to and stored on a visitor's computer or smartphone via websites they're browsing and can be used to identify a unique device. The data can then be used to form a profile of browsing habits and can be linked to a specific individual (Palmer, 2005). With explicit data collection, consumers may provide their personal information online willingly in order to gain access to information or complete their transactions (Taylor et al., 2009).

The advantages of personalization can be manifold. Existing research examined the effects of personalization in advertising and information technology, and results show that enhanced personalization can lead to positive outcomes when used carefully. Personalization technologies are powerful means to handle information overload (Liang et al., 2006), help online businesses establish good relations with their customers (Liang et al., 2009) and increase purchase intention (Wessel and Thies, 2015). Wessel and Thies (2015) conducted a field experiment on an online news aggregation website and found that an increased level of personalization can affect a user's purchase intention. Nowak et al. (1999) found in their study that personalized online advertising increased the possibility of clicking behavior among consumers.

2.3   Personalization-Privacy Paradox

The effect of personalization in the context of marketing offers a double-edged sword: while many scholars have identified the advantages of personalization, it has been linked to privacy concerns due to the amount of personal data being processed (Jung, 2017).

In fact, early surveys in e-commerce report privacy as one of the most important concerns of consumers when engaging in online shopping (Phelps et al., 2001). Privacy concerns are defined as individuals' concerns related to opportunistic behavior with regard to the disclosure of personal information over the internet (Karwatzki et al., 2017). Consumers are becoming increasingly concerned about the privacy of their personal information and the degree to which marketers, retailers and web sites monitor their activity (Graeff and Harmon, 2002). While personalization has a positive effect in empirical studies, privacy concerns negatively affect user's intentions (Sutanto et al., 2013).

The question that remains is: "can the perceived benefits of personalization override the privacy concerns of consumers?" Interestingly, people who are particularly concerned about their privacy, do not necessarily show the same concern in their actions. This is known as the Personalization-Privacy paradox (Sutanto et al., 2013)

2.4   Anthropomorphism

A current trend in designing IS, and specifically, chatbots, comprises the employment of anthropomorphic cues. The concept of anthropomorphism was briefly discussed in Chapter 1. However, it is important to understand how anthropomorphism is discussed through the lens of academia. In the following section, we will first introduce the definition of anthropomorphism, prevailing theory, its connection to information systems and marketing, as well as dive into the theory of the "Uncanny Valley".

The phenomenon of anthropomorphism was studied by various scholars from multiple fields of study, such as psychology (Waytz et al., 2010), marketing (Rauschnabel and Ahuvia, 2014), and information systems (Seeger et al., 2017). Although definitions within these disciplines vary slightly, anthropomorphism, at a broad scope, is the phenomenon of assigning human-like physical or non-physical features, behavior, emotions, characteristics, and attributes to nonhuman agents (Epley et al., 2007). Similarly, Pfeuffer et al. (2019) define anthropomorphic IS as "IS in which the technical and informational artifacts possess cues that tend to lead humans to attribute human-like physical or non-physical features, behavior, emotions, characteristics and attributes to the IS."

Humans are used to giving human-like characteristics to nonhuman entities from a young age (Lanier et al., 2013). Therefore, it comes as no surprise that marketers discovered anthropomorphism as a design pattern for products that are more likable to consumers (Wen Wan et al., 2017). Previous research has associated anthropomorphism with positive attitudinal and behavioral responses from consumers and showed that the specific product appearance design affects the effectiveness of anthropomorphism in marketing (Aggarwal and McGill, 2007; Landwehr et al., 2011). For example, Aggarwal and McGill (2007) found in their research that the survey respondents demonstrated an increased preference for vehicles with design features that resemble a human. Landwehr et al. (2011) identified a significant effect on cell phones designed in an anthropomorphic way that simulates a human face. These researchers found that presenting products with human-like physical features led to consumers' positive response.

The positive effects of anthropomorphic design have also been observed in information technology and information systems. As AI empowers the linguistic capabilities, it is expected that users are likely to attribute human-like characteristics to chatbots too. On a paper about recommendation agents, Qiu and Benbasat (2009) found that adding anthropomorphic cues to the chatbots such as visual (appearance) and auditory (human voice) strongly influence social presence, which directly influences trust and enjoyment and subsequently leads to greater acceptance. Another study by Araujo (2018) revealed that anthropomorphized

chatbots on social media have a significant influence on the emotional connection with the brand and a positive effect on relationship building. Rietz et al. (2019) conducted a study on chatbot designs on enterprise collaboration systems and found that the use of anthropomorphic cues causes increased perceived usefulness, which is associated with chatbot acceptance. Ischen et al. (2020) concluded in another experimental study that the use of human-like cues leads to recommendation adherence, which is the willingness to purchase the recommended product.

One of the primary goals of anthropomorphic design is to positively influence humans' affect, which is seen as an important element in human-computer interaction (Pfeuffer et al., 2019). As mentioned, adding anthropomorphic cues to robots has many advantages such as greater user acceptance, likeability and ease of use (Epley et al., 2007; Qiu and Benbasat, 2009). On the other hand, other scholars are skeptical about the use of humanoid interfaces. Anthropomorphic design can also have negative implications when the expectations are not met, which is known as the "uncanny valley" (Mori et al., 2012). The uncanny valley hypothesis proposes a non-linear relationship between an entity's anthropomorphism and its familiarity. It suggests that by increasing the level of how human an entity is, it will also increase the familiarity with it. From a certain degree onwards, the human-likeness results in negative customer evaluations, named as the "uncanny valley", pointing to the sudden decline of the curve (See Figure 2.1). Once an entity does not meet the observer's expectations, it can trigger uneasiness, disgust, fear, aggression, which may lead to a loss of trust in these systems (Stein and Ohler, 2017; Pfeuffer et al., 2019). The same mechanic could be at play when humans are interacting with conversational agents. Ciechanowski et al. (2019) conducted an experiment with two identical chatbots: one text-based and one that used a chatbot with an animated human fa ce. The findings showed that the participants found that the anthropomorphic chatbot was perceived as more incompetent than the text-based one. When a bot is clearly a bot, people know that its functions are limited. In contrast, when the chatbot looks and acts like a human, it creates higher expectations for humans. There ought to be a consistency between the level of human likeness on the one hand and the level of technological capabilities on
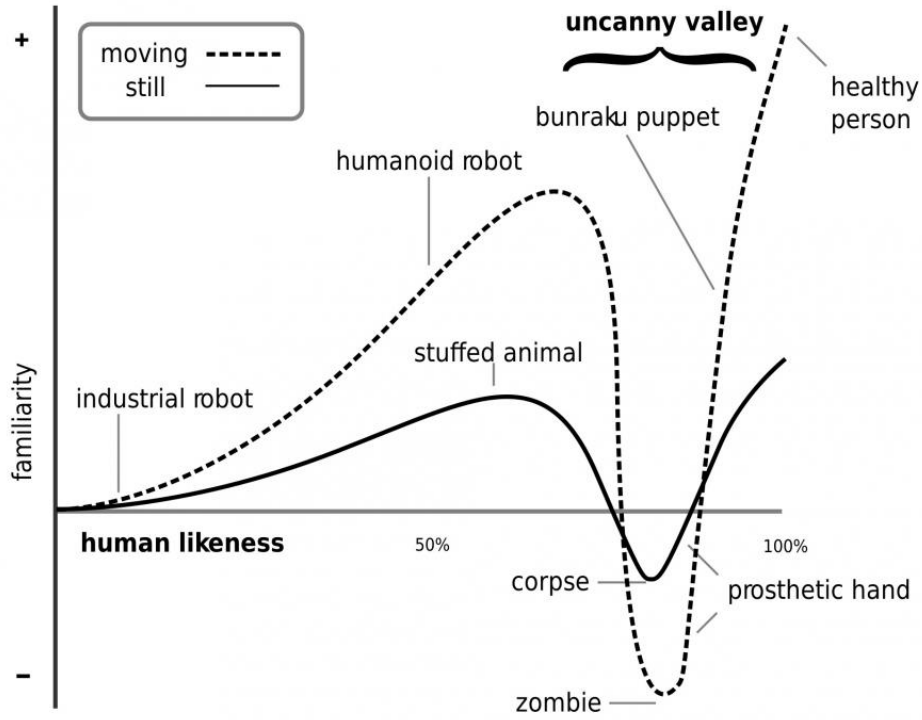
Figure 2.1: Uncanny Valley (source: Stein and Ohler (2017)).

the other.

In order to make a conversational agent as human-like as possible, the possibilities are limited (Rietz et al., 2019). Go and Sundar (2019) propose that there are three types of cues that suggest humanness among chatbots. These are visual cues, such as the use of human-like figures or avatars; identity cues, such as human-associated names; and conversational cues, such as the mimicking of human language or use of emojis. However, there are a few empirical studies that investigated various human attributes assigned to chatbots. Fadhil et al. (2018), analyzed how users interacted through different dialogue styles (i.e. plain text or text with emoji) and found that there is a different response with respect to the context and settings.

2.5   Perceived Usefulness

Perceived usefulness has been developed as an important construct on the technology acceptance model (TAM) (Davis et al., 1989). Perceived usefulness (PU) refers to a users' subjective probability that using a specific system/technology will increase his or her job performance (Davis, 1989). Wang and Tse (2016) defined perceived usefulness as the element whereby people obtain advantages to fulfill their needs. Applying the definition to our context, as the new technology, we classify the advertising chatbots and as the individual's performance the outcome of their experience with them. These perceptions have an influence on consumer's attitudes toward conversational advertising agents and their intention to purchase (Perea Y Monsuwé et al., 2004).

2.6   Advertising Effectiveness

From an advertiser's standpoint, the ultimate goal of an advertisement is persuasion (Braun-Latour and Zaltman, 2006). According to the Theory of Planned Behaviour (TPB) an individual's performance of a certain behaviour, such as purchasing a product, is determined by his or her intent to perform that behaviour (George, 2004) and is the most influential predictor of behavior (Ajzen, 1991). The effectiveness of an ad can be measured by how it affects the consumer's purchase and click-through intentions. (MacKenzie et al., 1986; Ajzen, 1991). Grewal et al. (1998) defined purchase intention as "a probability that lies in the hands of the customers who intend to purchase a particular product". Hence, purchase intention is used to predict purchase behaviors (Belleau et al., 2007). Moreover, the intention to click on the advertisement is commonly used in measuring the advertising effectiveness (Aguirre et al., 2015; Walrave et al., 2012). Researchers have found that there is a significant relationship between purchase intention, click-through intention and actual purchasing (Morwitz et al., 2006). Thus, the assessment of purchase and click-through intention can be valuable for advertisers as an advertisement may lead to conversion.

2.7 Research Framework and Hypothesis Development

Based on what has been presented so far, a research model was developed that explains how anthropomorphic cues and personalization can influence advertising outcomes.

The effects of personalization on advertising outcomes

Previous literature is silent with respect to whether personalization would lead to more favorable outcomes in the context of conversational advertising. Grounded from the theoretical framework, previous research shows that personalization results in a significant increase in purchase intention (Awad and Krishnan, 2006; Wessel and Thies, 2015). Therefore we hypothesize that:

> H1: Personalization leads to higher a) click-through & b)purchase intentions.

The effects of anthropomorphism on advertising outcomes

The power of anthropomorphism in increasing consumers' preferences and purchase intentions is well known. Anthropomorphism in information systems has also been associated with higher purchase intention (Laksmidewi et al., 2017). Choi et al. (2001) found that users exposed to a web advertisement with an agent interface have more favorable attitudes and are more likely to re-visit a website. Similarly, Kim and Biocca (1997), found that the feeling of being present in a computer-mediated environment has a positive effect on user's attitude change, buying intention and confidence in decision-making. In short, there is amble evidence that assigning human-like traits to nonhuman artifacts is positively influencing user behavior. Which leads to the following hypothesis:

H2: Anthropomorphic chatbots lead to higher a) click-through & b)purchase intentions.

The role of perceived usefulness as a mediator

Previous studies showed that anthropomorphism has been associated with higher perceived usefulness (Epley et al., 2007; Rietz et al., 2019). Anthropomorphism may increase the perceived usefulness of the conversational agents by creating social bonds that increase a sense of social connection. (Epley et al., 2007). Rietz et al. (2019) reported that that anthropomorphic features on a chatbot have four times the effect on perceived usefulness than any other significant effects identified (i.e perceived ease of use and perceived enjoyment).

The goal of personalization is to adapt a product or a service based on the relevant user's information and increase perceived usefulness and acceptance of digital information and application (Arbanowski et al., 2004). Also, the effects of personalization on purchase intentions and behavior are more positive when the ad fits consumers' needs (Van Doorn and Hoekstra, 2013). Therefore we suggest:

H3: Perceived Usefulness acts as a mediator between independent and dependent variables.

The effect of perceived usefulness on click-through and purchase intentions

Research shows that online purchase intention (PU) is positively and significantly related to perceived usefulness (Athapaththu and Kulathunga, 2018). Koufaris and Hampton-Sosa (2004) has validated the construct of perceived usefulness and has found that it influences the intention of internet shoppers to purchase a product or service. Additionally, Davis (1989); Chau and Hu (2002) also reported that PU is significant and positive influences behavioral intent. Hence we expect that:

H4: Perceived usefulness is positively related to (a) higher purchase intention and (b) higher click-through intentions.

The effect of privacy concerns on the advertising outcomes

Considering that it is widely reported that online customers are very concerned about threats related to their personal privacy and how companies use their personal data (Hofacker et al., 2016), it is no surprise that previous research finds a negative relationship between privacy concerns and purchase behavior. The research of Castañeda and Montoro (2007) suggests a strong correlation between privacy concerns and purchase intention. Similarly, Phelps et al. (2001) argue that customers with higher levels of privacy concerns perceive personalized ads as more intrusive and thus are less likely to purchase. Van Doorn and Hoekstra (2013) find that more personalization increases feelings of intrusiveness and as a result, it negatively affects purchase intentions Thus, we propose a hypothesis with which we expect privacy concerns will have a negative influence on behavioral intentions to determine whether or not a consumer's behavioral intention is due to increased concerns regarding privacy.

H5: Privacy Concerns lead to lower a)click through and b)purchase intentions.

The role of privacy concerns as a mediator

Consequently, we assume that as personalization increases privacy concerns, it will further decrease click-through and purchase intentions. Which leads to:

H6: Privacy Concerns will act as a mediator between personalization and, click-through and purchase intentions.

The role of anthropomorphism as a moderator

Privacy is a controversial issue in the topic of personalization. Although people value personalization, it also increases their privacy concerns as personalization comes at the cost of their personal data.Several scholars reported the downsides effects of personalization on privacy concerns (Graeff and Harmon, 2002; Van Doorn and Hoekstra, 2013). We expect that a human-like chatbot will mitigate privacy concerns as proposed by previous study. (Benlian, Klumpe and Hinz, 2019). Therefore, we hypothesize that a human-like chatbot will positively moderate the relationsip between personalization and privacy concerns. Resulting in

> H7: Anthropomorphism moderates the relationship between personalization and privacy concerns.

2.8   Conceptual Model

Figure 2.2 illustrates the conceptual framework that was established in this section.
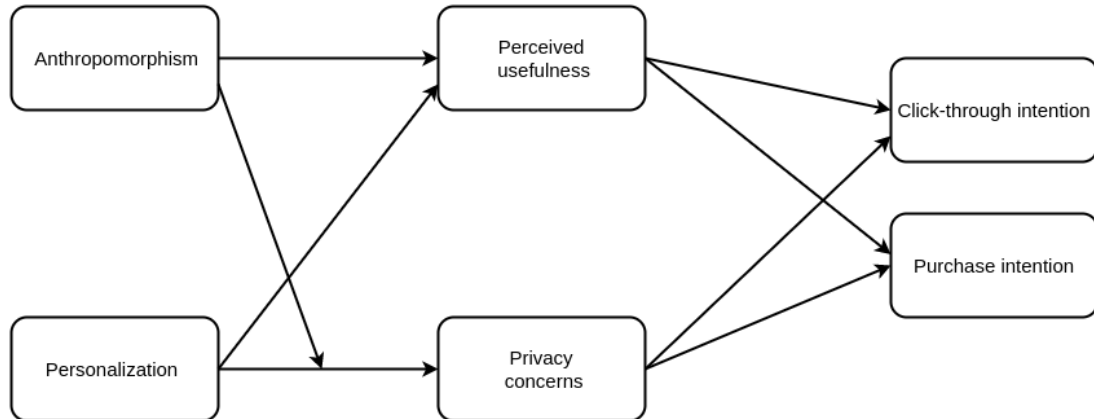
Figure 2.2: Conceptual model summarizing the proposed hypothesis.

3

Methodology

This chapter discusses the rationale for the research design and details the unit of analysis. It then outlines the reasons for the adoption of an experimental method. It also provides an overview of the data collection methods used for the thesis and the means used to analyze it. Lastly, it concludes with sections on the limitations of the research and ethical considerations.

3.1 Philosophy of science

In research, the philosophy of science is a broad term related to the development of knowledge as well as its nature. It encompasses the researchers' assumptions on how they view the world, which in turn construct the research strategy and the methods selected as a part of that strategy (Saunders et al., 2016). Deciding on the research philosophy is challenging, as there is so much debate among scholars, and neither view can be seen as absolute.

The two major components that constitute the research philosophy are ontology and epistemology. According to Guba (1990), ontology responds to "What is the nature of the knowable (or reality)?" and epistemology to "What is the nature of the relationship between the knower and the known?". Based on the ontological and epistemological assumptions, Saunders et al. (2016) identify four different research philosophies; positivism, realism, interpretivism and pragmatism. This thesis follows a positivism research philosophy.

By following a positivistic approach, this study will examine "the world as full of objective "things" that can be studied and measured" (Woodwell, n.d.). Positivism has the ontological assumption that there is one reality or truth and that social reality is subjective and external to the researcher (Collis and Hussey, 2013). Epistemologically, positivism assumes that knowledge can be measured and that the researcher is distant from phenomena under study (Collis and Hussey, 2013). Positivism relies on empirical findings; therefore, the researcher intends to test the formulated hypotheses. Analysis within the positivistic approach attempts to be objective and involves the researcher standing back from the data during analysis.

3.1.1   Quantitative Research

To test how the conversational agent is perceived for different human-like appearance scenarios and levels of personalization, a quantitative research method is adopted for collecting the data. Quantitative research is usually linked with positivism, primarily when used with predetermined and highly-structured data collection techniques (Saunders et al., 2016).

The quantitative research approach examines the relationship between variables that are measured numerically and analyzed with statistical methods (Saunders et al., 2016). Quantitative data is often perceived to be more objective and scientific than qualitative (Crowther and Lancaster, 2009).

3.2   Research Design

Saunders et al. (2016) defines the research design as the "general plan for how a researcher will be able to answer his or her research question". Research design is the framework of the project that specifies what information is to be collected, from which sources, and with what procedures. It is an essential element of the dissertation since it demonstrates how we have thought about the elements of a particular research design (Saunders et al., 2016). Research design aims to ensure

that the decisions are consistent and exposes them to critical evaluation.

3.2.1 Deductive Research Strategy

Considering we have sufficient literature to investigate anthropomorphism and personalization in a conversational advertising context, we can develop hypotheses from the theory. Therefore, we follow the deductive approach primarily and develop a hypothesis based on an existing and relevant theory with modification to the context. That is a top-down approach since it moves from the theory of our interest, and we narrow it down to specific hypotheses that we can test as shown in Figure 3.1. The purpose of deductive research is to test an existing theory rather than attempting to create the theory further. The social scientist needs to outline how data can be collected concerning the hypotheses' concepts. Ultimately, it leads us to test the hypotheses with data that we are going to collect.
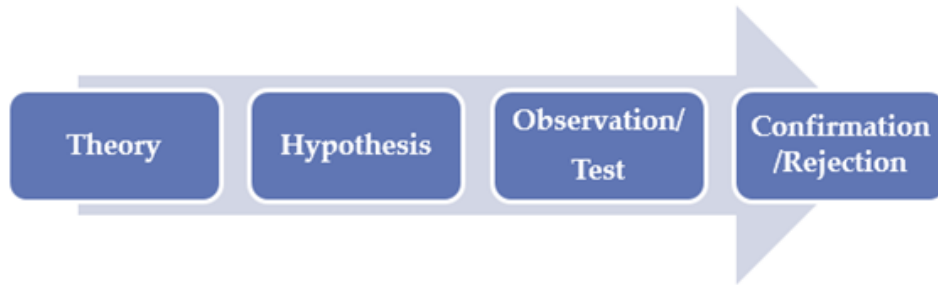
Figure 3.1: Deductive Process Scheme (Source: `https://research-methodology.net/`)

3.3 Methodology

To test our hypotheses, we employed a 2 (personalization vs. non-personalized) × 2 (anthropomorphic vs. non-anthropomorphic) full factorial survey-based experiment design with between-subject treatments to test proposed hypotheses and

answer the research question. A factorial design is one in which two or more variables or factors are used in a way that all possible combinations of selected values of each variable are used (McBurney and White, 2009). Taking into consideration the research objectives, a factorial survey-based experiment design proved to be the most suitable in organizing and gathering evidence to accept or reject the hypothesis and help explain the research question unambiguously and convincingly.

The experimental research design begins with the assumption that a researcher can manipulate the independent variables that are being studied in some way so that some change or difference can be measured. In general, in experiments, the participants are allocated to two or more experimental groups, each representing a different type or level of the independent variable (Bryman, 2016). In this study, our independent variables are anthropomorphism and personalization, and by manipulating them in an experimental setting, we can explore the relationship between them and other selected dependent variables. The objective of the present study is to determine how the use of anthropomorphism and personalization cues on a chatbot have an impact on the advertising outcomes as well as how the combination of their usage is connected. Thus, a between-subject survey-based experimental design was selected as the most suitable research design.

The four conditions of the experiment have two factors; anthropomorphism and personalization. The participants were randomly allocated into one of the four conditions using Qualtrics' randomization function. Randomization in this research was done automatically, and non-discriminant on any factor. The experiment conditions are summarized in Table 3.1.

		Personalization	
		Yes	No
Anthropomorphism	Yes	Condition 1	Condition 2
	No	Condition 3	Condition 4

Table 3.1: Experiment conditions.

3.3.1 Experimental Procedure

Due to restrictions on time and resources, convenience sampling was selected as the most suitable sampling method. The survey was shared through online personal messages and postings on several online social networks and the researcher's personal network. Participation was voluntary, and there was no compensation for the completion. All participants were informed that the experiment was anonymous and that the information they provided would be treated as confidential and explicitly used for this study's academic purposes.

This research is in the form of a survey experiment, making use of a vignette approach (Atzmüller and Steiner, 2010). The vignette methodology was selected for our experiment to control users' experience and avoid social desirability bias (Aguinis and Bradley, 2014). A vignette approach allows participants to be exposed to the manipulation variables and then express their opinion and intentions in a survey form that was administered online. In this research, the vignette approach was operationalized by a fictional situation followed by a series of questions in which they were asked to express their feelings and intentions.

After the introductory message, which explained the research purpose and ensured the necessary confidentiality, participants were presented to a brief explanation of what is a chatbot advertisement. After giving consent and agreeing to participate in the study, the participants were asked about their familiarity with chatbots. Then, the subjects were randomly allocated to one of the four experimental conditions. In the personalized treatment, they were told that they had recently purchased a house and intended to buy housing insurance while in the non-personalized condition, they were not given this statement. Next, the participants were given a scenario that they have been surfing the web, and they came across a chatbot advertisement. Based on this premise, the participants were then prompted to engage with the chatbot in order to learn more about the insurance options. They clicked on a link and were redirected to a landing page where they could interact with the chatbot. Once the participants completed the conversation, the chatbot invited the participants to return to the Qualtrics platform and

continue the survey.

3.3.2 Stimuli

For the execution of the experiment, an interactive website was developed where all participants were redirected to identical pages, each featuring the condition in the assigned condition. A visual example of the website is shown in Figure 3.2.
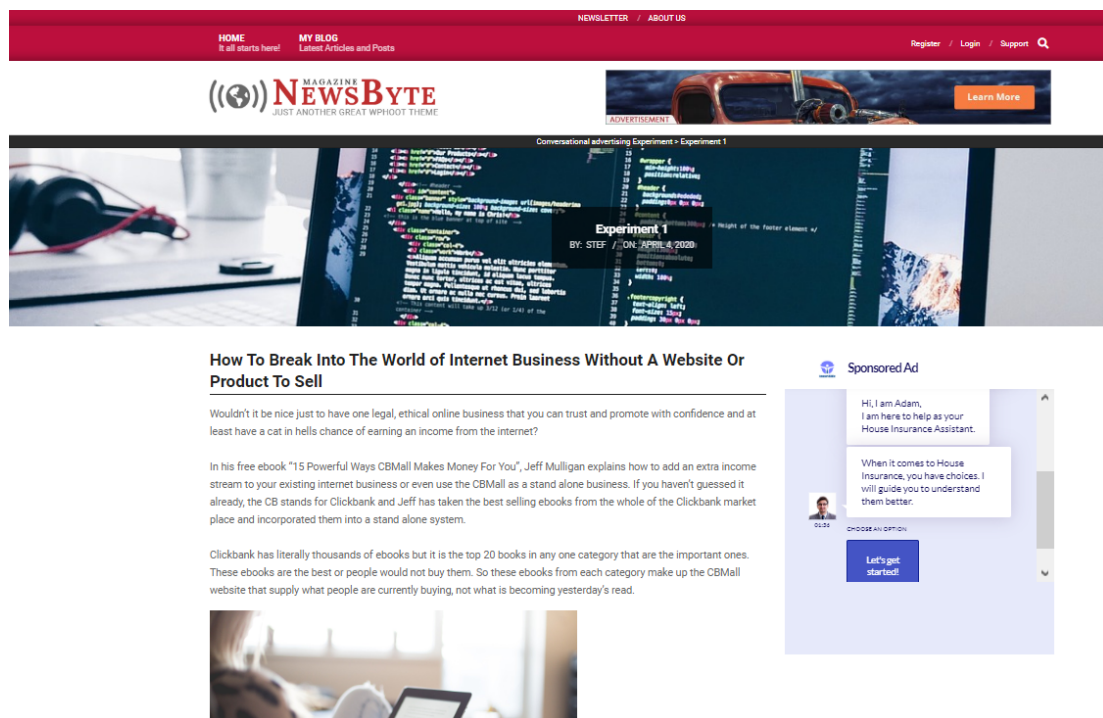
Figure 3.2: Stimulus Material Human-like/Highly Personalized Chatbot.

Furthermore, four different chatbot prototypes were developed using Landbot's platform. Landbot was selected as it had a friendly user interface; it was relatively easy to use and could be embedded into the website like a widget so that it could resemble an advertisement. Landbot supports simple rule-based chatbots and does not use any of the previous technologies mentioned (i.e. artificial intelligence), but as it was merely a prototype, the functionality was sufficient to create a minimum viable product and test our hypotheses.

3.3.3 Manipulation of anthropomorphism

To examine the influence of anthropomorphism, we designed two chatbots with different degrees of anthropomorphism. In the anthropomorphism conditions, to demonstrate verbal portrayals of anthropomorphism, the insurance advisor introduced itself and used personal pronouns like "I" and "my". Previous research suggests that using first-person pronouns trigger anthropomorphic cues (Aggarwal and McGill, 2007) thus making the chatbot appear more humanoid. Additionally, we implemented some visual cues that are summarized in Table 3.2.
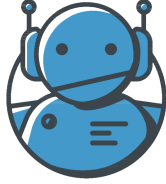
Anthropomorphism	No	Yes
Visual Cues - avatar		
Identity Cues - name	InsurAide chatbot	Adam
Verbal Cues - use of personal pronouns	Use of the third person	Personal pronouns

Table 3.2: Anthropomorphism cues: visual, identity and verbal cues used for anthropomorphism and no anthropomorphism.

The first operationalization (i.e. anthropomorphism) is demonstrated by employing a robot-like fictional picture and by using a function-oriented name ("InsurAide chatbot") while referring to it as a third person (e.g. "The InsurAide chatbot is calculating your premium"). On the second operationalization (i.e. anthropomorphized), we used an avatar that is closer to resembling a human, to enhance the humanoid appearance cues and gave him a human name. Similarly, like (Aggarwal and McGill, 2007), we applied the use of the first-person pronoun.

To check if the manipulation was successful, we adopted a scale developed by Nowak and Rauh (2017) on a 5-point Likert scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree") including the following items: "I perceive this chatbot as human", "I perceive this chatbot as realistic" and "I perceive this chatbot as cartoon-like".

3.3.4   Manipulation of personalization

According to Fan and Poole (2006) personalization in IS can be done either implicitly or explicitly.

To operationalize personalization, we adopted some variations in the experiment. The participants that fell into the personalized condition were told that they had purchased a house and were considering purchasing housing insurance. This alteration in the scenario of personalized conditions aimed to increase customers' perception that the personalized chatbot can more effectively understand their needs as they "expressed" interest in the type of product advertised.

The second operationalization was motivated by Komiak and Benbasat (2006). The chatbot in the personalization conditions informed the users that it would give them a personalized recommendation based on their data while in the non-personalization group, the chatbot stated it would help them find insurance. Some other smaller manipulations were conducted in terms of the wording used. For instance, in the personalization conditions, the chatbot asked need-based questions as it was expected to increase customers' perception that the personalization chatbot can more effectively understand and represent their personal needs than the non-personalized chatbot. Komiak and Benbasat (2006)

In both scenarios, the variables were identical, and at the end of the conversation, the chatbots recommended the same product.

3.3.5   Manipulation Checks

For this study, manipulation checks were performed as an indicator of the internal validity of this experiment. Manipulation check is a crucial component of the research as it improves the stability of the framework and verifies the implementation of the controlled factors (Foschi, 2014).

The manipulation check was conducted in order to make sure that respondents

understood the manipulations as expected. A summary of manipulation check results can be found in Table 3.3.

Condition		n	M (SD)
Anthropomorphism	No	88	2.40 (0.815)
	Yes	76	2.925(0.923)
Personalization	No	82	3.037 (0.999)
	Yes	82	3.122 (0.967)

Table 3.3: Summary of the manipulation checks for anthropomorphism and personalization.

In order to check our anthropomorphism manipulation, we used three five-point scale items ranging from 1 ("strongly disagree") to 5 ("strongly agree") from Nowak et al. (1999) including the following items: "I perceive this chatbot as human", "I perceive this chatbot as realistic" and "this chatbot looks cartoon-like". An independent-samples t-test was conducted to compare anthropomorphism in the anthropomorphism and non-anthropomorphism conditions. The test showed a significant difference between non-anthropomorphism (M=2.40, SD=0.815) and anthropomorphism (M=2.952, SD=0.923) conditions with t(162)=3.860 and p<0.001. This means that anthropomorphism manipulation was successful.

Personalization was measured with two items from a scale developed by Komiak and Benbasat (2006) on a 5-point Likert scale, including "This chatbot understands my needs" and "this chatbot knows what I want". Similarly, we followed an independent-samples t-test to check for manipulation. Unexpectedly, the test showed no significant difference in the scores for non personalization (M=3.037, SD=0.999) and personalization (M=3.122, SD=0.967) conditions; t(162)=-0.556, p= 0.579. This means that personalization manipulation was not perceived as successful in the experiment. We will discuss this limitation further in Chapter 5.

3.4 Sample

Due to restrictions on time and resources, convenience sampling was selected as the most suitable sampling method. The survey was shared through online personal messages and postings on several online social networks and forums through the personal network of the researcher.

Finally, a total of 209 responses were collected. To guarantee the data quality for our analysis, we discarded some of the participants for the following reasons: (1) 39 participants provided incorrect answers to attention filter questions (2) 6 finished the survey in less than two minutes which was considered far too fast to have completed the study meaningfully.

Our final sample consists of 164 participants. The distribution of participants in each condition is depicted in Table 3.4.

Out of the sample, 105 participants were female, and 59 were male. More than half of the participants' age ranged from 18-24 (n=88), followed by 57 who belonged in the age group between 25-34 and just 19 that belonged in any of the other groups. The participants reside in 32 different countries, with the majority living in Denmark (n=32) and Cyprus (n=26). The mean score of participants in terms of familiarity with the chatbot on a 5-point Likert scale is relatively low (M=2.61). More information about demographic details can be found in Table 3.9.

	Personalization	No personalization	Total
Anthropomorphism	37	39	76
No anthropomorphism	45	43	88
Total	82	82	164

Table 3.4: Distribution of the participants of this study along the 4 different conditions.

3.5 Quality Assessment

In order to assess the quality of this research, validity, and reliability are taken into consideration. In short, validity refers to the ability of a test to measure what it intends to measure (Saunders et al., 2016) and reliability refers to a measurement that supplies consistent results (Blumberg and Schindler, 2005).

3.6 Measurements

Table 3.5 shows the operationalization of variables that were introduced in the theoretical framework. Different scales have been used for the development of the questionnaire and were validated from previous research. The wordings were adapted to fit into the specific context of chatbot advertising.

Construct	Code	Item	Source
Perceived usefulness	PU1	This chatbot improves my performance in house insurance searching and buying.	Gefen and Straub (2000)
	PU2	This chatbot enables me to search and buy house insurance faster.	
	PU3	This chatbot makes it easier to search for and purchase insurances.	
	PU4	This chatbot enhances my effectiveness in insurance searching and buying.	
Privacy concerns	PC1	I am concerned that information collected about me by a chatbot like this could be misused.	Dinev and Hart (2006)
	PC2	I am concerned that personal information about me collected by a chatbot like this could be used in a way I did not foresee.	
	PC3	I am concerned about the privacy of personal information about me collected by a chatbot like this.	
Purchase intention	PI	It is likely that I would purchase the insurance.	Wu et al. (2010)
Click-through intention	CTI	I am inclined to click on the offer provided by the chatbot.	Aguirre et al. (2015)
personalization	PER1	This chatbot understands my needs.	Komiak and Benbasat (2006)
	PER2	This chatbot knows what I want.	
anthropomorphism	PA1	I perceive this chatbot as human	Nowak et al. (1999)
	PA2	I perceive this chatbot as realistic	
	PA3	This chatbot looks cartoon-like	

Table 3.5: Operationalization of the variables included in the theoretical framework. Wordings were adapted from the source papers to fit the specific context of the experiment.

Mediators. We measured *perceived usefulness* with four items adapted from Gefen and Straub (2000), which are based on original TAM scales proposed by Davis (1989) and by Davis et al. (1989). The scale includes the following items: "This chatbot improves my performance in house insurance searching and buying", "this chatbot enables me to search and buy house insurance faster", "this chatbot makes it easier to search for and purchase insurances" and "this chatbot enhances my effectiveness in insurance searching and buying". We used a 5-point Likert scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree"). *Privacy concerns* (PC) were measured with a scale developed by Dinev and Hart (2006) whose study was related to web interactions. The authors created a scale of 13 items, inspired by earlier work from Smith et al. (1996) and Culnan and Armstrong (1999).

Three items were adapted including ("I am concerned that information collected about me by a chatbot like this could be misused", "I am concerned that personal information about me collected by a chatbot like this could be used in a way I did not foresee." and "I am concerned about the privacy of personal information about me collected by a chatbot like this." Respondents report their level of agreement with the statements on a five-point Likert scale.

Outcome Variables *Purchase intention* was measured with a single item from Wu et al. (2010), "It is likely that I would purchase the insurance" (1=strongly disagree, 5=strongly agree). To measure *click-through intention*, we modified from Aguirre et al. (2015) to generate a five-point Likert scale and worded somewhat different to be coherent with chatbot advertising.

3.7   Randomization Check

To confirm the successful randomized assignment of participants to our experimental conditions, we conducted several one-way ANOVAs. Randomization check showed that participants did not differ across groups in terms of gender, age, education, duration spent on the survey, and familiarity with chatbots. Thus, our results indicate that these factors were not the cause of the different conditions.

3.7.1 Validity

In order to check our scale for validity, we perform a factor analysis, which is a way of testing that the relationship between observed variables and their underlying latent construct(s) exists. Although it in practice, it is possible to find factor analysis conducted with only a single item representing some factors scholars suggest that preferably four indicators should exist per construct (Hair et al., 2006). Also, we do not take into consideration the variables used for the manipulation check.

Therefore, we conduct factor analysis only for the constructs of perceived usefulness and privacy concerns. The results are presented in Table 3.6 and Table 3.7. All items loaded on the constructs that were intended to measure, with non-significant loadings on the other construct. The analysis confirms that the variables belong to their construct as expected with non-significant loadings on the other construct. The eigenvalue for perceived usefulness is 3.94 and this factor explains 56.35% of the variance. The eigenvalue for privacy concerns is 1.887 and this factor explains 26.96% of the variance. These two factors can explain a total of 83.32% of variance.

	Component	
	Perceived usefulness	**Privacy concerns**
PU1	.834	-.121
PU2	.887	-.161
PU3	.903	-.157
PU4	.872	-.183
PC1	-.200	.920
PC2	-.152	.936
PC3	-.143	.933

Table 3.6: Factor loadings and cross loadings for perceived usefulness and privacy concerns.

Variance Explained			
Factor	**Eigenvalue**	**Variance Explained**	**Cumulative Variance**
Perceived usefulness	3.945	56.354	56.354
Privacy concerns	1.887	26.964	83.318

Table 3.7: Variance explained by the first two principal components.

3.7.2 Reliability

Based on the participants' responses, the instrument's reliability was evaluated using Cronbach's alpha. Results are summarized in Table 3.8. Judged by the resulting alpha values (ranging from 0.653 to 0.939), the instrument appeared to exhibit an acceptable level of reliability. In general, an alpha greater than 0.50 is considered an adequate measurement and an alpha greater than .70 a good measurement (Taber, 2018).

Scale	Cr Alpha	Mean	Std
Personalization	0.828	3.079	1.059
Anthropomorphism	0.653	2.644	1.203
Perceived usefulness	0.909	3.446	1.135
Privacy concerns	0.939	3.719	1.168
Click-through and purchase intentions	0.794	2.871	1.182

Table 3.8: Cronbach's alpha values, mean and standard deviation of the variables of the model.

		Condition 1	Condition 2	Condition 3	Condition 4	Total
Country	Austria	0	0	1	0	1
	Belgium	0	1	1	0	2
	Brunei Darussalam	1	0	0	0	1
	Bulgaria	1	0	1	0	2
	Canada	1	0	0	0	1
	Cyprus	4	7	7	8	26
	Czech Republic	1	0	1	0	2
	Denmark	4	6	8	14	32
	Egypt	1	1	0	0	2
	France	1	1	0	0	2
	Greece	1	5	5	2	13
	Hungary	0	0	1	0	1
	India	0	0	0	1	1
	Indonesia	1	1	0	0	2
	Ireland	0	1	0	0	1
	Italy	2	1	3	0	6
	Latvia	0	0	0	1	1
	Lebanon	1	0	0	0	1
	Lithuania	0	1	1	0	2
	Malaysia	1	0	0	1	2
	Mexico	2	0	1	0	3
	Netherlands	0	1	1	1	3
	Poland	1	2	2	4	9
	Portugal	0	4	1	0	5
	Slovakia	1	0	0	0	1
	Slovenia	0	0	1	0	1
	Spain	1	1	0	0	2
	Switzerland	0	0	1	0	1
	Thailand	0	0	0	1	1
	United Kingdom of Great Britain and Northern Ireland	3	5	7	7	22
	United States of America	9	1	2	2	14
	Zimbabwe	0	0	0	1	1
Total		37	39	45	43	164
Education	High School degree	5	10	13	13	41
	Bachelor's degree	19	23	14	16	72
	High School degree	5	10	13	13	41
	Master's degree	12	5	16	14	47
	Completed a Phd degree or above	0	0	1	0	1
Total		37	39	45	43	164
Age	18-24	18	26	22	22	88
	25-34	14	11	16	16	57
	35-44	5	2	6	3	16
	45-54	0	0	1	0	1
	55-64	0	0	0	2	2
Total		**37**	**39**	**45**	**43**	**164**

Table 3.9: Demographic details of the participants of this study.

4

Results

4.1 Model-free results

The average of all respondents' answers conversational advertising bots provides a first impression of the results (see Table 4.1). The factors are all measured in a 5-point Likert Scale. Privacy concerns (PC) scored the higher result among other variables (M=3.71), followed by perceived usefulness (M=3.44). Click-through intention (CTI) has average scores (M=3.03) and purchase intention (PI) low (M=2.71). The standard deviation is around 1-1.21, which means there is a relatively distinct variability between responses.

When comparing the means across the different conditions (see again Table 4.1), we find that condition 4 (no anthropomorphism × no personalization) yields the highest mean scores in click-through and purchase intentions (M=3.37 and M=3.21 respectively), which comes in contrast to our initial hypotheses (H1 and H2) predicting that anthropomorphism and personalization would lead to better advertising outcomes. Condition 1 (anthropomorphism × personalization) scored the highest on (M=4.16) and Condition 4 (no anthropomorphism × no personalization) scored the lowest (M=3.35) on privacy concerns.

Correlations were computed among the four concepts we investigate; perceived usefulness, privacy concerns, purchase, and click-through intentions. The results are shown in Table 4.2; all the correlations coefficients were statistically significant (p<.01) and were, in absolute terms, greater or equal than r(163)=-0.26. In

general, the results suggest that privacy concerns were negatively associated with perceived usefulness and advertising outcomes (click-through and purchase intentions). Moreover, Table 4.2 shows a significantly positive relationship between perceived usefulness and advertising outcomes.

Descriptives										
		n	Mean	Std. Deviation	Std. Error		n	Mean	Std. Deviation	Std. Error
Condition 1		37	2.65	.949	.156		37	3.45	.85	.14
Condition 2	PI	39	2.67	1.221	.196	PU	39	3.56	.91	.147
Condition 3		45	2.33	1.108	.165		45	3.23	1.09	.162
Condition 4		43	3.21	1.081	.165		43	3.57	1.01	.167
Total		164	2.71	1.134	.089		164	3.44	1	.078
Condition 1		37	3.00	1.155	.190		37	4.16	.973	.16
Condition 2	CTI	39	2.90	1.231	.197	PC	39	3.69	1.01	.16
Condition 3		45	2.84	1.278	.191		45	3.72	1.03	.154
Condition 4		43	3.37	1.155	.176		43	3.35	1.24	.19
Total		164	3.03	1.216	.095		164	3.71	1.104	.086

Table 4.1: Descriptive analysis for all the hypothesis-relevant variables for each of the 4 conditions.

Correlation				
	Privacy Concerns	Perceived Usefulness	Purchase Intentions	Click-through Intentions
Privacy Concerns	1	-.345**	-.337**	-.263**
Perceived Usefulness	-.345**	1	.498**	.412**
Purchase Intentions	-.337**	.412**	1	.661**
Click-through Intentions	-.263**	.412**	.661**	1

Table 4.2: Correlation analysis showing the correlation coefficients between all hypothesis-relevant variables.

4.2 Main Effect Analysis

The first part of the analysis looks into whether the treatment variables have a causal effect on the outcome variables (i.e. click-through and purchase intention). We use linear regression, and inspect if the established hypotheses can be confirmed or rejected.

Our first two hypotheses (H1 and H2) state that the presence of anthropomorphism and personalization would lead to higher purchase and click-through

intentions. To check these hypotheses, we run two multiple regressions. In the first regression, we use personalization and anthropomorphism as the independent variables and click-through intention as the dependent. After performing the regression analysis (see Table 4.3), we find that anthropomorphism and personalization have no significant effects on click-through intention (p>0.05).

	Unstandardized Coefficients		Standardized coefficients		
Model 1	B	Std.Error	Beta	t	Sig.
(Constant)	3.223	.162		19.915	.000
Personalization Condition	-.236	.190	-.097	-1.242	.216
Anthropomorphism Condition	-.161	.190	-.066	-.844	.400
Dependent Variable: CTI					

Table 4.3: Regression analysis between the independent variables (personalization and anthropomorphism) and the depend variable (click-through intention).

We run a second regression using purchase intention as the dependent variable and the same independent variables as before (see Table 4.4). Results indicate that there is no statistical significance between anthropomorphism and purchase intention, but personalization has a significant negative effect on purchase intention (b=-0.478, p<0.01). Therefore, hypotheses H1 and H2 are rejected.

4.3 Mediation Effect Analysis

4.3.1 The role of perceived usefulness

Regression analysis was used to investigate hypothesis H3 that perceived usefulness mediates the relationship between manipulated variables and consumer evaluations; click-through and purchase intentions. A mediation analysis was conducted with "PROCESS", a plugin for SPSS, which was written by Hayes (2017). The PROCESS macro is now widely used to analyze mediation and moderation models. To test our hypothesis, we conducted a bootstrap mediation analysis (model

	Unstandardized Coefficients		Standardized coefficients		
	B	Std.Error	Beta	t	p
(Constant)	3.006	.148		20.261	.000
Personalization Condition	-.478	.174	-.212	-2.750	.007
Anthropomorphism Condition	-.115	.174	-.051	-.660	.510
Dependent Variable: PI					

Table 4.4: Regression analysis between the independent variables (personalization and anthropomorphism) and the depend variable (purchase intention).

4) with 10000 bootstraps and a 95% bias-corrected confidence interval (CI). Bootstrapping provides upper- and lower level confidence intervals. If the range of these two does not include zero, the analysis shows significance, and therefore, there is mediation.

For our dependent variable click-through intention, the indirect effect of anthropomorphism was not statistically significant, thus perceived usefulness does not mediate the relationship between anthropomorphism and perceived usefulness: indirect effect (ie)=0.0526, standard error (se)=0.0778, CI=[-0.1069, 0.2075]. We check the mediation for the other independent variable, personalization and confirm that there is no mediation: ie=-0.1184, se=0.0834, CI=[-0.2994, 0.340].

We repeat the same model, using as the dependent variable purchase intention to check if perceived usefulness is acting as a mediator. Similarly, we get similar results, and find that indirect effect of anthropomorphism is not statistically significant: ie=-0.0577, se=0.0851, CI=[-0.1090, 0.2267]. The results align when we use personalization as the independent variable; ie=-0.1300, se=0.921, CI=[-0.3269, 0.340]. Therefore we reject hypothesis H3 that perceived usefulness mediates the relationship between independent variables and behavioral intentions.

Furthermore, the results showed significant direct effects of perceived usefulness on click-through intention (b=0.5454, se=0.765, p<0.001) and purchase intention (b=0.4968, se=0.0874, p=<0.001). Therefore we confirm hypothesis H4 that perceived usefulness is positively associated with the dependent variables.

4.3.2   The role of privacy concerns

We hypothesized that privacy concerns mediate the effect of advertisement personalization on click-through and purchase intentions. To test our hypothesis, we use Hayes' mediation model 4 (Hayes, 2017).

As a first step, we check the mediation effect of privacy concerns between independent variables and click-through intention. For our independent variables, we find that there is no direct effect between personalization, anthropomorphism, and the outcome variable, click through intention. Then, we find that our independent variables personalization and anthropomorphism have a significant impact on the mediator privacy concerns (b=0.4159, p<0.05) and (b=0.3858, p<0.05) respectively. We also find that privacy concerns have significant direct effects on click-through intention. For our dependent variable click-through intention, the indirect effect of personalization through privacy concerns was statistically significant: ie=-0.1145, se=0.0604, CI=[-0.2509, -0.0160]. We repeated the process using anthropomorphism as the independent variable, and we come to the same conclusion, that there is a significant indirect effect: ie=-0.1062, se=0.0575, CI=[-0.2356, -0.121]. In other words, the results indicate that personalization was associated with click-through intention that was approximately 0.10 points lower as mediated with privacy concerns and anthropomorphism approximately 0.10. This is known as a case of complete/full mediation. There is a full mediation when the independent variable (i.e. personalization) does not have a significant direct impact on the dependent variable (i.e. click-through intention). However, it has a significant impact on the mediator (privacy concerns), which also has a significant impact on the dependent variable.

Next, we check that privacy concerns mediate the relationship between independent variables and purchase intention. From the previous model, we know that anthropomorphism and personalization are statistically significant to privacy concerns. We rerun model 4 from Hayes (2017) and check for mediation. When we use anthropomorphism as the independent variable, there is a full mediation with ie=-.1081, se=0.543, CI=[-0.2275, -0.0132]. However, using personalization as the

independent variable, we find that it has a direct effect on purchase intention with b=-0.3463 and p<0.05 and ie=-0.1322, se=0.0654, CI=[-0.2773, -0.0237]. This is known as a partial mediation and can be interpreted as; personalization decreases purchase intention, but privacy concerns also mediate the effect. Therefore, we accept hypothesis H6 that privacy concerns mediate the relationship between personalization and the dependent variables.

From the models, we come to some other findings that are worth mentioning. Our independent variables personalization and anthropomorphism have a significant impact on the mediator privacy concerns (b=0.4159, p<0.05) and (b=0.3858, p<0.05) respectively. We also find that privacy concerns have significant direct effects on click-through (b=-0.2753, se=0.0867, p<0.01) and purchase intentions, (b=-0.3177, se=0.0780, p<0.001). That is also supporting our hypothesis H5, that increased privacy concerns lead to lower purchase and click-through intentions.

4.4   Moderation effect Analysis

We hypothesized that in H7 that anthropomorphism will mitigate the relationship between personalization and privacy concerns. To test our hypothesis, we conducted a bootstrap moderation analysis using model 1 from Hayes (2017). The results of our moderation analysis showed that the effect of personalization on privacy concerns is not moderated by anthropomorphism, such as there was no significant interaction effect of personalization and anthropomorphism on privacy concerns (b=0.1005 and p>0.05). Consequently, our findings do not support H7. The complete model after the analysis is depicted in Figure 4.1.

4.5   Overview of the Hypotheses

Table 4.5 gives an overview of the 7 hypotheses and whether or not they are supported or rejected by the results of this research. We can see that 3 hypothesis
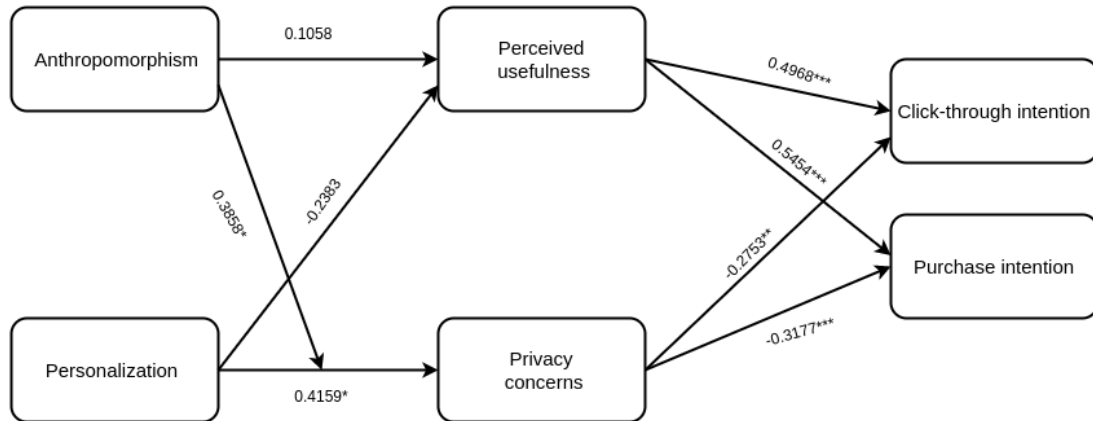
Figure 4.1: Conceptual model after the analysis.

were supported, while 4 hypothesis were rejected.

	Hypothesis	Supported?
H1	Personalization leads to higher a) click-through & b) purchase intentions.	No
H2	Anthropomorphic chatbots lead to higher a) click-through & b) purchase intentions.	No
H3	Perceived Usefulness acts as a mediator between independent and dependent variables.	No
H4	Perceived usefulness is positively related to a) higher purchase intention and b) higher click-through intentions.	Yes
H5	Privacy Concerns leads to lower a) click through and b) purchase intentions.	Yes
H6	Privacy Concerns act as a mediator between personalization, click-through and purchase intentions.	Yes
H7	Anthropomorphism moderates the relationship between personalization and privacy concerns.	No

Table 4.5: Overview of the 7 hypothesis of the study showing whether they were supported or rejected.

5

Discussion

The purpose of this chapter is to summarize and discuss the results of this study and to respond to our main research question. Furthermore, this chapter explains the theoretical and practical implications of the findings. Lastly, it explains the limitations of this study as well as suggestions for future research.

The study aimed to experimentally investigate how different levels of personalization and anthropomorphism affect advertising effectiveness of conversational advertisements. To get a more comprehensive understanding of these effects, it further studied how privacy concerns and perceived usefulness affect these behavioral outcomes. Moreover, the role of anthropomorphism as a moderator was tested in order to evaluate whether it will decrease the relationship between personalization and privacy concerns. As a result, this research provides empirical evidence and insights in regards to the possible outcomes of personalization and the assignment of anthropomorphic cues to the chatbot.

The following sections will answer and discuss the previously established main research question:

> RQ: "How does personalization and anthropomorphism influence advertising effectiveness in the context of chatbot advertising?"

5.1 Discussion of the results

Our study pursues to gain deeper insights into consumers' evaluation of personalization in the context of conversational advertising. We also wanted to investigate whether imbuing anthropomorphic cues will mitigate the effect of personalization on consumer privacy concerns. Furthermore, we looked into the mediating roles of privacy concerns and perceived usefulness on the advertising outcomes.

Based on previous studies on personalization (Aguirre et al., 2015; Wessel and Thies, 2015), we expected that personalized advertisements lead to higher click-through and purchase intentions. We hypothesized that personalized advertisements lead to higher click-through and purchase intentions in comparison to the non-personalized ones. However, hypothesis H1 was not supported by our results.

The findings indicate that advertisements' personalization did not have a positive effect on the dependent variables (click-through and purchase intentions). The findings of this study showed that personalization had a *negative* effect on purchase intention, a finding that contradicts our initial hypothesis H1.

The absence of the expected effects of personalization could be contributed to various explanations. Personalization is said to increase the appeal of an ad, because the user is more likely to assume that is matching his or her preferences (Anand and Shachar, 2009). Since participants failed to interpret the advertisements in the experiment as personalized, they may not have acquired the expected benefits. Another possible explanation is that when people are exposed to a personalized ad, they may recognize that a brand is using their personal data for marketing purposes (Okazaki et al., 2009). In return, this practice makes them resist to the ad messages (White et al., 2008). A study by Tucker (2014) suggests that personalization is only effective when consumers' privacy needs are met. This can be explained by the notions of social exchange and privacy calculus. Social exchange stems from psychology and proposes that people participate in social exchanges only if the benefits outweigh the costs (Schumann et al., 2014). Privacy calculus is a process in which consumers assess the benefits and risks of an online

behavioral advertisement (Phelan et al., 2016). Based on these theories, a consumer will positively react to an advertisement if the perceived benefits that come from personalization (i.e. relevance) outweigh any risks such as privacy invasion.

We find that the effect of anthropomorphism on advertising outcomes is not significant. Therefore, it does not support hypothesis H2 and partially contradicts previous findings. However, we observe that privacy concerns are fully mediating the relationship between anthropomorphism and the advertising outcomes. This means that there is a negative effect of anthropomorphism on click-through and purchase intention but only due to privacy concerns. Findings also contradict hypothesis H6 that anthropomorphism moderates the relationship between personalization and privacy.

According to previous studies, the mere presence of an anthropomorphic agent leads to social presence, which is the perception that the agent is real, immediate, or present (Russo, 2001; Nan et al., 2006). The Computers as Social Actors (CASA) model describes that humans are inclined to treat most everything like social entities, including chatbots (Phelan et al., 2016). A study by Choi et al. (2001) found that the presence of an anthropomorphic agent can generate a higher social presence, which results in more favorable attitudes and behavioral intentions. Our findings contradict their findings as ultimately, anthropomorphism has adverse indirect effects on the advertising effectiveness through the underlying mechanism of privacy concerns. Anthropomorphism triggers privacy concerns, and in return, there are lower click-through and purchase intentions. Previous research by White et al. (2008) suggests that when consumers feel observed, it threatens their feelings of control over their freedom and, as a result, avoid the object of intrusion – a motivational state known as psychological reactance Kiesler et al. (2008) explained this effect by the fact that people increase their concerns with being evaluated in the presence of others and reduce their willingness to disclose information. Puzakova et al. (2013) found that when consumers share personally sensitive information with recommendation agents, it triggers perceptions of being continuously monitored and scrutinized, thus creating unpleasant feelings that transform into negative attitudes towards the advertisement of interactive assis-

tants. Another possible explanation for this result can be better understood by
the theory of the uncanny valley. According to this theory, human-like technolo-
gies are perceived as more agreeable up until they become so human that people
find their nonhuman imperfections unsettling (Mori et al., 2012). Therefore, it
is possible that the condition with the more anthropomorphic appealing chatbot
backfired by creating higher expectations that it will also behave and think more
like a human. When these expectations were not met, the chatbot may have ended
up in the uncanny valley.

In line with previous studies (Boerman et al., 2017; Li et al., 2019), we found
that personalization increases privacy concerns. This can be explained by the
psychological ownership theory, which states that people often feel that they have
ownership over external objects (Pierce et al., 2001). When people are exposed to
a personalized advertisement, it evokes feelings of losing control over an external
object, in this case, their personal data (Edwards et al., 2002), and it is likely to
make consumers feel like their privacy has been infringed (Boerman et al., 2017).
This leads to several negative responses, such as provoking feelings of vulnerability
(Aguirre et al., 2015), feelings of intrusiveness (Van Doorn and Hoekstra, 2013)
and lower purchase intention (Chellappa and Sin, 2005).

We further investigated the relative importance of the direct impact of pri-
vacy concerns on behavioral intentions. Several studies have shown that privacy
concerns are negatively related to behavioral intentions and advertising outcomes
(Dinev and Hart, 2006; Sheng et al., 2006; Anderson and Agarwal, 2011; Xu et al.,
2011). Many consumers feel like they have little control over their personal in-
formation and how companies obtain them (Baek and Morimoto, 2012). Findings
support hypothesis H6. Overall, the results indicate that privacy concerns matter
and that there is a measurable relationship with the outcome variables. Our re-
sults are in line with previous studies Phelps et al. (2001); Castañeda and Montoro
(2007); Van Doorn and Hoekstra (2013). In general, we found that all consumers,
regardless of the condition group, were quite concerned about how the chatbot is
handling their personal data.

Lastly, we noticed no significant mediating effects of perceived usefulness on

the relationship between independent variables personalization and anthropomorphism and the outcomes click-through and purchase intentions, rejecting hypothesis H3. When a conversational advertisement is personalized or anthropomorphized, it does not necessarily mean that consumers perceive it as more useful, as initial hypothesized. Notably, results show that when consumers perceive advertisements as useful, the advertising outcomes are significantly positive, supporting hypothesis H4.

In general, the empirical results of this study designate that anthropomorphism and personalization do not necessarily have a positive effect on click-through and purchase intentions. They may as well have negative repercussions on the advertising effectiveness through the mediation mechanism of privacy concerns. Also, anthropomorphism is not mitigating the privacy risks that arise with personalization.

5.2 Practical and Theoretical Implications

We contribute to the IS literature by shedding light on the personalization-privacy paradox in a conversational advertising context. Through the theoretical framework of personalization-privacy paradox, this thesis furthers the theoretical contribution by examining the relationships between anthropomorphism and privacy concerns, considering differences in the advertising context. While prior research in IS has examined the relationship between personalization, privacy concerns, and behavioral intention (Chellappa and Sin, 2005), this paper is the first to incorporate the factor of anthropomorphism into the relatively established personalized-privacy paradox. We found that assigning human-like features to the chatbot is not a fruitful strategy to mitigate privacy concerns that are triggered by personalization as initially expected. In fact, employing anthropomorphic cues led to lower advertising outcomes through the mechanism of privacy concerns.

The results of the study also revealed the importance of incorporating the construct of privacy concerns into the marketing and information systems streams,

as well as the need for academics and practitioners to address privacy concerns in theory and practice. Findings have shown the relationship between privacy concerns and advertising outcomes. Suffice to say that businesses must ensure that they comply with the data protection regulations within their territory. A review of the legalities of consumer data and privacy is not within the scope of this paper. We concluded that marketers should strive to identify high-value data items that can be used to achieve the "sweet spot" in personalization that results in relevant, interesting ads that outweigh the customers' privacy concerns.

5.3   Limitations

Due to time and technical limitations, not all aspects were possible to explore related to this topic. In this section we discuss some noteworthy limitations and directions for future research.

The conclusions of this research are drawn from the analysis based on the manipulation of the degree of personalization and anthropomorphism. However, the manipulation check demonstrated that the degree of personalization did not significantly differ between personalized and non-personalized conditions. Because of this failure, the results can be biased. Two possibilities can explain the failure of the manipulation check. It could be because the operationalization of the personalization was not successful. However, it might also be the case that the chosen manipulation check is not adequate to measure personalization. However, one may argue that operationalization of personalization is, to one extent, relevant as it still captures the expected privacy concerns.

Another possible limitation relates to the method used to operationalize personalization and anthropomorphism in the study. Our experiment was designed as an online survey and we used scenarios to manipulate the different conditions of personalization and anthropomorphism. Written scenarios were presented to the subjects before capturing their perceived privacy concerns and behavioral intentions. The scenario-based experiment may have been interpreted differently by

the participants. It would be interesting to conduct a field study in future studies with a real conversational advertisement to further explore external validity.

This study is subject to sample bias as respondents are mostly highly educated Millennials contacted by means of non-probability through our personal network and groups on social media. It is possible that some of the participants were not motivated to fill in the questionnaire meaningfully. However, the reliability of our constructs is considered high enough.

The platform that we have used to create the chatbot had limited capacities in recognizing and understanding users' inputs. Therefore, participants had to follow a predefined scenario in their conversation with the chatbot. Ideally, future studies can replicate the experiment with an enhanced conversational agent that has more advanced capabilities than the menu-based chatbot, such as understanding context and engaging in "small-talk".

5.4 Directions for future research and conclusion

Due to time and technical limitations, not all aspects were possible to explore related to this topic. Some of the aspects that are interesting to be researched further. Artificial intelligence could enhance consumer's experience as the chatbot would be perceived as more "sophisticated". A more chatbot that is perceived as more useful and relevant could outweigh privacy concerns and lead to positive consumer evaluations and outcomes. It would be interesting to replicate this study when artificial intelligence is implemented. Moreover, it would be interesting to look further into the phenomenon of the uncanny valley and investigate the degree of anthropomorphism that is accepted by the customer. Further moderators and mediators which are relevant to this research could also be explored such as trust and enjoyment that might provide a more comprehensive research model.

In conclusion, the advancement of technology provides countless opportunities for companies and marketers to create inspiring and productive advertisements on

the Internet. Overall, our study is an initial step towards better understanding how the design of interfaces may improve advertising effectiveness and other behavioral outcomes in the context of conversational advertising. We hope that this study motivates future research to better understand the topic of human-chatbot interaction, that might otherwise never be revealed with a marketing focus.

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