UNIVERSITY OF TWENTE.

A VERY FORMAL AGENT

How culture, mode of dressing and linguistic style influence the perceptions toward an Embodied Conversational Agent?

Master thesis
Msc. Communication Studies
July 2020

Valeria Resendez
s2237539

1st Supervisor:
Dr. A.D. Beldad
2nd Supervisor:
Dr. J. Karreman

Faculty of Behavioural, Management and Social Sciences
University of Twente, Enschede, The Netherlands
Master specialization: Technology and Communication

Abstract

Introduction

Embodied conversational agents (ECAs) engage with users through verbal (text or speech), and nonverbal social cues (physical appearance). The increased usage of ECAs requires new studies assessing their design. Under the Computer as Social Agents (CASA) paradigm, the mode of dressing and linguistic style of ECAs can influence users' perceptions. A specific model that assesses the evaluation of linguistic style and mode of dressing for better interaction and adoption of an ECAs is the Technology Acceptance Model (TAM).

Theoretical Framework

The mode of dressing is a key element because it helps to make inferences about others such as competence, social position, status and personality, and can influence the evaluation of the organization the agent belongs to (Mehrabian & Ferris, 1967b; Rubinstein, 2018). Another important element is the linguistic style, which is usually adaptable according to the interaction's members. Additionally, linguistic style helps assessing how the interaction must be addressed and is a cue of task performance (Clark et al., 2019). The linguistic style in conversational agents influences the user-experience (Thomas et al., 2018). Literature that analyzes linguistic style for conversational agents is contradictory, increasing the need for further research.

Methodology

The study was conducted with an online experiment containing videos as stimuli and a questionnaire. The experimental design was done with a 2 (Formal dressing and casual dressing) by 2 (Formal and casual linguistic style) factors, implementing two cultural groups of respondents based on Hofstede's dimension: Individualism-Collectivism. This dimension was measured on a National level following Hofstede Insights index and in personal level with the Reduced Auckland Scale from LeFabvre and Franke (2013). Following Kitirattarkarn, Araujo, and Neijens (2019) methodology, an index was created at a personal level. Most participants were from the Netherlands, Mexico, and Germany; however, the inquiry also includes other international students.

Results

The results showed the mode of dressing has an impact on trustworthiness and perceived ease of use, while linguistic style influences trustworthiness, likeability, perceived ease of use, perceived usefulness. The interaction between the mode of dressing and linguistic style also influenced trustworthiness and perceived ease of use positively. Additionally, national participant's culture did not have a significant impact on the user's preferences. However, a comparison of the evaluations in trustworthiness between cultures and independent variables reveal collectivistic participants preferred formality in the ECA's mode of dressing. Finally, trustworthiness and perceived usefulness had an indirect effect on the linguistic style in intention to use the conversational agent.

Research contribution:

This study contributes to understanding and assessing the influences on the mode of dressing and linguistic style on user's perceptions when interacting with a conversational agent. The results also nurture research on formality and casualness styles in linguistics for organizations. Finally, the inquiry provides further evidence on the differences between personal culture over national culture.

Keywords: Embodied Conversational Agents, chatbots, culture, dressing, linguistic style

Contents

1. Introduction

Artificial Intelligence (AI) has come to change the world with devices powered by AI that can decrease costs for companies by increasing operational efficiency and effectiveness (Gursoy et al., 2019). Revolutionary technologies of AI are conversational agents (CAs), which are also known as virtual assistants, chatbots, avatars, virtual characters, and more. A probable reason for conversational agents' different terminology can be different types of embodied or disembodied CAs.

Embodied conversational agents (ECAs) engage with users through verbal (text or speech), and nonverbal social cues (physical appearance), while disembodied conversational agents, also known as chatbots, communicate mainly by automated texts (Araujo, 2018; Feine et al., 2019).

The improvements in natural language processing (NLP) had increased the demand for conversational agents. ECAs have been mainly on-demand, to support business as concierges or assistants for providing relevant information and performing simple tasks such as scheduling meetings and sending emails (Chaves & Gerosa, 2019; Quantum Capture, 2019). In this sense, it becomes relevant studying the interactions with ECAs. Firstly, because the agent as part of an organization influences the perception users will have toward the organization it belongs to. In fact, when evaluating a person or system, organizations are being evaluated too (Cardon & Okoro, 2009; Yurchisin et al.,2009). Therefore, designing positive interactions with Embodied Conversational Agents is necessary for increasing the positive evaluations of any organization.

Additionally, Diederich, Brendel, and Kolbe, (2019) emphasize that there is a lack of research focusing on embodied conversational agents that can guide on design for better interactions with the user, compared to the research in disembodied conversational agents. Literature, in general, suggests considering design and evaluation from technical and social elements of conversational agents (Aurajo, 2018; Feine et al. 2019; Diederich, Brendel, & Kolbe, 2019). The challenge of creating design guidelines for ECAs are the range of social cues that guide interactions (Feine et al., 2019).

Moreover, the recent literature (Kang, & Wei, 2018; Lee et al., 2019; Ochs et al., 2017) that addresses Embodied Conversational Agents focuses on the facial expressions and gestures to increase perceived humanness, leaving aside other verbal and non-verbal social cues that are also important for the interaction. Two of the social cues, a verbal and a non-verbal cue that the author's knowledge is not being evaluated together as variables for the evaluation of an Embodied Conversational Agent, are linguistic style and mode of dressing.

Mode of dressing is an influential aspect for any interaction because it guides the initial judgments that are enduring evaluations of a person (Bartneck et al., 2007), while linguistic style is also an essential element because it shows the clear intention of the conversational agent, and helps to evaluate the quality of the interaction (Wuenderlich and Paluch, 2017). Additionally, in Human - Human interaction, both social cues (mode of dressing and linguistic style) express personality, assessing the behaviors that the other member of the interaction must address to have a successful communication (Mehrabian, & Ferris, 1967b). Furthermore, literature (e.g. Gretry et al., 2017, Danielescu, & Christian, 2018, Tucker, & Ernestus, 2016) studying linguistic styles for organizations demonstrate contradictory results, increasing relevance of studying manipulations in linguistics to address better interactions with ECAs.

Following the phenomenon: Computers as Social Actors and Social Response Theory, which describes users treat computers with the same standards as when treating humans, ECAs can evoke a social response (Lee & Nass, 2010). The social response of ECAs increases the relevance of studying the mode of dressing and linguistic style because of its significance for Human-Human interactions, improving the understanding of other social cues that are important when interacting with an ECA and can influence its adoption.

A particular model that can assess how the mode of dressing and linguistic style design can influence the evaluation and adoption of Embodied Conversational Agents is the Technology Acceptance Model (TAM). Different studies (Beer et al., 2011; Chattaraman et al., 2019; Davis, 1989) used perceived usefulness and perceived ease of use to evaluate other social cues that influence the usage and acceptance of Embodied Conversational Agents. However, trustworthiness and likeability are also important factors that can be influenced by mode of dressing and linguistic style, and that can act as antecedents for intending to use the ECA (Brodsky et al., 2009; Chattaraman et al., 2019; Tarhini et al., 2016).

Additionally, research (Marcus 2006; Kitirattarkarn, Araujo, & Neijens, 2019; Yaaqoubi & Reinecke, 2018) suggests culture can act as a moderator in the interaction of different verbal and non-verbal communication styles. For instance, collectivistic cultures prefer detailed information to positively evaluate an interaction, while formality is also a more frequent communication style in their culture (Holtgraves, 1997; Rubinstein, 2018).

Aiming to address all the possible variables that could increase the comprehension toward the adoption of ECAs, this study employs an experimental design using BMS' Lab actual Embodied conversational agent looking to set guidelines on the design of verbal and non-verbal cues. More specifically, this research explores the extent to which (1) the mode of dressing styles designed to cover the ECA and (2) the adopted linguistic style by the ECA influence perceptions about trustworthiness, likeability, perceived ease of use, perceived usefulness and intention to use, attributed to the ECA. Moreover, the research aims to evaluate whether these two variables (3) (mode of dressing and linguistic style) interact positively affecting trustworthiness, likeability, perceived ease of use, perceived usefulness and intention to use while expanding the knowledge of how (4) culture can act as a moderator for the evaluation of mode of dressing and linguistic style. Finally, this research also (5) intends to evaluate how trustworthiness, likeability, perceived ease of use, and perceived usefulness can impact on intention to use the conversational agent. Therefore, the next research questions are proposed to guide the inquiry is:

RQ1: To what extent does mode of dressing influence the evaluation of an Embodied Conversational Agent in a positive way?
RQ2: To what extent does linguistic style influence the evaluation of an Embodied Conversational Agent positively?
RQ3: To what extent does mode of dressing in interaction with linguistic style influence trustworthiness, likeability, perceived usefulness and perceived ease of use, and the Embodied Conversational Agent's intention to use?
RQ4: To what extent does culture moderates the interaction between non-verbal (mode of dressing) and verbal communication (linguistics style) on an Embodied Conversational Agent?
RQ5: To what extent does the positive perceptions in trustworthiness, likeability, perceived ease of use and perceived usefulness influence the intention to use the Embodied Conversational Agent

2. Theoretical framework

The next sections describe the theories and research related to Embodied Conversational agents and the manipulations in mode of dressing and linguistic style, in order to understand how these social cues can influence the acceptance of ECAs.

2.1 Theories on Conversational Agents

Conversational agents can be defined as "software that accepts natural language as input and generates natural language as output, engaging in a conversation with the user" (Araujo, 2018, p. 184). However, conversational agents can be embodied or disembodied. Embodied conversational agents (ECAs) are systems that interact with the users through verbal (text or speech), and nonverbal social cues (physical appearance). On the other side, disembodied conversational agents or chatbots communicate through text messages with the users (Araujo, 2018; Feine et al., 2019). However, to understand the current relevance of conversational agents, it is necessary to describe different theories and concepts that explain the evaluations of conversational agents.

The first theory that emerges when talking about Embodied Conversational Agents is social response theory, also known as CASA paradigm. This theory states people treat and respond to computers as they do to people, despite knowing that they are interacting with machines and not humans (Moon, 2000). This theory is a central construct in Human-Computer interaction because users apply social standards to interactions with systems. In the same field, a central concept is a social presence. This concept is defined as "a social factor, specifically addressing the feeling of being present with another person in a virtual environment" (Allmendinger, 2010, as cited in Aljaroodi, Chiong, & Adam, 2020, p. 6). Additionally, it is understood as the "degree of salience of the other person in the interaction" (Short, Williams, & Christie, 1976, as cited in Go & Sundar, 2019, p. 305). In other words, social presence is a sense of connection between users and systems.

However, Schuetzler and colleagues (2018) stated that a system evoking social presence could elicit positive or negative effects according to the socially desirable responses the system gives. In this regard, if the social presence is positive, it will evoke comfortableness, which increases trust in the system. Similarly, this theory (social response theory) suggests that by increasing the degree of humanness in an Embodied Conversational Agent, users will judge the interaction according to the expectations they have with human agents (Go & Sundar, 2019). Nevertheless, the humanness of an ECA raises other theories that influence the users' perception of the conversational agent.

A critical theory related to the humanness of a conversational agent is the Uncanny Valley (1970). This theory explains how antrophormized technologies can influence perceptions of unease and discomfort. Mori's (1970) hypothesis predicts that as something looks more human-like is perceived more agreeable for users until it starts to resemble so human it is uncomfortable to interact with (MacDorman et al., 2009, 2006; Mori, 1970). Previous research (Geller, 2008; Skjuve et al., 2019) has shown that adding social features such as gestures in the human-robot interaction can reduce the uncanny valley effect. At this point, it might not be very certain if antrophormization is beneficial for the interaction with ECAs. However, research (Lulu, 2019; van Pinxteren et al., 2019) has proved it induces recognition of similarities between the users and the system, creating feelings of comfort and trust, which influence intention to use.

Another theory related to the judges' users experience when evaluating interactions with different styles in formality and casualness of dressing or linguistic style is Construal level theory (CLT). This theory explains how psychological distance influences individuals' thoughts for decision-making. The theory states that two processing styles (abstract processing and concrete processing)

occur when evaluating overall goals to perform an action, and each of this processing style influences in different ways the decision-making processes, such as information search, interpersonal choices, and probability estimates to perform an action (Trope & Liberman, 2010). Literature (Slepian et al., 2015) suggests that formality elicits abstract processing, which is related to a broad and holistic analysis of the interactions, driving users to focus on motives or ways of performance to evaluate their interactions with others, while concrete processing focuses on the details before evaluating or performing an action. This theory and processing styles become relevant when assessing the preferences of formality or casualness in communication styles.

Another significant suggestion related to the interaction with conversational agents is made by Perez and Saffon (2018), which describe female conversational agents are perceived as more trustworthy, warm, and understandable. However, it can always change depending on the conversational agent's tasks. Moreover, research suggests that female users prefer female conversational agents, while male users do not show a clear preference (Payne et al., 2013).

All these theories intend to explain the influence of conversational agents on the user's perception. However, to further understand the variables that are studied and increase explainability of conversational's acceptance, the next section provides insights into how trustworthiness, likeability, perceived usefulness, perceived ease of use, and intention to use can be related to the interaction with conversational agents.

2.2 Dependent variables and their relationship with ECAs

This research aims to provide a better understanding on how mode of dressing and linguistic style impact trustworthiness, likeability, perceived ease of use, perceived usefulness and intention to use, in order to provide guidelines that can increase technology acceptance (Beer et al., 2011; Chattaraman et al., 2019; Davis, 1989).

First, it is necessary to define trustworthiness. This concept is understood as an "assessment of whether another person or thing is worthy of trust," which applies to both humans and systems (Seymour et al., 2020 p. 4677). Trustworthiness includes the user beliefs in the conversational agent "competence, benevolence, and integrity" (Xiao & Benbasat, 2007, p.144). As described, trust is clearly a multidimensional concept, there are different dimensions in trust changing over time, according to Chung and Petrick, (2015) in the initial stages of a relationship, trust is linked to competence and the ability to fulfill what the user demands. In order to understand this concept, competence is the belief in the conversational agent's abilities and skills; benevolence refers to the agent's caring of the user, and integrity of the agent's principles and honesty (Xiao & Benbasat, 2007). Beldad and colleagues (2016) described that trustworthiness is also measured by looking at the ability-based construct and the character-based construct, the last construct, including benevolence and integrity assets. Trust in technology can also be developed if a device or equipment can help users achieve their objectives by meeting the goals indicated by the user and the relationship between the user and conversational agents (Lee & Choi, 2017). Research by Jones (2018) showed that perceived ability or competence could be a factor of trustworthiness, creating an attachment with a brand.

Additionally, literature (Nicolaou & McKnight, 2006) reveals that trustworthiness influences positive commitment while decreasing the propensity to leave a relationship. Trustworthiness is an important factor to study because it influences information and security perceptions in the usage of a device (Schuetzler et al., 2018), and can also have a significant influence on the intention to use the system. In this sense, Singh and Sinha (2020) explained that less trust in the online context might influence the usefulness, decreasing the intention to use. Literature (Nicolau & McKnight, 2006;

Tarhini et al., 2016) explained TAM and TRA models usually focus on studying perceived usefulness and ease of use to predict intention to use, however, to increase explanatory power other variables such as trust can also assess this prediction.
Therefore, other variables interacting with trust are perceived usefulness and ease of use. In this regard, to better understand perceived usefulness as a dependent variable, it is described as "the degree to which a person believes that using a particular system would enhance his or her job performance." Under the same frame, perceived ease of use is described as "the degree to which a person believes that using a particular system would be free of effort." (Davis, 1989, p.320).

Furthermore, intention to use will be understood as "the strength of one's intention to perform a specified behavior" (Nysveen, Pedersen, & Thorbjørnsen, 2005, p.6). Recommendations to increase the perceptions of usefulness and ease of use in conversational agents include effective and efficient delivery of information in a way that increases the user's productivity than other methods of interaction. Some examples on how to deliver the information are personal health assistants or personal assistants that usually enhance productivity (Brandztaeg & Følstad, 2017).

However, Brandztaeg and Følstad (2017) suggest that to create a productivity-oriented conversational agent, it also needs to have a friendly or empathic appearance and interaction to balance the system and evoke utility while evoking, enjoyment and empathy. In this sense, research (Huang, Teo, & Scherer, 2020) suggests that likeability might also be related to perceptions on ease of use and usefulness, while it can also predict intention to use (De Mooij, 2019). Therefore, in order to increase the explanatory power in this analysis, likeability is also added as a dependent variable.

According to Bartneck and colleagues (2009), users can be influenced by positive first impressions evoked by likeability that can later lead to a more positive evaluation of the conversational agent. Additionally, likeability is also related to trustworthiness, as both constructs are domains for credibility (Brodsky et al., 2009). Likeability is understood as the "quality of individuals who possess perceived pleasant characteristics, an attractive physique, and affable manners" (Aryadoust, 2017, p. 400), and is usually measured with items regarding the perceptions on friendliness, niceness, and pleasantness around others (Chen et al., 2014, p. 30). Similarly, likeability is related to verbal and nonverbal communication congruence (Aryadoust, 2017) and similarity-attraction, where users prefer similar others (Payne and et al., 2013). These two evaluations are related to the willingness of positive commitment users will try to achieve with the conversational agent (Pulles, Niels, and Hartman, 2017). However, to further understand how these variables (trustworthiness, likeability, perceived usefulness, and perceived ease of use) can mediate the intention to use the avatar, it is necessary to determine the independent variables (the mode of dressing and linguistic style) that will be used within the research.

2.3 Mode of dressing

The mode of dressing as a visual social cue, under the artifact's elements, from a CA is defined as the items worn by the conversational agent, including clothes, trousers, or elements to protect and decorate the body (Feine et al., 2019).

Two of the most common modes of dressing styles are formal and casual. The general operationalization of a formal mode of dressing includes the usage of suit and ties for males, and blouses and skirts for females, while casual dressing is related to jeans and shirts (Furnham, Chan & Wilson, 2013).

The dress is a key element because it helps make inferences (e.g., economic background, trustworthiness, social position, level of sophistication, level of success, status, personality, and moral character) about others, based on the mode of dressing (Conner, Peters, & Nagasawa, 1975; Kwon

& Johnson-Hillery, 1998). More importantly, the agent's mode of dressing also influences the evaluation of the organization it belongs to. Research (Cardon & Okoro, 2009; Yurchisin et al., 2009) suggests that the mode of dressing from the salespersons in a store influences the store's perceptions and service quality.

Research showed that (Rubinstein, 2018) the mode of dressing can act as a social cue tied to personality, and personality can help to make inferences about what to expect from social agents (Mehrabian & Ferris, 1967b). Moreover, Beer and colleagues (2011) describe that cues such as mode of dressing in social robots can also assess the robot's functionality, according to pre-existing mental models. Therefore, an appropriate match between the conversational agent's appearance and its tasks can improve its acceptance (Beer, et al., 2011).

In the educational context, Slabbert (2019) describes that professors wearing formal clothes are considered more organized, knowledgeable, and prepared, while teachers with casual clothing are perceived as friendlier, flexible, and sympathetic. Similarly, in the medical context, the casual mode of dressing is related to friendliness and approachability, but it enhances incompetence and decreases confidence (Furnham et al., 2013). In these different evaluations between knowledge as an aspect of competence and trust; and friendliness as an aspect of likeability, a trade-off effect occurs according to the mode of dressing chosen (Muramoto, Yamaguchi, & Kim, 2009).

Research assessing mode of dressing in women Broadbridge (2018), suggests females should dress masculine to gain credibility but must find a balance to avoid non-social norms. Under the same context, Beldad, Hegner, and Hoppen (2016) clarified that competence and trustworthiness are tied to certain communication cues related to more masculine communication. Therefore, formal mode of dressing is used to obtain respect, be perceived as professional, less approachable, socially distant, and less familiar (Slepian et al., 2015). Additionally, Slepian and colleagues described that formal mode of dressing enhances abstract cognitive processing. Abstract processing is described as a holistic evaluation of the interaction, which helps to focus on the motives of the agent. This type of processing helps users to evaluates all aspects of the interaction (Slepian et al., 2015).

The studies in non-dynamic agents have demonstrated that the mode of dressing had a significant effect on showing trust by influencing perceptions in warmth, friendliness, and competence (Legde & Cunningham, 2019). Additionally, because the mode of dressing is an expression of personality and a social cue, it influences the functional perceptions toward the conversational agent, such as perceived ease of use and perceived usefulness (Beer, et al., 2011). Therefore, the next hypothesis follows:

H1: Users exposed to the formal mode of dressing of an ECA will evaluate the conversational agent better in trustworthiness (a), likeability (b), perceived usefulness (c), perceived ease of use (d), and intention to use (e) than the users exposed to the casual mode of dressing.

2.4 Linguistic style

In human-human communication, one of the most common forms of interaction is through linguistic style, which is adaptable depending on the members who interact (Clark et al., 2019). Linguistic style is defined as "the way text is written, referring to the type of language used" (Hernández-Ortega, 2018, p.35). It is an important feature because the words used to portray a specific personality. Linguistic style as a social cue and descriptor of personality assesses how the interaction must be addressed and how a task will be performed (Perez & Saffon, 2019; Shamekhi et al., 2016; Wuenderlich & Paluch, 2017). This way, in conversational agents' linguistic style, can influence the user-experience (Thomas et al., 2018). Moreover, different studies (e.g., Gretry et al., 2017,

Danielescu, & Christian, 2018, Tucker, & Ernestus, 2016) report there is a lack of literature studying manipulations in linguistic style, increasing the significance of evaluating its impact on the interactions with conversational agents.

The two most common linguistic styles are formal and casual. According to Gretry and colleagues (2017), formal style is opposed by casual linguistic style. On one side, the formal linguistic style is mostly used in informational and business situations, and it is characterized by long words and passive voice, mostly used when lack of familiarity between speakers occurs (Brodsky et al., 2019; Sheika & Inkpen, 2012). Additionally, formality is perceived as the most critical modification in style because it helps to determine the level of social distance and shared knowledge. However it also helps to increase perceptions in expertise and authoritativeness, leading to more trustworthiness and perceived usefulness of the information provided (Pavlick & Tetreault, 2016; Zimmermann, & Jucks, 2018), and because formality is related to politeness, research (Percival & Pulford, 2019) indicate people are rated better in likeability when being polite. Moreover, similar to mode of dressing, formal linguistic style can enhance abstract processing (Slepian et al., 2015). This way of abstract processing can induce an overall evaluation of the agent.

On the other side, casual linguistic style is also mostly used between familiar members. Some examples of the operationalization of casual linguistic style include abbreviated expressions, such as "thanks" and direct reference toward the user, such as "hi" (Gretry et al., 2017, p.76).

Further, Feine and colleague (2019) operationalized the casual linguistic style emphasizing first and second person instead of the third person. The studies related to a casual linguistic style suggest that it helps to increase motivation, better retention of the information delivered, and a closer social distance that increases familiarity among the members of the interaction (Lin et al., 2020; Hernández-Ortega, 2018), while in conversational agent casual linguistic style is mostly used to increase rapport and common-ground with the users (Danielescu, & Christian, 2018; Perez & Saffron, 2019)

Similarly, studies on reviews in online context determine casual linguistic styles can also increase the perception of trustworthiness and usefulness (Hair & Ozcan, 2018), contrary to reports by Zimmermann and Jucks (2018). Moreover, a study (Gretry et al., 2017) in content analysis expressed organizations are more prone to implement casualness in their linguistic style, claiming it evokes closeness with the audiences, leading to trustworthiness in the relationship. However, this research (Gretry et al., 2017) demonstrated that organizations should implement a formal linguistic style in the initial stages of interaction.

Following the different studies (Gretry et al., 2017; Pavlick & Tetreault, 2016; Zimmermann, & Jucks, 2018) suggesting formal linguistics for initial interactions, the next hypothesis is formulated:

H2: Users exposed to the formal linguistic style of the ECA will evaluate better the conversational agent in trustworthiness (a) likeability (b), perceived usefulness (c), perceived ease of use (d), and intention to use (e) than the users exposed to casual linguistic style.

2.5 Interaction between mode of dressing and linguistic style

Although to the author's knowledge, mode of dressing, and linguistic style has not been evaluated jointly as variables for assessing interaction in ECAs, both are social cues that complement each other. For instance, mode of dressing is a non-verbal social cue that determines the expectations toward linguistic style as a verbal social cue. When talking about verbal and non-verbal communication, congruence is a concept that must be taken into consideration. Research by Lichtman (2017) explains that congruence between verbal and non-verbal messages is done concerning the

similarity between the signals, meaning that a need for enhancement is needed to evoke congruence. However, Lichtman (2017) explained that not all congruence is positive because some congruence can have negative cues that elicit a negative congruence affecting the interaction negatively with other users. This research is aligned with the general stereotype content theory. This theory proposes two dimensions for the evaluation of others: warmth (friendly and sincere people) and competence (capable, competent and skillful people), suggesting that sometimes a combination of positive and negative cues are better evaluated than two negative cues (Cuddy et al., 2019).

Additionally, when talking about congruence, the consistency paradigm needs to be addressed. According to Kruglanski and colleagues (2017), consistency is the degree to which one cognition implies the other. For example, if a person is dressed formally, but does not interact in a formal way, it can cause inconsistent perceptions toward the user's expectations. Therefore, consistency is a "cognitive relation among the beliefs represented in the user's mind" (Kruglanski et al., 2017, p.46). Similarly, research by Burgoon and Le Poire (1999) and colleagues explain highly consistent activities are positively related to pleasantness and high involvement, while low, consistent cues in verbal and nonverbal communication are related to poor interaction management and egocentrism. Therefore, according to Gong and Nass (2007), any manipulation on the system needs to be consistent with the pre-established user's mental model to increase their trust. Following Gong and Nass (2007) study a match between verbal and non-verbal communication cues can make it easier for users to evaluate their interactions. Further, Gong and Nass (2007) demonstrated that people look for consistency in appearance, personality, and background, between systems and the way they interact with others. Moreover, Mirnig and colleagues (2017) found that congruence in the verbal and non-verbal communication of the agent would make it appear more anthropomorphic and likable.

Other studies (e.g., Klipfel, Barclay, and Borckorny, 2014; Suh, Kim, & Suh, 2011) suggest that products and systems, in general, are perceived as symbols that can be purchased or used frequently when congruence between the product and the users' self-perception match. Therefore, congruence goes beyond the Embodied Conversational Agent itself; assessing congruence must align with the users' perception.

H3: Users exposed to the congruent interaction between the linguistic style and the mode of dressing increases the perception of trustworthiness (a), likeability (b), perceived usefulness (c), perceived ease of use (d), positively influence intention to use (e) the avatar than the users exposed to the non-congruent interactions.

2.6 Mediating intention to use

One of the most critical aspects of developing technology is achieving its acceptance. To predict acceptance, most models refer to the intention to use (Davis, 1989). Intention to use is understood as “the strength of one’s intention to perform a specified behavior” (Nysveen, Pedersen, & Thorbjørnsen, 2005, p.6). Frequently, the intention to use is predicted by a positive evaluation of perceived usefulness and perceived ease of use (Davis, 1989). However, trust has also become an important factor in predicting intention to use new technologies. Recent studies have demonstrated that more trust toward a product leads to more proneness to use it (Schuetzler et al., 2018). Moreover, literature (Nicolau & McKnight, 2006; Tarhini et al., 2016) suggests that it is important to add variables to the TAM traditional model to increase explanatory power. Therefore, in addition to trust as a mediator for intention to use, research (e.g. Nowak, Hamilton, & Hammond, 2009, De Mooij, 2019) suggests that likeability can also influence the acceptance of the technology. For instance, better ratings in likeability elicit behavioral intention; for example, better ratings in antrophormization

can influence likeability influencing trustworthiness and increased intention to use a product (De Mooij, 2019). Likeability is also related to trustworthiness because both factors are aspects of credibility (Brodsky et al., 2009). Therefore, following recommendations and research (e.g., Brodsky et al., 2009; Nicolau & McKnight, 2006; Nowak, Hamilton, & Hammond, 2009, De Mooij, 2019; Tarhini et al., 2016), these two variables are added as mediators of mode of dressing and linguistic style to increase the explanatory power toward intention to use. The next hypothesis is formulated:

H4: The positive evaluations in trustworthiness (a), likeability (b), perceived usefulness(c) and perceived ease of use (d) will influence indirectly on intention to use the conversational agent than the negative evaluations in trustworthiness, likeability, perceived ease of use and perceived usefulness.

2.7 Culture as a moderator

As stated by Poggi and colleagues (2005), different physical contexts can provide various resources to the population, resulting in a set of different beliefs that influence the relationship within its members. In order to further understand the relationship of an ECA within its users, it is necessary to introduce culture as a moderator of the preferences among users. Hofstede's (2001) research for cultural dimensions provides a framework for understanding the influence of culture on trustworthiness, likeability, perceived usefulness, ease of use, and intention to use the conversational agent. Culture is understood as "the collective programming of the mind that distinguishes the members of one group or category from others" (Hofstede, 2011, p.1).

Culture as a central feature for belief, norms, and practices can influence practical communication styles (Kitirattarkarn, Araujo, & Neijens, 2019) and preferences in mode of dressing (Aljaroodi, Chiong, and Adam, 2020). Culture can be studied in two ways: typically, cultural studies occur at a national level, usually using one of Hofstede's cultural dimensions. This approach can encounter limitations because individuals in the same culture can have their own identity, and those tendencies can also be part of an individual (Kitirattarkarn, Araujo, & Neijens, 2019). Similarly, literature (Kitirattarkarn, Araujo, & Neijens, 2019; Tarthini & colleagues 2016; Yoo, Donthu, & Lenartowicz, 2011) is continuously suggesting that culture must be analyzed on a personal level. Therefore, it is important to question the influence of personal culture on national culture to understand the extent to which personal perspectives assess on cultural evaluations.

Furthermore, one of Hofstede's cultural dimensions, mostly used in marketing and psychology, is Individualism-Collectivism. This cultural dimension is popular because it helps to evaluate the user's preferences on a personal level and it is related to individual decision-making styles (Marcus, 2006; Masoumian, 2020; Yaaqoubi, & Reinecke, 2018). Moreover, one of the most significant claims is that individualistic cultures tend to be more autonomous and have loose ties between other groups, while collectivistic cultures care about others and their needs (Hofstede, 2011).

The relationship between collectivistic cultures and dressing is explained by Min Ju (2008), stating that collectivistic cultures are conscious of what others wear, while individualistic cultures prefer to maintain their own styles. In addition, research (Aljaroodi, Chiong, & Adam, 2020; Payne, Johnson, & Szymkowiak, 2012) suggests that in online worlds, culture influences the way an agent should dress. They claim that agents should dress according to their cultural background to increase intention to use, for instance, if there are cues that assess an agent is muslin, the dress must be aligned to that cue, to enhance social presence and increase a sense of connection between users and ECAs. Similarly, Aljaroodi, Chiong, and Adam (2020) explained that the inappropriate mode of dressing according to the user's cultural background might decrease trust.

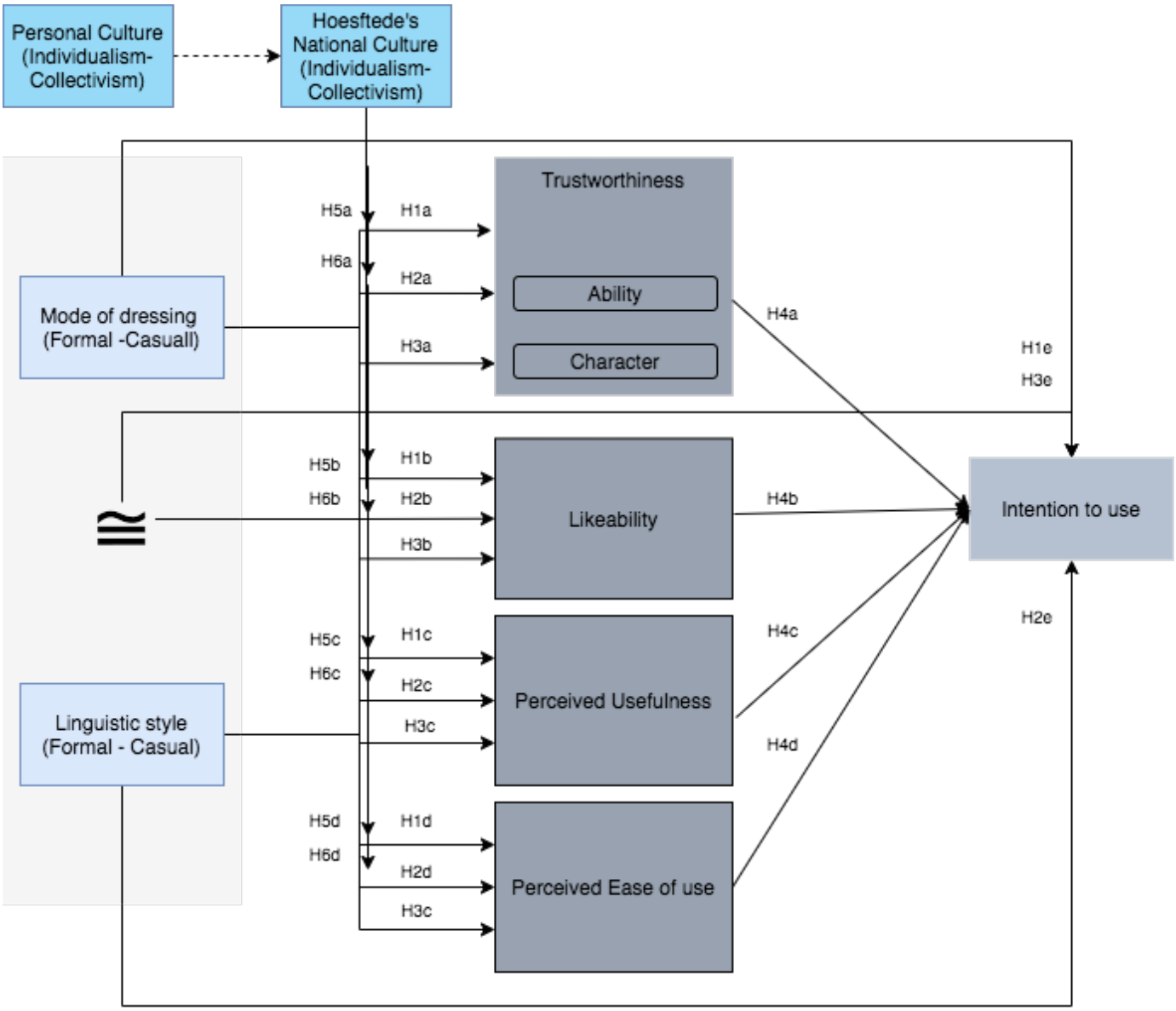
Additionally, the association between cultures and linguistic style is linked to the preferences in style delivery of a message. Individualistic cultures tend to focus on the overall content of the message, while collectivistic cultures prefer details (Liu, 2016). Moreover, the literature suggests individualistic cultures prefer a casual linguistic style that can be considered as more direct and friendly than a formal linguistic style associated with hierarchies and competence, which is generally preferred by collectivistic cultures (Amarasinghe, 2012; De Mooij & Hofstede, 2010; De Mooij, 2019; Dumitrescu, 2013). Finally, according to literature (Klipfel, Barclay, and Borckorny, 2014; Suh, Kim, & Suh, 2011), users tend to prefer systems that align with their self-perception, suggesting that users prefer conversational agents that are more similar to them. Therefore, the hypothesis about culture goes as followed:

H5: Participants with high collectivism culture will have a better perception in trustworthiness (a), likeability (b), perceived more usefulness(c) and perceived ease of use (d) of an Embodied Conversational Agent with a formal mode of dressing than participants from high individualistic countries.

H6: Participants with high collectivism culture will have a better perception in trustworthiness (a), likeability (b), perceived more usefulness(c) and perceived ease of use (d) of an Embodied Conversational Agent with a formal linguistic style than participants from high individualistic countries.

Finally, the research model to describe the inquiry is detailed in Figure 1. The figure shows the expected influence on the mode of dressing and linguistic style on trustworthiness, likeability, perceived usefulness, and perceived ease of use, impacting the outcome variable: intention to use. Additionally, an interaction effect between the mode of dressing and linguistic style is expected to guide the user's perceptions. Moreover, it is presumed personal culture moderates' national culture as a moderator for trustworthiness, likeability, perceived usefulness, and perceived intention to use.

Figure 1: Research model with hypothesis.



3. Research methodology

3.1 Methodology and Experiment Design

In order to show the importance of mode of dressing and linguistic style of a conversational, in this research, an online experiment with videos as stimuli and a questionnaire based in Qualtrics was created. The experimental design was done with a 2 (Formal dressing and casual dressing) by 2 (Formal and casual linguistic style) factors, implementing two cultural groups of respondents based on Hofstede's dimension: Individualism-Collectivism. The cultural groups were created considering Hofstede's index per country (Hofstede Insights, 2020), participants from the Netherlands, United States, Finland, Italy, Germany, and Sweden were considered high individualistic, while participants from Mexico, India, China, Vietnam, Indonesia, and Romania were categorized as collectivistic. Additionally, to explore the influence of personal culture on each individual, the participant's personal Individualism-Collectivism was measured, and an index was created following Kitirattarkarn, Araujo, and Neijens (2019) methodology. The index and country comparison are added in Appendix 13. Similarly, the design of this experiment is detailed in Table 1.

Table 1. 2x2 experimental design with 4 conditions and 1 moderator

Condition number	*Mode of Dressing*	*Linguistic Style*	*National Culture*
Condition 1	Casual	Formal	Individualistic
Condition 2	Formal	Formal	Individualistic
Condition 3	Formal	Casual	Individualistic
Condition 4	Casual	Casual	Individualistic
Condition 1	Casual	Formal	Collectivistic
Condition 2	Formal	Formal	Collectivistic
Condition 3	Formal	Casual	Collectivistic
Condition 4	Casual	Casual	Collectivistic

This experiment is based on the Computers Are Social Actors (CASA) paradigm (Moon, & Nass, 1996; Nass, & Moon, 2000), using a female Embodied Conversational Agent of the University of Twente (BMS LAB). The information given by the ECAs is related to the BMS and intends to explain the requirements needed by the BMS Lab to provide facilities to the students and employees. The experiment counts with ethical approval from the University of Twente to ensure the participants' privacy and safety.

3.2 Materials

The stimuli were four different videos of a user asking questions to the conversational questions. The videos were recorded only showing the agent, while subtitles were placed to show the conversation. The first interaction was a casually dressed avatar speaking formally (Condition 1) to the user. The

second included a formal mode of dressing with a formal linguistic style (Condition 2). In contrast, the third was formally dressed but using a casual lexicon with abbreviations to address the user (Condition 3). Finally, the fourth condition used a casual mode of dressing and casual linguistic style (Condition 4). Each video used voice and subtitles to attract the users' attention and facilitate the interpretation of the interaction. The estimated time of the videos was 1 minute with 30 seconds.

The mode of dressing was created using a UMA component based in Unity, which provided the elements for changing the avatar's clothing. For the formal model, a suit was used, while the casual Embodied Conversational Agent wears a blue t-shirt with pink letters (Figure 5 & 6).

Figure 2 Formal ECA

Figure 3 Casual ECA

The linguistic style included a formal linguistic style and a casual linguistic style. The formal linguistic style was evoked by proper grammar, punctuation, polite words like please and indirect address of the user. The constructions on formality of linguistic style were based on PERSONAGE (Mairesse & Walker, 2007) and the recommendations on modifying lexicon and word length (Guerini, Falcone, & Magnini, 2018; Pavlick and Tetreault, 2016). On the other hand, the casual linguistic style was created following Pavlick and Tetreault (2016) advice, which includes using slangs and abbreviations for colloquial language. Therefore, the casual linguistic style includes popular slangs such as “qwest” referring to “questions” and “pls” (Table 2).

It is also important to mention, the interaction with the conversation was speech-based. For this reason, subtitles were added to direct attention in the linguistic interaction of the Embodied Conversational Agent and the user. Moreover, the video and the official language of the survey were set up in English, the university’s official language.

Table 2: Linguistic style

Formal linguistic style	Casual linguistic style
1. **Start:** Good morning, My name is Sam, BMS Lab virtual assistant. It is a pleasure to meet you! It is possible to discuss about the facilities, services or equipment reservation of the Laboratory. 2. **Where is the BMS Lab?** I recognize you would like to know the location. I understand. The BMS Laboratory is situated at the Universitey of Twente, Cubicus building in the second level. 3. **How can I reserve?** Oh! I notice you would like to reserve, please enter our website: WWW.BMS lab.U twente.nl and inspect it there. 4. **What is the BMS Lab?** The BMS lab is astonishing; it supports scientists and students of the social sciences to obtain the benefits offered by innovative technologies for investigation. As a matter of fact, BMS lab has a range of facilities and equipment, such as, virtual reality, sensors, and recording equipment. 5. **What are the facilities?** All right, facilities. The BMS Lab allocates rooms for development, for instance, applications and different software, rooms for observing and contacting others, additionally, extraordinary flexible laboratory spaces for virtual reality, and a mobile laboratory that will support you to do distant research! 6. **After every question:** Would you like to know further information? 7. **Bye:** Goodbye 8. **If the avatar does not understand:** Oh, I apologize. I did not understand that inquiry. Is it possible to repeat the request trying modifications please?	1. **Start:** Hi, I'm Sam, BMS Lab V.A., glad to see yaa! We can chat 'baut the facilities, services or equipment reservation of the lab. 2. **Where is the Bms lab?** Oh wanna know the spot! gotya find us at Uni of Twente, Cubicus build, at the sec floor. 3. **How can I reserve?** Oh! I see you wanna book, pls enter the website at WWW.BMS lab.U twente.nl and dig there. 4. **What is the Bms lab?** BMS lab is cool; it helps scientists and students of the social sci to get the benefits given by new tech for invs. By The Way, we have a lot of facilities and gadgets, like vr, sensors and recording tools. 5. **What are the facilities?** Okey dokey, so facilities, BMS Lab has rooms for devp, you know apps and diff software, rooms for scanning and meeting others, also cool flex lab spaces for VR, and a mobile lab that will help you to do remote research! 6. **After every question:** Wanna know more info? 7. **Bye:** See ya 8. **If the avatar does not understand**: Oh sorry, Dunno that qwest. Can you redo your qwest trying changes pls?

3.3 Pre-test

A pre-test was conducted to identify problems regarding measuring the variables and instruments being used. The pre-test intended to measure an influential manipulation check regarding formality and casualness in a mode of dressing and linguistic style of an Embodied Conversational Agent. The conversational agent was pre-tested first, with 18 participants that interacted with the ECA. Later due to the coronavirus pandemic, the experiment was moved to an online-based environment.

During the initial stages of the experiment, participants could recognize the ECA was dressed in a formal or casual style. Nevertheless, while interacting with the ECA, it was harder to focus on the conversational agent's linguistic style. Therefore, in the online version of the experiment, subtitles were added to the conversation.

The items used for mode of dressing were measured based on previous research's definitions and operationalization (Aljaroodi, Chiong, & Adam, 2020; Furnham, Chan & Wilson, 2013; Legde, & Cunningham, 2019). These variables were measured in a 7-point semantic scale; examples of the items included: "I believe the organization's conversational agent is dressed for a business setting" "I think the organization's conversational agent is dressed in a formal way" (Appendix 7). Similarly, for linguistic style, a 7-point semantic scale was used. However, the items included: "I believe the organization's conversational agent sounded approachable" "I believe the organization's conversational agent sounded colloquial." The items were also created based on previous research's definitions and operationalization (Feine and et al., 2019; Guerber et al., 2019; Mairesse & Walker, 2007; Pavlick & Tetreault, 2016).

The online experiment was pre-tested with 12 students different from the University of Twente. The results showed an effective manipulation check for mode of dressing (p-value = 0.00), the formal mode of dressing showed (m=2.37, sd= 1.01) and casual mode of dressing (m=5.0, sd=1.05). Similarly, linguistic style was also effectively manipulated (p value= 0.00), formal linguistic style (m=3.58, sd=.41), while casual linguistic style (m=5.54, sd=0.56). The pre-test also provided insights for adding qualitative spaces that can assess the direction of the complete experiment.

3.4 Manipulation check

The manipulation check was added to the online questionnaire; the items are the same used for the pretest, such as: “I think the organization’s conversational agent is dressed in a formal way” and “I believe the organization’s conversational agent sounded colloquial” (Appendix 7). The study focused on measuring the effect of formality in the mode of dressing and linguistic style. Therefore, during the experiment, a casual and formal mode of dressing and linguistic style was tested. This way, to measure a significant difference between both styles, a sample t-test was conducted. Results showed a significant variance between formal mode of dressing (m = 6.21, sd= 1.3), and casual mode of dressing (m = 1.85, sd= 1.41) with a of t (163.64) = 20.90, and p-value = 0.00, while the formal linguistic style (m = 2.50, sd=.1.42) , and casual linguistic style (m = 6.19, sd=1.11) with t (154.93) = 18.818, and a p-value = 0.00. The results confirmed that respondents recognized a difference between a formal and casual mode of dressing and linguistic style. The factor analysis was done to test the reliability of the items. Both independent variables (mode of dressing and linguistic style) demonstrated reliability with a Cronbach’s Alpha of 0.82 and 0.80, respectively. Similarly, the items for each variable loaded as different factors (Table 3).

Table 3. Factor analysis manipulation items

Item	**Factor1**	**Factor2**
Linguistic style - Distance	0.69	
Linguistic style – Setting	0.95	
Linguistic style - Formality	0.97	
Linguistic style - Elaboration	0.95	
Mode of dressing –Setting		0.97
Mode of dressing - Formality		0.98
Mode of dressing –Authoritativeness		0.93
	Mode of dressing	**Linguistic style**
Explained Variance	.46%	.40%
Cronbach's Alpha	0.82	0.80

3.5 Respondents

Since this research required participants to use an online browser, the focus was on respondents using online channels. Therefore, respondents were approached through social media, online forums, SONA system, and snowball sampling groups.

Participants' mean age was 23.63 (sd=2.64); the range age is between 18 and 34. The 60% (n = 102) of the sample were females. Similarly, 53% (n=90) of the participants reported that the current level of studies was Master, followed by 41% (n=69) studying the Bachelor; only 4% (n=7) was coursing their Secondary School and 1%(n=3) doing a Ph.D. The students following a master's in engineering represented 48% (n=44) of their sample (n=90), while students from Business, Management, and Social Sciences represented 52% (n=46). On the side, 75% (n=52) of participants that their current level of studies was Bachelor were mainly coursing a Social Science degree, while only 24% (n=17) studied Engineering.

Additionally, the sample was made by different nationalities. Participants were mostly from the Netherlands 42% (n=71), Mexico 27% (n=45), and Germany 17% (n=28) (Appendix 12). Under this frame, participants with an individualistic national culture represented the 64% (n=108) of the sample. At a personal level, 60% (n=101) of the sample were individualistic participants (Appendix 12). Finally, 135 participants reported to have previously used a virtual assistant such as Alexa, and 92 participants responded that they have previously used a Chabot.

3.6 Procedure

Participants (N = 198) were randomly assigned to one of the four conditions. The total sample included incomplete answers (24 participants), and inaccurate answers (5 responses); therefore only 169 respondents were used to analyze the variables. The next table describes the total of participants per condition as well as the participants assigned by personal and national culture (Table 4).

Table 4. Participants and cultural dimension per condition

Condition	Respondents	Personal Culture	Respondents	National Culture	Respondents
1 Casual-Formal	41	Collectivistic	17	Collectivistic	17
		Individualistic	24	Individualistic	24
2 Formal-Formal	42	Collectivistic	18	Collectivistic	15
		Individualistic	24	Individualistic	27
3 Formal-Casual	40	Collectivistic	12	Collectivistic	16
		Individualistic	28	Individualistic	24
4 Casual-Casual	46	Collectivistic	21	Collectivistic	12
		Individualistic	25	Individualistic	34

As previously described, each participant was randomly assigned to one of the conditions. First, participants were asked demographic questions such as gender, the current level of education, nationality, and previous usage of chatbots or virtual assistants. Second, their personal individualism-collectivism dimension was also validated (Appendix 1 & Appendix13). The purpose of this evaluation was also to compare nationality and personal individualistic or collectivistic level.

After that fragment of items, participants were exposed to one of the conversations with the Embodied Conversational Agents. After being exposed, the participants continue filling the questionnaire with items related to trustworthiness, likeability, perceived usefulness, perceived ease of use, and intention to use the conversational agent. Once the questionnaire measuring the dependent variables was finished, a small fragment of the interaction with the agent was shown to test the manipulation. Finally, the users add a comment related to the Embodied Conversational Agent to understand their personal opinions further.

3.7 Measurement items

The following section describes the type of items used to measure each of the variables. The model had 5 dependent variables and one moderator. Most answers are given on a 7-point Likert scale, from 1 “strongly disagree” to 7 “strongly agree”.

Nevertheless, to measure likeability, a 7-point semantic scale is used. All the scales are previously used in similar contexts with high validity and reliability.

Individualism-Collectivism dimension

National Individualism- Collectivism

The cultural groups were created considering Hofstede's Individualism-Collectivism index per country (Hofstede Insights, 2020), and they were coded as dummy variables.

Participants from the Netherlands, United States, Finland, Italy, Germany and Sweden which have a ranking higher than 50%, were considered highly individualistic, while participants from Mexico, India, China, Vietnam, Indonesia and Romania having a score lower than 50% for individualism deemed to be collectivistic.

Personal Individualism- Collectivism

The Individualism – Collectivism dimension was also measured for each participant. The Reduced Auckland Scale from LeFabvre and Franke (2013) was used. In this scale, 14 items (7 measuring individualism and 7 measuring collectivism) measure the whole dimension. The scale, previously tested by LeFabvre and Franke (2013), showed acceptable reliability: $\alpha > 0.67$. The following questionnaire is used to measure individualistic and collectivistic traits. In the appendix (Appendix 1), items are indicated with I or C to indicate which questions belong to the Individualism or Collectivism dimension of the scale. Some examples for measuring individualism include: "I define myself as a competitive person" and "I like to be accurate when I communicate".

On the other side, Collectivism is measured with items such as "Before I make a major decision, I seek advice from people close to me" and "I sacrifice my self-interest for the benefit of my group". Each question was implemented on a 7 Likert scale from "strongly agreed to strongly disagree".

However, as a multidimensional construct, an index or composite figure was needed to analyze each individual's effects. The index was computed with the mean in Individualism and Collectivism, and then Collectivism was subtracted to Individualism (C-I). The negative values suggest an Individualistic value, while positive showed a tendency of Collectivism. This way of creating the index is validated by different studies (Kitirattarkarn, Araujo, & Neijens, 2019; Taras, Steel & Kirkman, 2013).

Trustworthiness

As a multidimensional concept, trustworthiness includes assets of competence, benevolence, and integrity (Xiao & Benbasat, 2007). However, Beldad and colleagues described that trustworthiness could be measured by measuring the ability-based construct and the character-based construct. The last construct (character-based) includes benevolence and integrity as assets. This scale was previously used in a similar context.

Therefore, the items used for this inquiry are built under the scale from Beldad, Hegner, and Hoppen (2016) (Appendix 2). In this research, the scale is used on a 7 Likert scale ranging from 1=" strongly disagree" to 7= "strongly agree". Some examples of the items for character-based were: "I believe the organization's conversational agent does business with my interests in mind," while an item or ability-based was: "I think the organization's conversational agent is competent." The items in this scale are also highly reliable, with $\alpha = 0.95$.

Likeability
Likeability is measured by using a semantic differential scale developed by Bartneck and colleagues (2009). These items are also used in the context of social robots. The semantic differential scale used in the research was based on 7 points with four items. As an example of how these items were structured: "I believe the organization's conversational agent is: nice." "I believe the organization's conversational agent is: awful", "I believe the organization's conversational agent is friendly." "I believe the organization's conversational agent is unfriendly." The complete semantic differential scale can be found in Appendix 3. The reliability of these items are also acceptable with $\alpha = 0.95$. Details can be found in Table 6.

Perceived Usefulness
Perceived Usefulness are two variables used in the TAM model. The items used for this research are adapted from using Davis (1989) and validated in a similar context with Embodied Conversational Agents by Song (2019).

As an example of these items included, "I think using the organization's conversational agent can help me accomplish tasks to increase my productivity." "I think using the organization's conversational agent can improve my performance at accomplishing tasks." (Appendix 4). The scale was measured based on a 7-point Likert scale ranging from strongly disagree (score = 1) to strongly agree (score = 7).

Perceived Ease of Use
The same way, perceived ease of use was measured using six items adapted from Davis (1989) and validated in a similar context by Song (2019). The items used "I believe learning to use the organization's conversational agent would be easy for me", "I think I would find it easy to get the organization's conversational agent what I want it to do" (Appendix 5). These items were also measured based on a 7-point Likert scale ranging from strongly disagree (score = 1) to strongly agree (score = 7).

Intention to Use
Intention to use was measured using Venkatesh et al., (2012) UTAUT2. The three questions assessed by this model were used, plus one item regarding the probability of using the conversational agent was added. The items were measured with 7-point Likert scales, ranging from strongly disagree to strongly agree. Participants were asked about items: "I intend to use the organization's conversational agent in the next months", "I believe I would use the organization's conversational agent in the next few months", "I am planning to use the organization's conversational agent in the next months", and "The probability I will use the organization's conversational agent is high" (Appendix 6).

3.8 Construct Validity and Reliability

Dependent variables
Construct validity can help demonstrate the online-based experiment measurements as an appropriate way of measuring the experiment. The first factor analysis was done only with the dependent variables (trustworthiness, likeability, perceived ease of use, and perceived usefulness). Before conducting the Factor Analysis, a scree test to analyze how many factors were reliable for the factor analysis. The test suggests 5 for a Principal Component Analysis and 5 for Factor Analysis. The factor analysis was done with the five factors suggested by the test and by theory. All items loaded in a specific factor with a fit greater than 0.05 (Table 5).

Table 5: Factor Analysis Dependent Variables

	Factor1	***Factor2***	***Factor3***	***Factor4***	***Factor5***
Trustworthiness	0.57				
Trustworthiness	0.52				
Trustworthiness	0.68				
Trustworthiness	0.69				
Trustworthiness	0.70				
Trustworthiness	0.65				
Trustworthiness	0.74				
Trustworthiness	0.74				
Trustworthiness	0.78				
Trustworthiness	0.74				
Likeability					0.75
Likeability					0.68
Likeability					0.55
Likeability					0.67
Perceived Usefulness				0.64	
Perceived Usefulness				0.73	
Perceived Usefulness				0.81	
Perceived Usefulness				0.77	
Perceived Usefulness				0.75	
Perceived Ease of Use		0.62			
Perceived Ease of Use		0.54			
Perceived Ease of Use		0.71			
Perceived Ease of Use		0.77			
Perceived Ease of Use		0.70			
Perceived Ease of Use		0.76			
Intention to Use			0.90		

Intention to Use	0.86				
Intention to Use			0.86		
Intention to Use	0.79				

	Trustworthiness	***Perceived Ease of Use***	***Intention to Use***	***Perceived Usefulness***	***Likeability***
Explained Variance	.20%	.14%	.12%	.12%	.08%
Cronbach's Alpha	0.95	0.95	0.95	0.95	0.95

Personal Culture as Moderator

The personal culture as a moderator of national culture, personal individualism-collectivism dimension was evaluated separately to avoid misalignment with the other variables. The Individualism-Collectivism construct is a bi-dimensional construct; for that reason, two factors were used for the factor analysis. The items measuring Collectivism are loaded in factor 1, while items measuring Individualism are loaded in Factor 2. Although some of the items are loaded under the 0.5 thresholds, the reliability test measuring Cronbach's Alpha suggests that all items are acceptable (0.82 and 0.78, respectively) (Cortina, 1993). The next table (Table 6) details the items and loadings.

Table 6: Factor Analysis Moderator

	Factor 1	***Factor 2***
Competitivity - Individualism		0.66
Advice - Collectivism	0.58	
Competition- Individualism		0.68
Consideration of friends- Collectivism	0.72	
Communication accuracy- Individualism		0.43
Friends decision making – Collectivism	0.79	
Career decision – Collectivism	0.80	
Sacrifice – Collectivism	0.47	
Indirect language – Collectivism	0.33	

Responsibility – Individualism		0.36
Personal identity – Individualism		0.36
Winning – Individualism		0.81
Individuality – Individualism		0.47
Family decision making – Collectivism	0.52	

	Collectivism	**Individualism**
Explained Variance	.21%	0.18%
Cronbach's Alpha	0.82	0.78

4. Results

The main effects proposed in the theoretical framework, along with the interaction effects, were tested with a Multivariate analysis of Variance (MANOVA). The test used to interpret the measure was Wilk's Lambda in order to understand the power of each variable in the model. Following MANOVA analysis, simple ANOVAs were performed to analyze mode of dressing and linguistic style effects on each dependent variable (trustworthiness, likeability, perceived ease of use, perceived usefulness, and intention to use). Additionally, the indirect effects and possible mediations were tested with Hayes (2009) PROCESS Macro. Finally, the reviews collected at the end of the survey were categorized according to sentiment analysis to understand users' expectations and feelings better.

4.1 Main effects

4.1.1 Mode of Dressing

Mode of dressing has an overall significant effect (λ=0. 91, f (5,149) = 2.66, p=0.02) in the study. However, when evaluating the results for each dependent variable with a simple ANOVA, mode of dressing is only significant for trustworthiness (p=0.00), and perceived ease of use (p=0.00) (Table 8). The test confirms a slightly better evaluation in the formal mode of dressing for trustworthiness (m=4.83, sd=0.77) than the casual mode of dressing (m=4.49, sd=0.81). Moreover, formal mode of dressing for perceived ease of use was better rated (m=5.01, sd=0.87) than the casual mode of dressing (m=4.62, sd=0.91). Further analysis of correlation demonstrated trustworthiness and perceived ease of use have moderated correlation r (162) = .62, p = 0.00. The correlation between trustworthiness and perceived ease of use is assessing perceptions on qualifications and capability, translating it into better attitudes in becoming skillful at managing the system. Likewise, as suggested before, the first impression is evaluated with cues such as mode of dressing. Therefore, Hypothesis 1 (a and c) is partially confirmed with these results. Although likeability, perceived usefulness, and intention to use showed similar patterns with the means, the standard deviation was larger; therefore, no statistical significance was found. This way, the formal mode of dressing does not support a significant influence on perceived likeability, perceived usefulness, or intention to use for the conversational agent, and hypothesis 1 (b,d,e) are not supported. The details of each means, standard deviations, f-values, and p-values are described in Table 7.

Table 7. Mode of Dressing Mean, Standard Deviation and ANOVA

Dependent Variables	**Formal Mode of Dressing**		**Casual Mode of Dressing**			
	M	**SD**	**M**	**SD**	**F**	**P**
Trustworthiness	4.83	.77	4.49	.81	9.52	0.00
Likeability	4.74	1.18	4.56	1.08	0.93	0.33
Perceived Ease of Use	5.01	.87	4.62	.91	7.07	0.00
Perceived Usefulness	3.89	1.08	3.76	1.0	0.30	0.58
Intention to Use	3.33	1.25	3.31	1.25	0.00	0.47

4.1.2 Linguistic Style

The Multivariate Analysis of Variance demonstrated linguistic style has significant influence with (λ=0. 81, f(5,149)=6.88, p=0.00). Similarly, to measure the linguistic style's hypothesis and influence in each dependent variable, a simple ANOVA test was performed. All dependent variables were statistically significant when compared to the linguistic style. Later the means and standard deviations of each are also measured. Trustworthiness was better rated (m=5.01, sd=0.70) than a casual linguistic style (m=4.31, sd=0.76). Likability showed similar parameters; the formal linguistic style was preferred (m=5.03, sd=1.00), rather than casual linguistic style (m=4.38, sd=1.12). Perceived usefulness was rated better with a formal linguistic style (m=4.04, sd=1.01) than a casual linguistic style (m=3.63, sd=1.03), the same occurred for perceived ease of use, the formal linguistic style was preferred (m=4.96, sd=0.78) than a casual linguistic style (m=4.66, sd=1.00). Finally, a formal linguistic style (m=3.52, sd=1.14) was preferred than a casual linguistic style (m=3.11, sd=1.31) for intention to use. These results confirmed that formal linguistic style is perceived positively for trustworthiness and likeability as dimensions for credibility and perceived ease of use, perceived usefulness, and intention to use as functional outcomes for technology acceptance. Therefore, this hypothesis 2 (a,b,c,d,e) is accepted (Table 8).

Table 8. Linguistic Style Mean, Standard Deviation and ANOVA

Dependent Variables	**Formal Linguistic Style**		**Casual Linguistic Style**			
	M	**SD**	**M**	**SD**	**F**	**P**
Trustworthiness	5.24	.87	4.38	.97	39.33	0.00
Likeability	5.03	1.00	4.28	1.12	19.94	0.00
Perceived Ease of Use	4.96	0.78	4.66	1.00	5.45	0.02
Perceived Usefulness	4.04	1.01	3.62	1.03	6.65	0.01
Intention to Use	3.53	1.14	3.11	1.31	3.78	0.05

4.1.3 National Culture

The national culture hypotheses suggested that collectivistic cultures would evaluate a better formal mode of dressing and formal linguistic style than individualistic cultures. However, the influence of national culture within the other variables was measured with a Multivariate Analysis of Variance, and a non-significant effect was found (λ=0. 95, f(5,149)= 1.27, p=.27). Therefore, hypothesis 6 and 7 are rejected. However, a comparison between means, showed collectivistic cultures rated better formal-formal interactions for trustworthiness, showing a possible guideline that for collectivistic cultures formality of dressing does have impact in their perceptions (Figure 4).

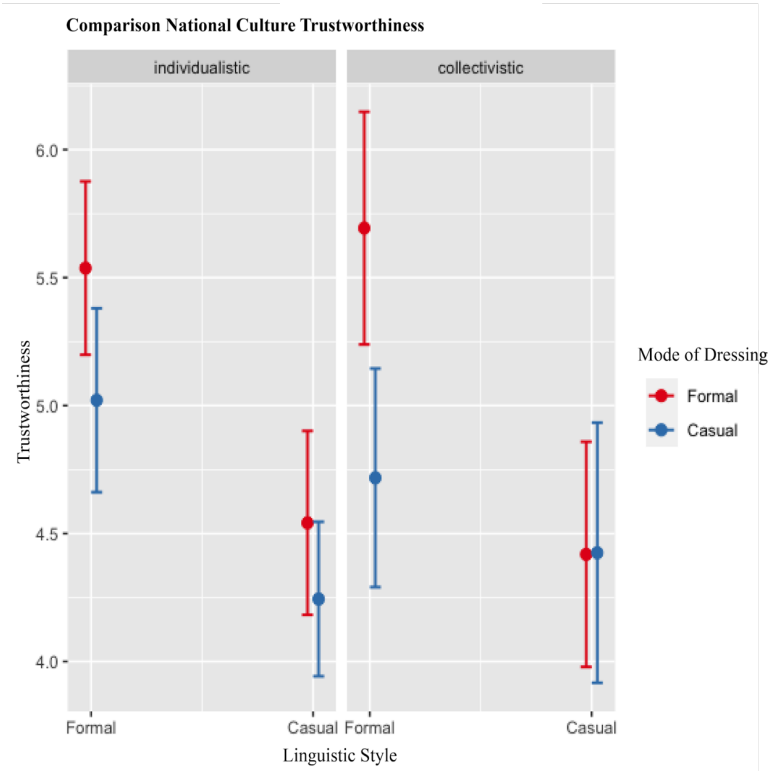


Figure 4. Trustworthiness tendency

4.2 Interaction Effects

A multivariate analysis of variance (MANOVA) was conducted to analyze the hypothesis regarding interaction effects. For instance, mode of dressing and linguistic style was evaluated to test if possible, congruence effects increase the evaluation in trustworthiness, likeability, perceived ease of use, perceived usefulness and intention to use. Additionally, to analyze the influence of personal culture on national culture the Hayes's approach was used (Hayes 2009, Model 3).

4.2.1 Mode of Dressing * Linguistic Style

Hypothesis 3 suggested a consistent mode of dressing with the same style in linguistic style will have better perceptions on the users. The interaction between mode of dressing and linguistic style showed a relatively significant effect (λ=0. 92, f(5,149)= 2.28, p=.04). Post hoc tests with simple ANOVAs confirmed trustworthiness and perceived ease of use were significant. However, this hypothesis needs to be considered carefully because the formal-formal style showed better evaluations, but trends in casual-casual congruence did not demonstrate better perceptions (Appendix 12). These trends suggest that not all congruence is positive. It also must be considered the positive evaluations in trust and perceived ease of use are related to Gong and Nass (2007) research, which describes a match between verbal and non-verbal communication cues make it easier to evaluate for users. Therefore, the correlation between trustworthiness and perceived ease of use must be considered when assessing the mode of dressing and linguistic style for better acceptance.

Table 9. Mode of Dressing * Linguistic Style influence in Dependent Variables

DV	F	P value
Trustworthiness	4.63	0.03
Likeability	2.56	0.11
Perceived Ease of Use	7.36	0.00
Perceived Usefulness	0.33	0.56
Intention to Use	1.17	0.28

Table 10. Mode of Dressing * Linguistic Style comparison among Dependent Variables

DV	Formal Mode of Dressing		Casual Mode of Dressing		Formal Linguistic Style		Casual Linguistic Style	
	M	SD	M	SD	M	SD	M	SD
Trustworthiness	4.83	.77	4.49	.81	5.24	.87	4.38	.97
Likeability	4.74	1.18	4.56	1.08	5.03	1.00	4.28	1.12
Perceived Ease of Use	5.01	.87	4.62	.91	4.96	0.78	4.66	1.00
Perceived Usefulness	3.89	1.08	3.76	1.0	4.04	1.01	3.62	1.03
Intention to Use	3.33	1.25	3.31	1.25	3.53	1.14	3.11	1.31

4.2.2 National Culture * Personal Culture

The question related to personal culture influencing national culture showed non-significant effects over national culture. The question was explored following Kitirattarkarn, Araujo, and Neijens (2019) methodology, the analysis was done with Model 3 of Hayes (2009) PROCESS Macro using linguistics as the main variable and mode of dressing as covariate, later the same analysis was repeated but adding mode of dressing as the main variable and linguistic style as covariate. However, no interaction effects were found (Table 11), unless for perceived ease of use in the slope for mode of dressing (B=.24, t(160)=1.99, p=.04), suggesting that personal culture does have an influence on how users perceived the usefulness of a product according to their appearance. Additionally, it must be noticed that personal culture does not always comply with national culture (Appendix 13).

Table 11. Personal Culture * National Culture comparison over Dependent Variables

DV	Linguistic Style				Mode of Dressing			
	B	t	p	df	B	t	p	df
Trustworthiness	0.20	0.12	0.90	160	0.04	0.36	0.71	160
Likeability	0.05	0.31	0.75	160	0.05	0.41	0.68	160
Perceived Ease of Use	-0.06	-0.43	0.66	160	-.12	-1.12	0.26	160
Perceived Usefulness	0.02	-0.54	0.58	160	.24	1.99	0.04	160
Intention to Use	0.18	1.23	0.33	160	0.28	1.86	0.06	160

4.3 Mediation Effect toward Intention to use

The analysis for measuring the influence of the dependent variables on the intention to use was tested with multiple regressions. It must be remarked that because MANOVA demonstrated culture was not significant and had no significant interactions with any of the independent variables, it was not considerate for path analysis or mediation analysis.

First, intention to use was regressed with mode of dressing (B=-.112 *t*(162)=-0.68 p=0.49) and linguistic style (B=.024 *t*(162)=0.13 p=0.88). In order to continue evaluating the indirect effects that occurred in the model and following recommendations on literature on new approaches for mediation (Hayes, 2009; Zhao, Lynch, & Chen, 2010) mediation is still possible although c' path is non-significant.

Therefore, path a was regressed. A positive effect significant of linguistic style was found in trustworthiness (B=0.845 *t*(166)=6.1 p=0.00), likeability (B=0.748 *t*(166)=4.54 p=0.00), perceived usefulness (B=0.418 *t*(166)=2.64 p=0.00), and perceived ease of use (B=0.282 *t*(166)=2.06 p=0.04). Similarly, mode of dressing was significantly correlated to trustworthiness (B=0.44 (166)=3.21 p=0.00) and perceived ease of use (B=0.372 *t*(166)=2.72 p=0.00), however not significance was found for likeability (B=0.147 *t*(166)=.892 p=0.37) and perceived usefulness (B=0.107 *t*(166)=0.68 p=0.49).

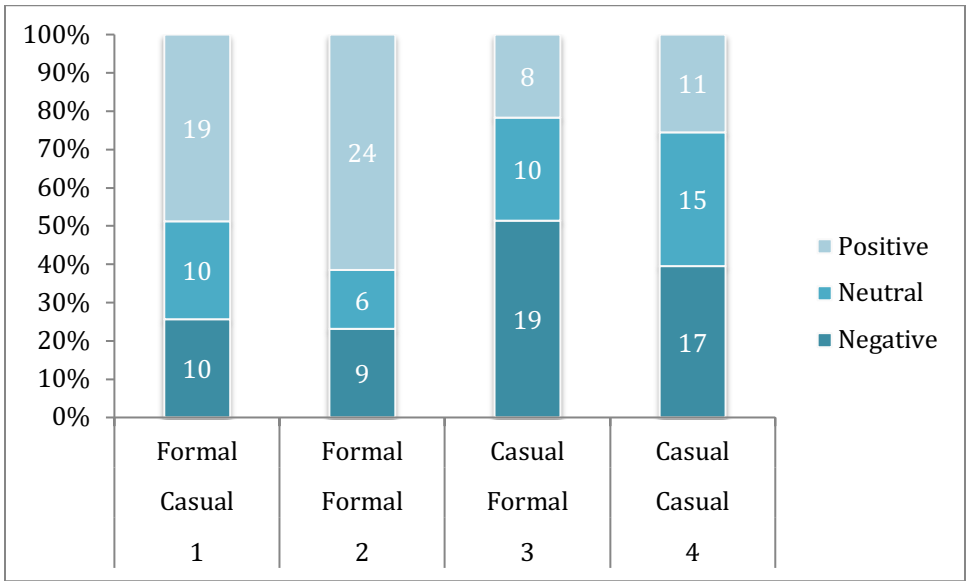
All dependent variables were regressed for intention to use, trustworthiness (B=0.3131 *t*(162)=0.10 p=0.01 CI = 0.2 to .56) and perceived usefulness (B=0.653 *t*(162)=7.08 p=0.00 CI = 0.06 to .49) were positively correlated with intention to use and also significant. However, likeability (B=-0.126 *t*(162)=-1.25 p=0.21 CI = -0.31 to .08) and perceived ease of use (B=-0.181 *t*(162)=-1.57 p=0.11 CI = -0.15 to .02) were negatively correlated to intention to use and non-significant. Hereby, the results showed that an indirect-only mediation occurred for trustworthiness and perceived usefulness. These results showed that trustworthiness and perceived usefulness are important predictors for intention to use the conversational agent. The figure detailing the paths coefficients and significance are added in Appendix 14.

4.4 Comment analysis

Additionally, 157 reviews were collected to analyze other aspects that were not measured during the experiment. Similar to the previous analysis, the most influential aspect of a positive evaluation was

a formal linguistic style. This qualitative data was categorized into sentiments with an algorithm provided by Monkeylearn (2019). The tool helped to establish a positive, negative, or neutral sentiment described with words. The conditions testing the formal linguistic style (1 & 2) were rated better than those with a casual linguistic style (3 &4). Finally, the formal linguistic style and formal mode of dressing had more positive reviews than the other conditions (Figure 6).

Figure 6. Review analysis



Similarly, with the NLP python analysis, the most frequent words were extracted for analysis. The words' frequencies showed that “good” and “nice” were the most frequent adjectives to describe the Embodied Conversational Agent. However, weird and informal referring to the ECA’s way of speaking also stands out. Some comments on the facial expressions and roboticness of the voice were also done. The complete review per condition is added in the Appendix 12.

5. Discussion

The aim of the study was to research the influence in mode of dressing and linguistic style in variables such as trustworthiness, likeability, perceived ease of use and usefulness to assess how Embodied Conversational Agents such dress and talk for increasing intention to use. The results show that these two social cues (mode of dressing and linguistic style) as personality cues (Mehrabian, & Ferris, 1967b) impact on how a conversational agent is perceived. Therefore, manipulations in mode of dressing and linguistics have an influence on the expectations and social interactions the ECA must fulfill, giving the system a perception of social agent (Moon, 2000; Go & Sundar, 2019).

It is also important to address the social presence concept, as described by Schuetzler and colleagues (2018), the perceptions in trustworthiness, likeability, perceived usefulness and perceived ease of use are rated according to the socially desirable response given by the conversational agent, in this case, the formal linguistic style influenced positively that socially desirable responses, while formality in mode of dressing increased perceptions in trustworthiness and perceived ease of use.

The manipulations in formality can be related to the processing style described in Construal Level theory, stimulating a holistic evaluation of the conversational agent, evoking more informed decisions and interpersonal choices, in other words the formal mode of dressing could enhance users to evaluate holistically the interaction with the conversational agent, therefore users could evaluate ECA's formal mode of dressing, evaluating as well the linguistics, increasing the preferences in trustworthiness and perceived ease of use of it (Trope & Liberman, 2010). However, the social distance evoked by formality also increases the rationale for perceived usefulness, which influenced non-intention to use the conversational agent.

Additionally, it must be considered other aspects of the conversational agent that impact the interaction with users, such as the facial expressions and the roboticness of the voice, as suggested in the comments (Appendix 12). This is aligned with Feine and colleagues (2019) suggest that from a big taxonomy of social cues in a conversational agent not all are equally important. Similarly, these features are related to uncanny valley theory (Mori, 1970). Although the resemblance of an Embodied Conversational Agent is beneficial for increasing intention to use, the lack of movement and gestures does influence the user's perception of intention to use, and these points were constantly mentioned in the reviews of the conversational agent (Appendix 12).

Mode of dressing

The particular ANOVA tests for each dependent variable demonstrated the mode of dressing was significant for trustworthiness and perceived ease of use. Additionally, one of the key findings is that perceived ease of use is high-medium correlated with trustworthiness, this way, the formal mode of dressing in the Embodied Conversational Agent increased the perceptions in honesty, competence, capability and well-informed that assessed the user into how ease would be to use the conversational agent in how easy it would be to manage the conversational agent into doing what the user expects, this correlation enhanced the perceived ease of use the conversational agent. Firstly, this is also aligned to suggestions made by Beldad, Hegner, and Hoppen (2016), who described competence and trustworthiness are tied to certain communication cues such as masculinity, this way the formal mode of dressing guides user's trustworthiness in the ECA. Similarly, the formality in dressing influenced the perceptions of trustworthiness proving also cues for the quality of the system, this is aligned with Creusen and Schoormans (2005), who suggest that appearance can address quality perceptions.

Moreover, no significant impact on mode of dressing assessing likeability, however different authors (Muramoto, Yamaguchi, & Kim, 2009; Furnham et al., 2013; Slabbert, 2019) described the formal mode of dressing could increase perceptions in how organized or prepared is a person, while

casual mode of dressing induces friendliness and flexibility, therefore, the statistical significance in trustworthiness and perceived ease of use, but the lack of significance in likeability, can suggest a trade-off effect on competence vs. friendliness occurring. On the other side the non-significant impact on perceived usefulness and intention to use suggest that this particular social cue does not affect user preferences for technology acceptance, instead other features as described in reviews such as scheduling meetings or booking the devices must be added to increase perceived usefulness and intention to use, as previously mentioned by Brandztaeg and Følstad (2017).

Linguistic Style

Additionally, linguistic style had an impact on the different dependent variables. First, it can be observed that formal linguistic style could evoke competence of the Embodied conversational agent by noticing the significant impact on trustworthiness. Second, although research (Kim, Lee, & Gweon, 2019) suggests casual conversation styles were perceived friendlier, the results of this study suggest that highly casual conversational styles are not always positive, and in that sense, users prefer formality. Moreover, many organizations are preferring the casual linguistic style to address their users, however, aligned with Gretry and colleagues (2017) the results in this research showed it is not always positive to address the user in a casual manner. Moreover, although formality is related to social distance (Pavlick & Tetreault, 2016), users described it does not affected negatively the impressions toward a conversational agent, instead, because formality is related to politeness the formal linguistic style in the ECA was positively evaluated in trustworthiness, likeability, perceived usefulness, perceived ease of use and intention to use. Similarly, highly colloquial conversational agents can decrease functionality perceptions such as perceived usefulness and perceived ease of use, decreasing intention to use as well. This way, at least in initial stages of the interaction it is important the ECA shows formality and politeness to enhance positive evaluations (Percival & Pulford, 2019).

5.1 Interaction Effects

Mode of dressing*Linguistic Style

In addition, the Multivariate Analysis of Variance showed an interaction effect between the mode of dressing and linguistic style. However, this interaction was mainly significant in trustworthiness and perceived ease of use, similarly to the significant impact of mode of dressing on those two constructs.

In this sense, the results indicate formality in the mode of dressing and linguistic style influence in a positive way trustworthiness and perceived ease of use. As Gong and Nass (2007) described, the consistent modification in formality through the mode of dressing and linguistic style increased users' trust. Their research also suggests congruence effects make it easier for the users to evaluate the experience; this can explain why the interaction was also significant for perceived ease of use. Moreover, because trustworthiness is related to perceived ease of use and the interaction between mode of dressing and linguistic style could influenced how users perceive the interaction, the congruence effect could assess the easiness to manage the conversational agent. Therefore, as Creusen and Schoormans (2005) suggest the appearance and linguistic styles can evoke functional outcomes, such as perceived ease of use.

Additionally, it must be remarked that not all congruence is positive, according to Lichtman (2017), because some social cues can have negative messages; when two negative cues are aligned, a negative congruence is evoked. It does not have the same effect as positive congruence with two positive cues. Another theory linked to the better evaluations in the formal-formal conversational agent than the casual-casual is the general stereotype content theory, which proposes two dimensions for evaluation: warmth (friendly and sincere people) and competence (capable, competent and skillful

people). In this case, the formal conversational agent in the linguistic style and mode of dressing could be evaluated as competent. In contrast, the casual conversational agent could be perceived as disgusting (Cuddy et al., 2019). Finally, although research (Aryadoust, 2017; Mirnig et al., 2017; Pulles, Niels, and Hartman, 2017) suggested consistent verbal and non-verbal communication could influence anthropomorphism and likability, in this case, likeability was not significant.

Personal*National Culture

Additionally, it was expected that personal culture influenced the national culture of participants, which at the same time influenced preferences on mode of dressing and linguistic style. Although different research (Aljaroodi, Chiong, and Adam 2020; Payne, Johnson, & Szymkowiak, 2012; Poggi et al., 2005), suggested culture influences different beliefs and therefore, different behaviors are expected, the results in this experiment were not statistically significant for most variables to provide culture as evidence of preference in dressing and linguistic style. The only slope that was significant was perceived usefulness, suggesting that personal culture have an influence on how users examine the conversational agent according to their appearance, this is aligned with Rubinstein (2018), which describes mode of dressing impact cultural aspects. However, for the non-significant variables, one possible explanation of the preference toward the formality, especially in linguistic style is that it resembles more to a natural conversational, aligned to user's interactions and self-perception rather than a highly colloquial linguistic style, these lines up with research by Klipfel, Barclay, and Borckorny (2014), as well as, Suh, Kim, and Suh, (2011) which suggests systems should resemble as much possible to a user.

Moreover, although in the analysis trustworthiness were not significantly moderated by the national culture, further analysis showed collectivistic cultures tend to trust more formality in mode of dressing and linguistic style. This trend can show how collectivistic participants prefer formality; therefore, it is important to consider their preferences when designing a conversational agent. Likewise, it is important to notice that as mentioned by literature (Tarthini & colleagues 2016; Yoo, Donthu, & Lenartowicz, 2011) culture must be considered at personal level, this research provided evidence to believe that Hofstede's dimensions in a country level are not always aligned in a personal level (Appendix 14).

5.2 Mediation Analysis

The mediation analysis suggests that although mode of dressing and linguistic style are not directly related to intention to use the conversational agent, indirect effects through trustworthiness and perceived usefulness influence intention to use. This confirms what is well studied in literature (Davis, 1989; Nysveen, Pedersen, & Thorbjørnsen, 2005; Schuetzler et al., 2018). Therefore, in order to increase the acceptance of embodied conversational agents it is important that designers evaluate the usefulness of their product and increase trustworthiness on it. A simple way to enhance trustworthiness in the conversational agent is through formality in the mode of dressing and linguistic style, however, if the conversational agent can perform other activities such as booking devices, it is probable that users will use more often the conversational agent.

6. Implications

This research has several implications for future research. For instance, the mode of dressing as well as the linguistic style used by the agent are significant when evoking trust.

6.1 Practical Implications

The first practical implication is that in a high technological educational context with internationals, it is easier to find personal, individualistic perspectives rather than collectivistic. The increase in individualism implies that users cannot be categorized into one culture according to the country they belong to (Appendix 13). Other factors affect the personal individualism-collectivism perspective of each individual. Although no significant effects on culture were found, the analysis shows collectivistic cultures prefer formality compared to individualistic cultures, therefore, it is important that when designing a conversational agent in an international community, some formal characteristics are added to increase trustworthiness for collectivistic users; especially in initial stages of the interaction or when the conversational agent has recently been launched.

Second, the linguistic style of the ECA can influence positively or negatively interactions with the users in a more significant way than the mode of dressing. According to the results of this study, it is better to create an informative formal conversational agent in the mode of dressing and linguistic style than a casual one for educational organizations. This way, users can trust and interact more naturally with the conversational agent. The congruence in the formality of both aspects (mode of dressing and linguistic style) influence positively trust and perceived ease of use, while casual-casual interactions did not have the same effect. These evaluations show not all congruence is positive, designers and organizations should address for positive congruence using positive cues such as formality in the mode of dressing and linguistic style for better evaluation of their users. This recommendation also implies that formal linguistic style does not always increase social distance; on the contrary, the relationship of formality with politeness influenced trustworthiness, likeability, perceived usefulness, and perceived ease of use positively. Organizations should address formal mode interaction, especially during initial stages of the communication, to help the users relate with the brand (Gretry et al., 2017).

Another practical implication is that the conversational agent's linguistic style has an impact on different variables, increasing the relevance of adding the proper words to the ECA's responses. This linguistic style can also influence functional qualities and, more importantly, users' experience with the agent. The reviews in this research also suggest users prefer interactions that resemble human-human interaction (Appendix 12).

Moreover, it is necessary to add functional features to the conversational agent to increase perceived usefulness, as suggested by Brandztaeg and Følstad (2017), and described in the reviews (Appendix 12). Some examples of these features include the capability to make reservations or inform the availability of devices.

This implication is also aligned with Huang, Teo, & Scherer's (2020) suggestion that a system needs to be balanced between being friendly and empathic to demonstrate it is easy to use and useful.

Finally, there are other aspects of the interaction with conversational agents such as the roboticness of voice, and the facial expressions that can increase trustworthiness and intention to use the conversational agent. These cues are important to consider when creating a conversational agent because it can give humanness to the interaction, engaging more with the participants.

6.2 Theoretical Implications

The research also demonstrates theoretical implications. For instance, when interacting with conversational agents, users do perceive the systems as another social being and evaluate it as they would assess a social being. A remarkable demonstration is a review that suggests a person would not interact casually with another human on their first interaction (Appendix 12). This implication is aligned with the CASA paradigm (Moon, 2000).

Similarly, as Schuetzler and colleagues (2018) described, the interaction with the conversational agent can evoke positive or negative feelings according to the socially desirable response. This research adds to their study on how formality in the ECA's linguistic style and mode of dressing can evoke positive attitudes on the interaction. These results are also aligned with Lichtman (2017), who describes not all congruence is positive, and for addressing positive congruence, two positive manipulations are needed. In this study, ECA's formality in the mode of dressing and linguistic style positively user's perceptions, while the casual-casual manipulation was negatively evaluated; therefore, not all congruence is positive. The consistency in the formal mode of dressing and formal linguistic style also influences in a positive way trustworthiness confirming Gong and Nass's (2007) research.

Moreover, the ECA's formality in linguistic style does not always evoke a negative social distance. Contrary to what Pavlick and Tetreault (2016) proposed, formal language could influence social distance and shared knowledge; however, in initial interactions, formality is positive, confirming Grety and colleagues' (2017) study on how the organizations should address new users. Additionally, the adjustment in a formal linguistic style can evoke politeness that does not negatively affect the interaction. This result aligns with what Percival and Pulford (2019) suggest: politeness can positively influence the communication process.

Another important theoretical implication is the demonstration that gestures can reduce the Uncanny Valley theory (Mori, 1970). This recommendation was mentioned during the reviews of the conversational agent. The reviews are also aligned with studies (Geller, 2008; Skjuve et al., 2019), suggesting that users need to see gestures in the interaction with embodied conversational agents to reduce Uncanny valley effects.

Furthermore, the mediation analysis confirms the studies describing perceived usefulness and trustworthiness as antecedents for intention to use (Davis, 1989; Schuetzler et al., 2018), and adding variables to TAM model can help to address better the cues that influence intention to use a system (Nicolau & McKnight, 2006; Tarhini et al., 2016). Therefore, to increase the acceptance of embodied conversational agents, designers must evaluate their product's usefulness and address those features with trustworthiness. This recommendation aligns with Brandztaeg and Følstad (2017) advice that conversational agents, rather than informing about a topic, most be able to do something productive and efficient. The users mention this proposition, where they explained conversational agents must go beyond providing information and do something with it, such as making reservations or providing the status of the equipment, which can enhance intention to use the ECA.

Finally, the results confirmed how manipulations in formality could influence holistic evaluations of the system, aligned it to Slepian and colleagues' (2015) research. Formality helped to evoke overall interaction evaluations; this way, participants were able to assess usability aspects instead of focusing on entrainment cues.

7. Limitations and Future Research

7.1 Sample

For instance, the first limitation is the impossibility of performing this study with physical interactions among users and the conversational agent. The experiment was performed online through videos; these results in a constraint because participants did not experience using the conversational agent, which can influence some of the users' perceptions.

Additionally, due to restrictions in physical interactions, it was complicated to follow the planned sampling method for obtaining enough participants of each cultural group for powerful statistical analysis. Although some instruments assessing statistical significance, such as G*Power, indicated the sample was compelling enough for analysis, it is possible that for cultural interactions, the sample did not have enough collectivistic participants to address significant interactions between the variables. Future research studying different cultural groups must ensure effective sampling methods to include many participants of each group.

7.2 Length of the experiment

One of the frequent comments of the instrument was that it was too long for an online experiment. Therefore, it was not only hard to find motivated participants willing to answer the instrument, but also maintaining them interested and motivated to provide reliable feedback was a challenge. Future research for online experiments must ensure their instruments do not imply much time for participants to obtain more and accurate results.

7.3 Measurements on Personal Culture

Finally, the instrument measuring the personal Individualism-Collectivism could be enhanced by using the Horizontal and Vertical Individualism Scale (Kitirattarkarn, Araujo, & Neijens, 2019) or the complete Auckland Scale (Shulruf, Hattie, & Dixon, 2007). Future research must validate the reliability of the instruments used for personal culture before testing it with participants, to satisfy highly reliable measurements.

7.4 Straightforward interactions

Additionally, during the first pre-test of this experiment the real interaction with Embodied Conversational Agent was measured. However, during this interaction on many occasions the system started lagging, creating frustration among the participants. It is recommended to adjust the software and hardware necessary to test the personal interactions with the ECA without bias of frustration.

7.5 Additional features

Third, one of the features that do have a significant influence in the interaction and was remarked by the users are facial expressions. Although other characteristics of the avatar can be tested, having a well animated Embodied Conversational Agent can help to better test other social cues of the conversational agent. Future research must ensure their instruments have the right animation.

8. Conclusion

The goal of this research was to investigate the influence of linguistic style and mode of dressing on the perceptions in trustworthiness, likeability, perceived usefulness, perceived ease of use, and intention to use. This study shows the mode of dressing is only significant when evaluating trustworthiness and perceived ease of use, while the linguistic style has a significant impact in trustworthiness, likeability, perceived usefulness, and perceived ease of use. Although it was expected that non-verbal cues were had more impact on different perceptions than verbal cues, this research shows that verbal cues can sometimes have a more significant impact. Similarly, the study intended to investigate the extent in which trustworthiness, likeability, perceived usefulness and perceived ease of use influenced intention to use. This study demonstrates that trustworthiness and perceived usefulness are the main variables assessing intention to use. However, linguistic style and mode of dressing were not directly influencing intention to use. Moreover, it was intended to study the influence of the individualism-collectivism dimension on the ECA's non-verbal and verbal communication. However, this was also non-significant. Although showing important trends from collectivistic toward better evaluations for interaction with an ECA. This research contributed to literature in linguistic style by understanding how the manipulations in formality and casualness in the words used by an ECA impacts on its preference. This way, it was demonstrated that high casual interactions are not evaluated positively by the users, especially when they are starting to know the system. The study also contributes to better understanding on how organizations should design their conversational agents for increasing perceptions in trustworthiness. Finally, the review in the comments demonstrates it also important to study the voice and gestures of the conversational agent.

Acknowledgements

First, thanks to my supervisor Dr. Ardion Beldad for his patience, motivation, and support throughout the complete project since the proposal. Thanks, as well to my second supervisor Dr. Joyce Karreman for sharing her insights with me when I felt confused during the process, thank you for supporting me with this and other personal projects. The complete team of the BMS Lab (J.W., Peter, Johnny, Marcia, Joris, Lucia, Amir) for making this project possible, and especially to Amad for creating the avatar, and Lucia Rabago for helping me to create the outfits and running the avatar. Additionally, thanks to VidiNexus for sharing their technology with us to have better interaction with the users, although it was impossible to continue the experiment this way, I am sure this is a precedent for innovative communication with customers.

References

Amarasinghe, A. D. (2012). Understanding intercultural facework behaviours. *Journal of International Communication*, 18(2), 175-188.

Aljaroodi, H. M., Chiong, R., & Adam, M. T. (2020). Exploring the design of avatars for users from Arabian culture through a hybrid approach of deductive and inductive reasoning. *Computers in Human Behavior*, 106-246.

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, 183–189. doi:10.1016/j.chb.2018.03.051

Aryadoust, V. (2017). Understanding the role of likeability in the peer assessments of university students' oral presentation skills: A latent variable approach. *Language Assessment Quarterly* ,14(4),398-419.

Bartneck, C., Kanda, T., Ishiguro, H., & Hagita, N. (2007). Is the uncanny valley an uncanny cliff? *RO-MAN 2007*, 1(1), 368-373. https://doi.org/10.1109/roman.2007.4415111

Bartneck, C., Kulić, D., Croft, E., & Zoghbi, S. (2009). Measurement instruments for the anthropomorphism, animacy, likeability, perceived intelligence, and perceived safety of robots. *International journal of social robotics ,* 1(1), 71-81.

Beer, J. M., Prakash, A., Mitzner, T. L., & Rogers, W. A. (2011). *Understanding robot acceptance*. Georgia Institute of Technology.

Beldad, A., Hegner, S., & Hoppen, J. (2016). The effect of virtual sales agent (VSA) gender–product gender congruence on product advice credibility, trust in VSA and online vendor, and purchase intention. *Computers in human behavior*, 60, 62-72.

Broadbridge, A., & Fielden, S. (2018). Research handbook of diversity and careers. https://doi.org/10.4337/9781785365607

Burgoon, J. K., & Le Poire, B. A. (1999). Nonverbal cues and interpersonal judgments: Participant and observer perceptions of intimacy, dominance, composure, and formality. *Communication Monographs*, *66*(2), 105-124. doi:10.1080/03637759909376467

Cardon, P. W., & Okoro, E.A. (2009). Professional characteristics communicated by formal versus casual workplace attire. *Business Communication Quarterly* , 72(3), 355-360.

Chattaraman, V., Kwon, W.-S., & Gilbert, J. E. (2012). Virtual agents in retail web sites: benefits of simulated social interaction for older users. *Computers in Human Behavior* , 28(6), 2055–2066. doi:10.1016/j.chb.2012.06.009

Chattaraman, V., Kwon, W., Gilbert, J. E., & Ross, K. (2019). Should AI-based, conversational digital assistants employ social- or task-oriented interaction style? A task-competency and reciprocity perspective for older adults. *Computers in Human Behavior*, *90*, 315-330. doi:10.1016/j.chb.2018.08.048

Chaves, A. P., & Gerosa, M. A. (2019). How should my chatbot interact? A survey on human-chatbot interaction design. ArXiv. Retrieved from https://arxiv.org/abs/1904.02743

Chiou, E. K., Schroeder, N. L., & Craig, S. D. (2019). How we trust, perceive, and learn from virtual humans: The influence of voice quality. *Computers & Education*, 10, 37-56.

Chen, F. F., Jing, Y., & Lee, J. M. (2014). The looks of a leader: Competent and trustworthy, but not dominant. *Journal of Experimental Social Psychology*, 51, 27-33. doi:10.1016/j.jesp.2013.10.008

Chung, J. Y., & Petrick, J. F. (2015). Measuring price fairness: Development of a multidimensional scale. *Journal of travel & tourism marketing*, *32*(7), 907-922.

Ciechanowski, L., Przegalinska, A., Magnuski, M., & Gloor, P. (2018). In the shades of the uncanny valley: An experimental study of human–chatbot interaction. *Future Generation Computer Systems*. doi:10.1016/j.future.2018.01.055

Clark, L., Pantidi, N., Cooney, O., Doyle, P., Garaialde, D., Edwards, J., Spillane, B., Gilmartin, E., Murad, C., Munteanu, C., Wade V. P., Cowan, B. R., (2019). What makes a good conversation? Challenges in designing truly conversational agents. *Conference on Human Factors in Computing Systems - Proceedings*, *475*, 1-12. doi:10.1145/3290605.3300705

Creusen, M. E., & Schoormans, J. P. (2005). The different roles of product appearance in consumer choice. *Journal of Product Innovation Management*, *22*(1), 63-81. doi:10.1111/j.0737-6782.2005.00103

Conner, B. H., Peters, K., & Nagasawa, R. H. (1975). Person and costume: Effects on the formation of first impressions. *Home Economics Research Journal*, 4(1), 32-41.

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78(1), 98–104. doi:10.1037/0021-9010.78.1.98

Cuddy, A. J., Fiske, S. T., Kwan, V. S., Glick, P., Demoulin, S., Leyens, J. P., .Bond, M. H., Croizet J., Ellemers, N., Sleebos, E., & Sleebos, E. (2009). Is the stereotype content model culture-bound? A cross-cultural comparison reveals systematic similarities and differences. *British Journal of Social Psychology, 48*(1), 1-33.

Danielescu, A., & Christian, G. (2018). A bot is not a polyglot. *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems*, *1*, 1-9. doi:10.1145/3170427.3174366

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.

De Mooij, M. (2019). Consumer behavior and culture: Consequences for global marketing and advertising. *SAGE Publications Limited*.

De Mooij, M., & Hofstede, G. (2010). The Hofstede model: Applications to global branding and advertising strategy and research. *International Journal of advertising*, *29*(1), 85-110.

Diederich, S., Brendel, A. B., & Kolbe, L. M. (2020). Designing anthropomorphic enterprise conversational agents. *Business & Information Systems Engineering, 62*(3), 193-209. doi:10.1007/s12599-020-00639-y

Divekar, R. R., Kephart, J. O., Mou, X., Chen, L., & Su, H. (2019). You talkin'to me? A practical attention-aware embodied agent. *IFIP Conference on Human-Computer Interaction*, 760-780.

Dumitrescu, V. M. (2013). Culture as communication: Communication style across and within cultures. *Synergy*, (1), 84-91.

Fischer, M., Campagna, G., Xu, S., & Lam, M. S. (2018). Brassau: automatic generation of graphical user interfaces for virtual assistants. *Proceedings of the 20th International Conference on Human-Computer Interaction with Mobile Devices and Services.* doi:10.1145/3229434.3229481

Feine, J., Gnewuch, U., Morana, S., & Maedche, A. (2019). A taxonomy of social cues for conversational agents. *International Journal of Human-Computer Studies, 132,* 138-161. doi:10.1016/j.ijhcs.2019.07.009

Foustanas, N. (2014). Effects of having an embodied agent in a personality assessment application. Retrieved from https://pdfs.semanticscholar.org/aee1/2a66a4c49f4db5292fcf9e47059ede2ba667.pdf

Furnham, A., Chan, P. S., & Wilson, E. (2013). What to wear? The influence of attire on the perceived professionalism of dentists and lawyers. Journal of Applied Social Psychology, *43*(9), 1838-1850. doi:10.1111/jasp.12136

Geller, T. (2008). Overcoming the uncanny Valley. IEEE *Computer Graphics and Applications, 28(4)*, 11-17. doi:10.1109/mcg.2008.79

Griol, D., Carbó, J., & Molina, J. M. (2013). An automatic dialog simulation technique to develop and evaluate interactive conversational agents. *Applied Artificial Intelligence*, *27(9)*, 759-780. doi.org/10.1080/08839514.2013.835230

Go, E., & Sundar, S. S. (2019). Humanizing chatbots: The effects of visual, identity and conversational cues on humanness perceptions. *Computers in Human Behavior, 97*, 304-316. doi:10.1016/j.chb.2019.01.020

Gong, L., & Nass, C. (2007). When a talking-face computer agent is half-human and half-humanoid: Human identity and consistency preference. *Human Communication Research, 33(2), 163–193.* doi:10.1111/j.1468-2958.2007.00295.

Guerber, A. J., Anand, V., Ellstrand, A. E., Waller, M. A., & Reychav, I. (2019). *Extending the Situational Crisis Communication Theory: The Impact of Linguistic Style and Culture. Corporate Reputation Review.* doi:10.1057/s41299-019-00081-1

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

Guerini, M., Falcone, S., & Magnini, B. (2018). A methodology for evaluating interaction strategies of task-oriented conversational agents. *Proceedings of the 2018 EMNLP Workshop SCAI: The 2nd International Workshop on Search-Oriented Conversational AI*. doi:10.18653/v1/w18-5704

Gursoy, D., Chi, O. H., Lu, L., & Nunkoo, R. (2019). Consumers acceptance of artificially intelligent (AI) devices use in service delivery. *International Journal of Information Management*, 49, 157-169.

Hallikainen, H., & Laukkanen, T. (2018). National culture and consumer trust in e-commerce. *International Journal of Information Management*, *38*(1), 97-106.

Hair, M., & Ozcan, T. (2018). How reviewers' use of profanity affects perceived usefulness of online reviews. *Marketing Letters, 29*(2), 151-163.

Hayes, A. F. (2009). Beyond baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, *76*(4), 408-420. doi:10.1080/03637750903310360

Hernández-Ortega, B. (2018). Don't believe strangers: Online consumer reviews and the role of social psychological distance. *Information & Management*, *55*(1), 31-50.

Hofstede Insights. (2020). Compare countries. Retrieved July 3, 2020, from https://www.hofstede-insights.com/product/compare-countries/

Hofstede, G., & Bond, M. H. (1984). Hofstede's culture dimensions: An independent validation using Rokeach's value survey. *Journal of cross-cultural psychology*, *15*(4), 417-433.

Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. *Online readings in psychology and culture*, *2*(1), 8.

Holtgraves, T. (1997). Styles of language use: Individual and cultural variability in conversational indirectness. *Journal of personality and social psychology*, *73*(3), 624.

Hui, C. H. (1988). Measurement of individualism-collectivism. *Journal of research in personality*, *22*(1), 17-36.

Huang, F., Teo, T., & Scherer, R. (2020). Investigating the antecedents of university students' perceived ease of using the internet for learning. *Interactive Learning Environments,* 1-17. doi:10.1080/10494820.2019.1710540

Kang, J., & Wei, L. (2018). Give me the support I want! *Proceedings of the 6th International Conference on Human-Agent Interaction*, 106–113. doi:10.1145/3284432.3284462

Kim, E. J., Berger, C., Kim, J., & Kim, M. (2014). Which self-presentation style is more effective? A comparison of instructors' self-enhancing and self-effacing styles across the culture. *Teaching in Higher Education, 19*(5), 510-524. doi:10.1080/13562517.2014.880686

Kim, S., Lee, J., & Gweon, G. (2019). Comparing data from chatbot and web surveys. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems - CHI '19*. doi:10.1145/3290605.3300316

Kitirattarkarn, G. P., Araujo, T., & Neijens, P. (2019). Challenging traditional culture? How personal and national collectivism-individualism moderates the effects of content characteristics and social relationships on consumer engagement with brand-related user-generated content. *Journal of Advertising*, *48*(2), 197-214.

Klipfel, J. A., Barclay, A. C., & Bockorny, K. M. (2014). Self-congruity: A determinant of brand personality. *Journal of Marketing Development & Competitiveness*, *8*(3).

Kwon, Y. H., & Johnson-Hillery, J. (1998). College students' perceptions of occupational attributes based on formality of business attire. *Perceptual and Motor Skills*, *87*(3), 987-994.

Lee, J. R., & Nass, C. I. (2010). Trust in computers. *Trust and Technology in a Ubiquitous Modern Environment*, 1-15. doi:10.4018/978-1-61520-901-9.ch001

Leenheer, R. (2006). Should ECAs 'dress to impress'. *4th Twente Student Conference on IT*. Retrieved from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.76.4734&rep=rep1&type=pdf

Lee, S., & 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*, 95–105. doi:10.1016/j.ijhcs.2017.02.005

Lee, S., Lee, G., Kim, S., & Lee, J. (2019). Expressing personalities of conversational agents through visual and verbal feedback. *Electronics*, *8*(7), 794. doi:10.3390/electronics8070794

LeFebvre, R., & Franke, V. (2013). Culture matters: Individualism vs. collectivism in conflict decision-making. *Societies*, *3*(1), 128-146.

Legde, K., & Cunningham, D. W. (2019). Evaluating the effect of clothing and environment on the perceived personality of virtual avatars. *Proceedings of the 19th ACM International Conference on Intelligent Virtual Agents - IVA '19*. doi:10.1145/3308532.3329425

Lichtman, T. G. (2017). The positive effect of contradictory information: The effect of verbal/ nonverbal discrepancy on brand attitudes in the short term and the long term. *Journal of Accounting & Marketing*, *06*(03). doi:10.4172/2168-9601.1000253

Lin, L., Ginns, P., Wang, T., & Zhang, P. (2020). Using a pedagogical agent to deliver conversational style instruction: What benefits can you obtain?. *Computers & Education*, *143*, 1-11.

Liu, M. (2016). Verbal communication styles and culture. *Oxford Research Encyclopedia of Communication*. doi:10.1093/acrefore/9780190228613.013.162

MacDorman, K. F. (2006). Subjective ratings of robot video clips for human likeness, familiarity, and eeriness: An exploration of the uncanny valley. *ICCS/CogSci-2006 long symposium: Toward social mechanisms of android science*, 26-29.

MacDorman, K. F., Green, R. D., Ho, C. C., & Koch, C. T. (2009). Too real for comfort? Uncanny responses to computer generated faces. *Computers in human behavior*, *25*(3), 695-710.

Mairesse, F., Walker, M. A., Mehl, M. R., & Moore, R. K. (2007). Using linguistic cues for the automatic recognition of personality in conversation and text. *Journal of Artificial Intelligence Research*, *30*, 457-500. doi:10.1613/jair.2349

Marcus, A. (2006). Cross-Cultural User-Experience Design. *Diagrammatic Representation and Inference*, 16-24. doi:10.1007/11783183_4

Masoumian, P. (2020). Individual-Level Cultural Values: Decision Making Styles among Individualist and Collectivist Customers (Case Study: Customers of Automobile Radial Tire). *Journal of Business Management*, *12*(1), 161-182.

Mayer, R. C., & Davis, J. H. (1999). The effect of the performance appraisal system on trust for management: A field quasi-experiment. *Journal of applied psychology*, *84*(1), 123.

Mehrabian, A., & Wiener, M. (1967a). Decoding of inconsistent communications. *Journal of Personality and Social Psychology, 6*(1)*,* 109–114. doi:10.1037/h0024532

Mehrabian, A., & Ferris, S. R. (1967b). Inference of attitudes from nonverbal communication in two channels. *Journal of Consulting Psychology, 31*(3)*,* 248–252. doi:10.1037/h0024648

Mirnig, N., Stollnberger, G., Miksch, M., Stadler, S., Giuliani, M., & Tscheligi, M. (2017). To err is robot: How humans assess and act toward an erroneous social robot. *Frontiers in Robotics and AI*, *4*, 21.

Monkeylearn. (2019). Text analysis. Retrieved from https://monkeylearn.com/text-analysis/

Moon, Y. (2000). Intimate exchanges: Using computers to elicit self-disclosure from consumers. *Journal of consumer research*, *26*(4), 323-339.

Moon, Y., & Nass, C. (1996). How "real" are computer personalities? *Communication Research, 23(6),* 651–674. doi:10.1177/009365096023006002

Mori, M., & Bukimi, N. (1970). Tani (The Uncanny Valley). *Energy*, 33-35.

Nass, C., & Moon, Y. (2000). Machines and mindlessness: Social responses to computers. *Journal of social issues*, *56*(1), 81-103.

Nicolaou, A. I., & McKnight, D. H. (2006). Perceived information quality in data exchanges: Effects on risk, trust, and intention to use. *Information systems research*, *17*(4), 332-351.

Ngo, T. D., & Bui, T. D. (2015). A Vietnamese 3D taking face for embodied conversational agents. *The 2015 IEEE RIVF International Conference on Computing & Communication Technologies - Research, Innovation, and Vision for Future (RIVF)*, 25-28. doi:10.1109/rivf.2015.7049881

Nowak, K. L., Hamilton, M. A., & Hammond, C. C. (2009). The effect of image features on judgments of homophily, credibility, and intention to use as avatars in future interactions. *Media Psychology*, *12*(1), 50-76.

Nysveen, H., Pedersen, P. E., & Thorbjørnsen, H. (2005). Intentions to use mobile services: Antecedents and cross-service comparisons. *Journal of the academy of marketing science*, *33*(3), 330-346.

Ochs, M., Pelachaud, C., & Mckeown, G. (2017). A user perception--based approach to create smiling embodied conversational agents. *ACM Transactions on Interactive Intelligent Systems*, *7*(1), 1-33. doi:10.1145/2925993

Parida, B., & Gupta, V. (2017). Effects of Non-conformity on Perceived Status and Competence: Examining the Moderating Role of Physical Attractiveness. *Psychological Studies*, *62*(3), 305-313.

Park, H. S., Levine, T. R., Weber, R., Lee, H. E., Terra, L. I., Botero, I. C., & Wilson, M. S. (2012). Individual and cultural variations in direct communication style. *International Journal of Intercultural Relations*, *36*(2), 179-187. doi:10.1016/j.ijintrel.2011.12.010

Pavlick, E., & Tetreault, J. (2016). An empirical analysis of formality in online communication. *Transactions of the Association for Computational Linguistics,* 4, 61-74

Payne, J., Johnson, G., & Szymkowiak, A. (2012). *Virtual assistants and social cues: Retail interactions and consumer experience*. Retrieved from https://www.academia.edu/3055789/Virtual_Assistants_and_Social_Cues_Retail_Interactions_and_Consumer_Experience

Payne, J., Szymkowiak, A., Robertson, P., & Johnson, G. (2013). Gendering the machine: Preferred virtual assistant gender and realism in self-service. *Intelligent Virtual Agents*, 106-115. doi:10.1007/978-3-642-40415-3_9

Perez, M., & Saffon, S. (2018). Building trust between users and telecommunications data driven virtual assistants. *Artificial Intelligence Applications and Innovations,* 628–637. doi:10.1007/978-3-319-92007-8_53

Perez, M., & Saffon, S. (2019). Exploring the uncanny valley theory in the constructs of a virtual assistant personality. *Advances in Intelligent Systems and Computing*, 1017-1033. doi:10.1007/978-3-030-29516-5_76

Percival, N. M., & Pulford, B. D. (2019). Do say "thank you": verbal expressions of politeness and gratitude influence interpersonal perceptions. *The Journal of General Psychology*, 1-16. https://doi.org/10.1080/00221309.2019.1690970

Poggi, I., Pelachaud, C., De Rosis, F., Carofiglio, V., & De Carolis, B. (2005). Greta. A believable embodied conversational agent. *Multimodal Intelligent Information Presentation*, 3-25. doi:10.1007/1-4020-3051-7_1

Potdevin, D., Clavel, C., & Sabouret, N. (2018). Virtual intimacy, this little something between us: A study about human perception of intimate behaviors in embodied conversational agents. *Proceedings of the 18th International Conference on Intelligent Virtual Agents*, 165-172.

Pulles, N. J., & Hartman, P. (2017). Likeability and its effect on outcomes of interpersonal interaction. *Industrial Marketing Management*, *66*, 56-63. https://doi.org/10.1016/j.indmarman.2017.06.008

Quantum Capture. (2019). IBM Tiriga - 2019 [Video file]. Retrieved from https://www.youtube.com/watch?v=Q5SkEmTvebg

Radziwill, N., & Benton, M. C. (2017). Evaluating quality of chatbots and intelligent conversational agents. Retrieved from https://arxiv.org/abs/1704.04579

Roy, S. K., Balaji, M., Soutar, G., Lassar, W. M., & Roy, R. (2018). Customer engagement behavior in individualistic and collectivistic markets. *Journal of Business Research*, *86*, 281-290. doi:10.1016/j.jbusres.2017.06.001

Roose, G., Vermeir, I., Geuens, M., & Van Kerckhove, A. (2019). A match made in heaven or down under? The effectiveness of matching visual and verbal horizons in advertising. *Journal of Consumer Psychology*, *29*(3), 411-427.

Rubinstein, R. (2018). Dress codes: Meanings and messages in American culture. *Routledge*.

Salem, M., Ziadee, M., & Sakr, M. (2013). Effects of politeness and interaction context on perception and experience of HRI. *Social Robotics*, 531-541. doi:10.1007/978-3-319-02675-6_53

Sánchez, R. A., & Hueros, A. D. (2010). Motivational factors that influence the acceptance of Moodle using TAM. *Computers in human behavior*, *26*(6), 1632-1640.

Schuetzler, R. M., Grimes, G. M., Giboney, J. S., & Nunamaker Jr, J. F. (2018). The influence of conversational agents on socially desirable responding. *Proceedings of the 51st Hawaii International Conference on System Sciences*, 283.

Seymour, M., Yuan, L., Dennis, A., & Riemer, K. (2020). Facing the artificial: Understanding affinity, trustworthiness, and preference for more realistic digital humans. *Proceedings of the 53rd Hawaii International Conference on System Sciences*, 4673-4683. doi:10.24251/hicss.2020.574

Shamekhi, A., Czerwinski, M., Mark, G., Novotny, M., & Bennett, G. A. (2016). An exploratory study toward the preferred conversational style for compatible virtual agents. *Intelligent Virtual Agents*, 40-50. doi:10.1007/978-3-319-47665-0_4

Sheika, F. A., & Inkpen, D. (2012). Learning to classify documents according to formal and informal style. *Linguistic Issues in Language Technology*, *8*(1), 1-29.

Shulruf, B., Hattie, J., & Dixon, R. (2007). Development of a new measurement tool for individualism and collectivism. *Journal of Psychoeducational Assessment*, *25*(4), 385-401.

Shum, H., He, X., & Li, D. (2018). From Eliza to XiaoIce: Challenges and opportunities with social chatbots. *Frontiers of Information Technology and Electronic Engineering, 19*(1), 10-26. doi:10.1631/FITEE.1700826

Skjuve, M., Haugstveit, I. M., Følstad, A., & Brandtzaeg, P. B. (2019). Help! Is my chatbot falling into the uncanny valley?: An empirical study of user experience in human-chatbot interaction. *Human Technology*, *15*(1).

Slabbert, A. (2019). Lecturer dress code and student perceptions of lecturer professional attributes. *Journal of Psychology in Africa, 29*(2), 176-181.

Slepian, M. L., Ferber, S. N., Gold, J. M., & Rutchick, A. M. (2015). The cognitive consequences of formal clothing. *Social Psychological and Personality Science*, *6*(6), 661-668.

Suh, K. S., Kim, H., & Suh, E. K. (2011). What if your avatar looks like you? Dual-congruity perspectives for avatar use. *MIs Quarterly*, 711-729.

Song, Y. W. (2019). User acceptance of an artificial intelligence (AI) virtual assistant: an extension of the technology acceptance model (Doctoral dissertation).

Taras, V., Steel, P., & Kirkman, B. L. (2012). Improving national cultural indices using a longitudinal meta-analysis of Hofstede's dimensions. *Journal of World Business*, *47*(3), 329-341.

Tarhini, A., Hone, K., Liu, X., & Tarhini, T. (2016). Examining the moderating effect of individual-level cultural values on users' acceptance of E-learning in developing countries: A structural equation modeling of an extended technology acceptance model. *Interactive Learning Environments, 25*(3), 306-328. https://doi.org/10.1080/10494820.2015.1122635

Times Higher Education. (2019). University of Twente. Retrieved from https://www.timeshighereducation.com/world-university-rankings/university-twente

Thomas, P., Czerwinski, M., McDuff, D., Craswell, N., & Mark, G. (2018). Style and alignment in information-seeking conversation. *Proceedings of the 2018 Conference on Human Information Interaction&Retrieval - CHIIR '18*. doi:10.1145/3176349.3176388

Toader, D. C., Boca, G., Toader, R., Măcelaru, M., Toader, C., Ighian, D., & Rădulescu, A. T. (2020). The effect of social presence and chatbot errors on trust. *Sustainability*, *12*(1), 256.

Trovato, G., Ramos, J. G., Azevedo, H., Moroni, A., Magossi, S., Ishii, H., & Takanishi, A. (2015). Designing a receptionist robot: Effect of voice and appearance on anthropomorphism. *Proceedings - IEEE International Workshop on Robot and Human Interactive Communication, 2015*, 235-240. doi:10.1109/roman.2015.7333573

Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological review*, *117*(2), 440.

Tucker, B. V., & Ernestus, M. (2016). Why we need to investigate casual speech to truly understand language production, processing and the mental lexicon. *New Questions for the Next Decade*, *11*(3), 375-400. doi:10.1075/ml.11.3.03tuc

Van Pinxteren, M. M. E., Wetzels, R. W. H., Rüger, J., Pluymaekers, M., & Wetzels, M. (2019). Trust in humanoid robots: Implications for services marketing. *Journal of Services Marketing, 33*(4), 507-518. doi:10.1108/JSM-01-2018-0045

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157-178.

Vrij, A. (1997). Wearing black clothes: The impact of offenders' and suspects' clothing on impression formation. *Applied Cognitive Psychology: The Official Journal of the Society for Applied Research in Memory and Cognition*, *11*(1), 47-53.

Walther, J. B., Van Der Heide, B., Ramirez, A., Burgoon, J. K., & Peña, J. (2015). Interpersonal and Hyperpersonal dimensions of computer-mediated communication. *The Handbook of the Psychology of Communication Technology*, 1-22. doi:10.1002/9781118426456.ch1

Wang, H., Fussell, S. F., & Setlock, L. D. (2009). Cultural difference and adaptation of communication styles in computer-mediated group brainstorming. *Proceedings of the 27th international conference on Human factors in computing systems - CHI 09*. doi:10.1145/1518701.1518806

Wanner, L., André, E., Blat, J., Dasiopoulou, S., Farrùs, M., Fraga, T., & Vrochidis, S. (2017). Kristina: A knowledge-based virtual conversation agent. *Lecture Notes in Computer Science*, *10349*, 284-295. doi:10.1007/978-3-319-59930-4_23

Wilson, J., Crisp, C. B., & Mortensen, M. (2013). Extending construal-level theory to distributed groups: Understanding the effects of virtuality. *Organization Science*, *24*(2), 629-644.

Winter, S., & Schulte-Bockholt, L. (2018). When do we trust online reviews by similar vs. dissimilar users? An application of construal level theory. *Advances in Advertising Research IX,* 287-300.

Wuenderlich, N. V., & Paluch, S. (2017). A nice and friendly chat with a bot: User perceptions of AI-based service agents. *ICIS 2017 Proceedings,* 1-12. Retrieved from https://pdfs.semanticscholar.org/f956/3dbf161729a7d1ec28644fe4f561709b5e3c.pdf

Yaaqoubi, J., & Reinecke, K. (2018). The use and usefulness of cultural dimensions in product development. *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems*. https://doi.org/10.1145/3170427.3174368

Yang, X. (2019). How perceived social distance and trust influence reciprocity expectations and eWOM sharing intention in social commerce. *Industrial Management & Data Systems*, *119*(4), 867-880. doi:10.1108/imds-04-2018-0139

Yurchisin, J., Jin Kwon, Y., & Marcketti, S. B. (2009). Consumers of charity bracelets: Cause-supporters or fashion-followers?. *Journal of Fashion Marketing and Management: An International Journal*, *13*(3), 448-457.

Yoo, B., Donthu, N., & Lenartowicz, T. (2011). Measuring Hofstede's five dimensions of cultural values at the individual level: Development and validation of CVSCALE. *Journal of international consumer marketing*, *23*(3), 193-210.

Xiao, & Benbasat. (2007). E-Commerce product recommendation agents: Use, characteristics, and impact. *MIS Quarterly, 31*(1), 137. doi:10.2307/25148784

Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of consumer research*, *37*(2), 197-206.

Zimmermann, M., & Jucks, R. (2018). With a view to the side: YouTube's Sidebar and YouTuber's linguistic style as hints for trust-related evaluations. *International Journal of Human–Computer Interaction*, *35*(14), 1279-1291. doi:10.1080/10447318.2018.1519165

Appendix

Appendix 1. Reduced Auckland Individualism Collectivism Scale (AICS) Scale (LeFebvre & Franke, 2013).

1. I define myself as a competitive person. (I)
2. Before I make a major decision, I seek advice from people close to me. (C)
3. I believe that competition is part of human nature. (I)
4. I consider my friends' opinions before taking important actions. (C)
5. I like to be accurate when I communicate. (I)
6. It is important to consult close friends and get their ideas before making a decision. (C)
7. I ask the advice of my friends before making career related decisions. (C)
8. I sacrifice my self-interest for the benefit of my group. (C)
9. I prefer using indirect language rather than upsetting my friends. (C)
10. I take responsibility for my own actions. (I)
11. My personal identity independent of others is very important to me. (I)
12. Winning is very important to me. (I)
13. I see myself as "my own person." (I)
14. I consult my family before making an important decision. (C)

All items will be measured on a 7-point Likert-type scale ranging from "strongly disagree" (score 1) to "strongly agree" (score 7).

Appendix 2. Trustworthiness scale (Beldad, Hegner, & Hoppen, 2016)

Character-Based Trust in the ECA

1. I believe the organization's conversational agent does business with my interests in mind.
2. I believe the organization's conversational agent has interest in my safety and not of the organization's.
3. I believe the organization's conversational agent is fair in dealing with me.
4. I believe the organization's conversational agent is honest.

Ability-Based Trust in the ECA

5. I think the organization's conversational agent is competent
6. I think the organization's conversational agent is effective in responding to my questions.
7. I think the organization's conversational agent does his/her role as an adviser well.
8. I think the organization's conversational agent is well informed.
9. I think the organization's conversational agent is qualified
10. I think the organization's conversational agent is capable.

All items are measured on a 7-point Likert-type scale ranging from "strongly disagree" (score 1) to "strongly agree" (score 7).

Appendix 3. Likeability Scale Bartneck, C., Kulić, D., Croft, E., & Zoghbi, S. (2009).

11. I believe the organization's conversational agent is nice
12. I believe the organization's conversational agent is awful,
13. I believe the organization's conversational agent is friendly
14. I believe the organization's conversational agent is unfriendly
15. I believe the organization's conversational agent is kind
16. I believe the organization's conversational agent is unkind
17. I believe the organization's conversational agent is pleasant
18. I believe the organization's conversational agent is unpleasant

All items are measured on a 7-point scale ranging from 1 to 7.

Appendix 4. Perceived usefulness (Davis, 1989)

1. I think using the organization's conversational agent can help me accomplishing tasks to increase my productivity.
2. I think using the organization's conversational agent can improve my performance at accomplishing tasks.
3. I believe using the organization's conversational agent would enhance my effectiveness at accomplishing tasks.
4. I believe using the organizations conversational agent would enable me to accomplish tasks more quickly.
5. I find the organization's conversational agent useful for me to accomplish tasks.

Appendix 5. Perceived Ease of Use (Davis, 1989)

1. I believe learning to use the organization's conversational agent would be easy for me.
2. I think I would find it easy to get the organization's conversational agent what I want it to do.
3. I think the interaction with the organization's conversational agent is clear.
4. I think the interaction with the organization's conversational agent is understandable.
5. I believe it would be easy for me to become skillful at using the organization's conversational agent.
6. I think the organization's conversational agent would be easy to use.

Appendix 6. **Intention to use (Venkatesh et al., 2012)**

3 items adapted from Venkatesh et al's study

1. I intend to use the organization's conversational agent in the next months.
2. I believe I would use the organization's conversational agent in the next months.
3. I am planning to use the organization's conversational agent in the next months.
4. The probability I will use the organization's conversational agent is high.

All items will be measured on a 7-point Likert-type scale ranging from "strongly disagree" (score 1) to "strongly agree" (score 7).

Appendix 7. Manipulation check
Mode of dressing: Semantic scale

1. I believe the organization's conversational agent is dressed for a business setting.
2. I believe the organization's conversational agent is dressed for a recreation setting.
3. I think the organization's conversational agent is dressed in a casual way.
4. I think the organization's conversational agent is dressed in a formal way.
5. I think the organization's conversational agent is dressed in an authoritative way.
6. I think the organization's conversational agent is dressed in a non-authoritative way.

Linguistic style: Semantic scale

1. I think the words used by the organization's conversational agent were distant.
2. I think the words used by the organization's conversational agent were approachable.
3. I think the words used by the organization's conversational agent were business like.
4. I think the words used by the organization's conversational agent were colloquial.
5. I think the words used by the organization's conversational agent were formal words.
6. I think the words used by the organization's conversational agent were informal words.
7. I believe the words used by the organization's conversational agent were elaborated.
8. I believe the words used by the organization's conversational agent were abbreviated.

Appendix 8: Formal linguistic style

9. **Start:** Good morning, My name is Sam, BMS Lab virtual assistant. It is a pleasure to meet you! It is possible to discuss about the facilities, services or equipment reservation of the Laboratory
10. **Where is the BMS Lab?** I recognize you would like to know the location. I understand. The BMS Laboratory is situated at the Universitey of Twente, Cubicus building in the second level.

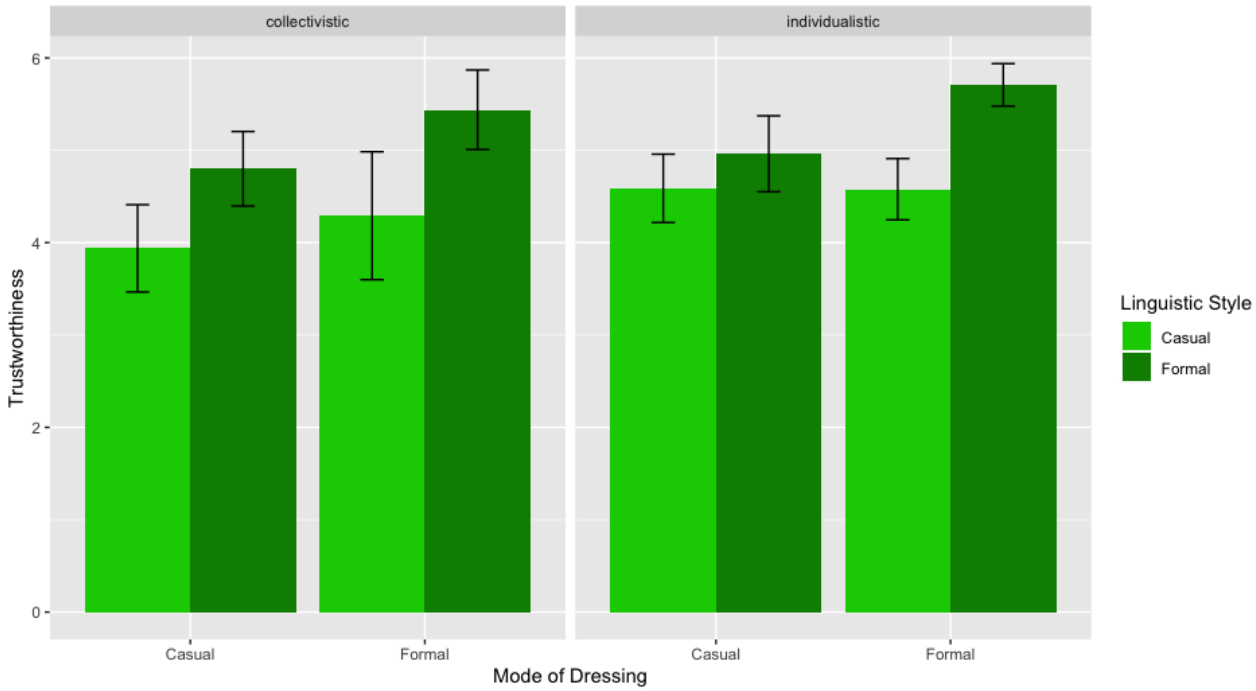
11. **How can I reserve?** Oh! I notice you would like to reserve, please enter our website: WWW.BMS lab.U twente.nl and inspect it there.
12. **What is the BMS Lab?** The BMS lab is astonishing; it supports scientists and students of the social sciences to obtain the benefits offered by innovative technologies for investigation. As a matter of fact, BMS lab has a range of facilities and equipment, such as, virtual reality, sensors, and recording equipment.
13. **What are the facilities?** All right, facilities. The BMS Lab allocates rooms for development, for instance, applications and different software, rooms for observing and contacting others, additionally, extraordinary flexible laboratory spaces for virtual reality, and a mobile laboratory that will support you to do distant research!
14. **After every question:** Would you like to know further information?
15. **Bye:** Goodbye
16. **If the avatar does not understand:** Oh, I apologize. I did not understand that inquiry. Is it possible to repeat the request trying modifications please?

Appendix 9: Casual linguistic style

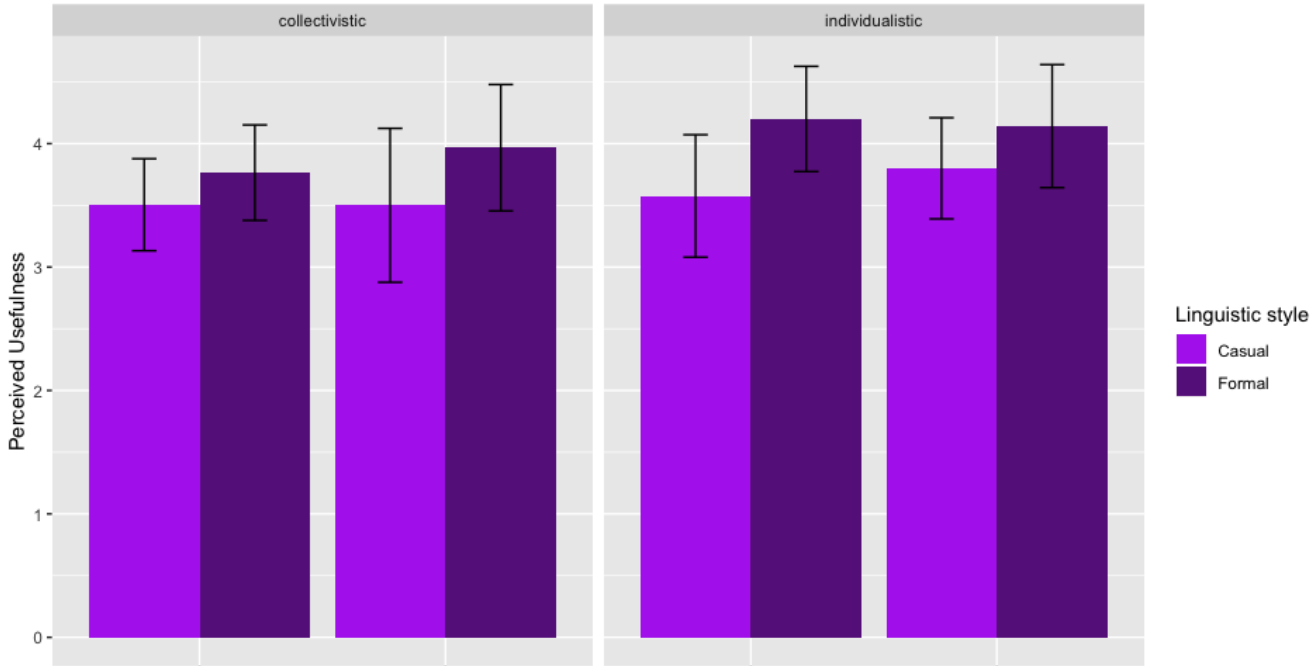
9. **Start:** Hi, I'm Sam, BMS Lab V.A., glad to see yaa! We can chat 'baut the facilities, services or equipment reservation of the lab
10. **Where is the Bms lab?** Oh wanna know the spot! gotya find us at Uni of Twente, Cubicus build, at the sec floor
11. **How can I reserve?** Oh! I see you wanna book, pls enter the website at WWW.BMS lab.U twente.nl and dig there.
12. **What is the Bms lab?** BMS lab is cool; it helps scientists and students of the social sci to get the benefits given by new tech for invs. By The Way, we have a lot of facilities and gadgets, like vr, sensors and recording tools.
13. **What are the facilities?** Okey dokey, so facilities, BMS Lab has rooms for devp, you know apps and diff software, rooms for scanning and meeting others, also cool flex lab spaces for VR, and a mobile lab that will help you to do remote research!
14. **After every question:** Wanna know more info?
15. **Bye:** See ya
16. **If the avatar does not understand**: Oh sorry, Dunno that qwest. Can you redo your qwest trying changes pls?

Appendix 10: Formal and casual mode of dressing

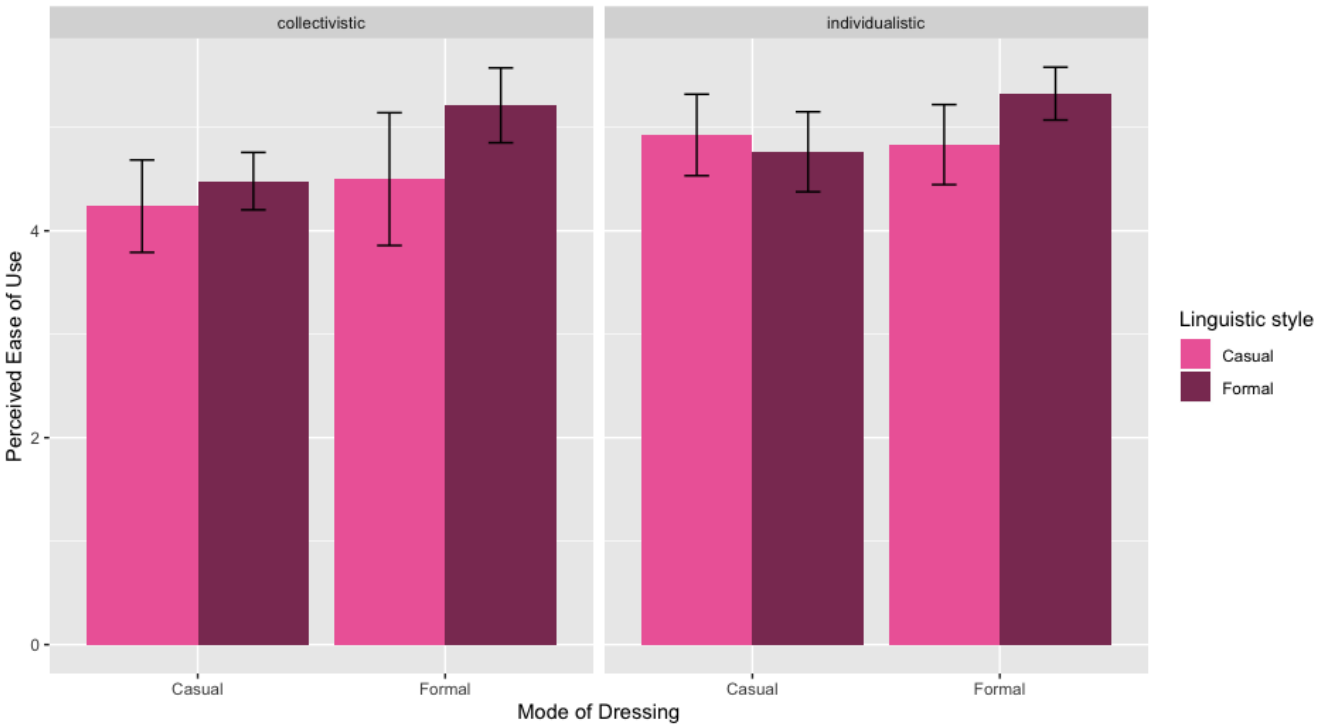
Appendix 11: Graphs demonstrating the preferences among the variables



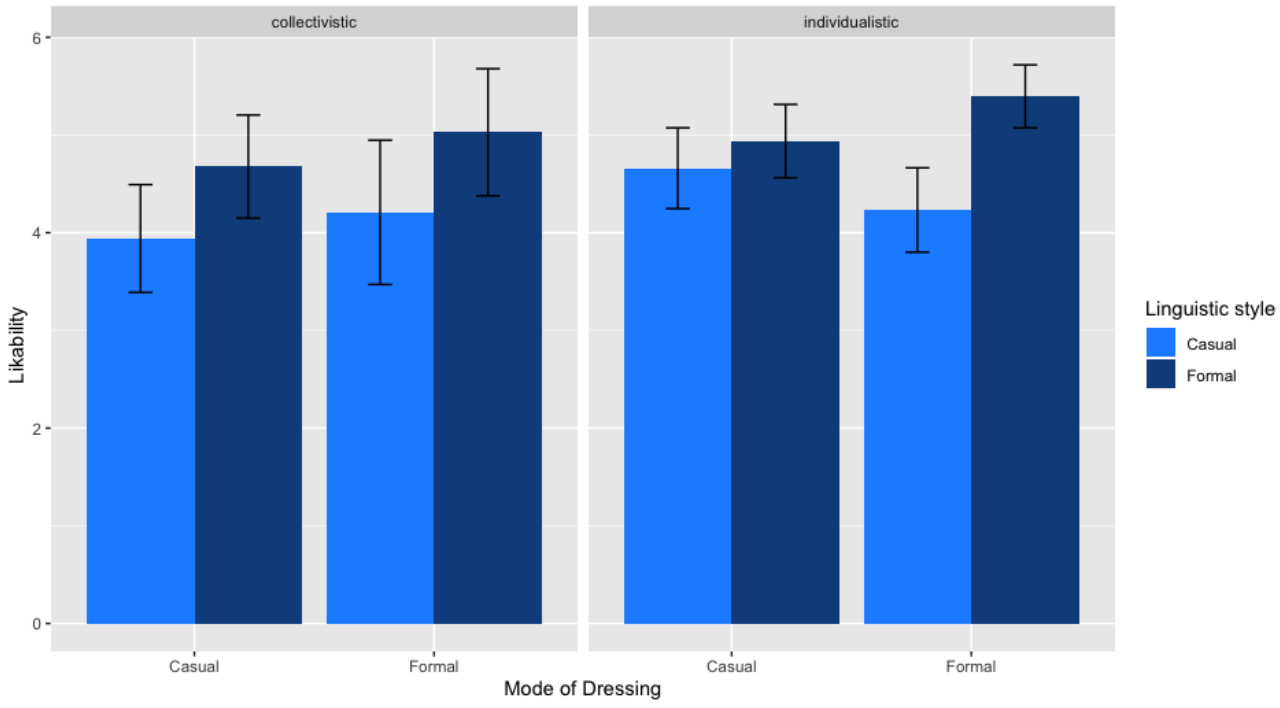
Trustworthiness over personal culture



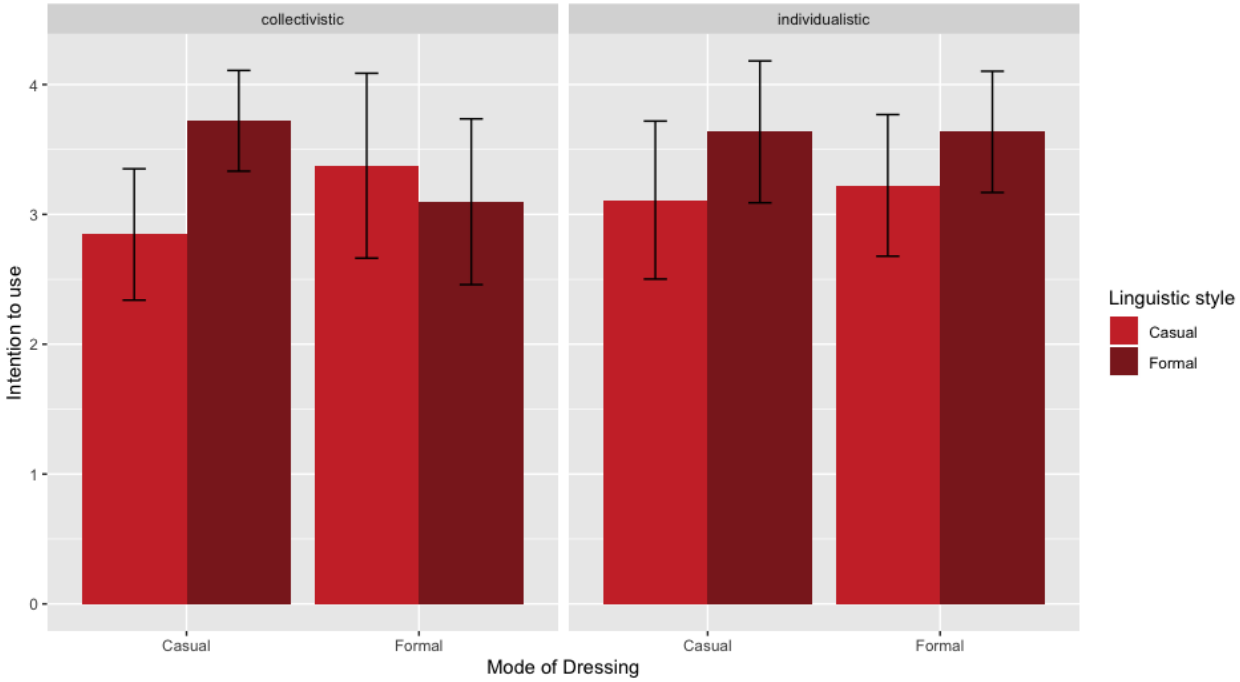
Perceived Usefulness over personal culture



Perceived Ease of Use over personal culture



Likeability over personal culture



Intention to Use over personal culture

Appendix 12: Reviews per condition

Condition 1	Condition 2	Condition 3	Condition 4
Pretty hard to use (chatbot), mostly use to answer FAQ if not trained well. Language and cultures	crappy	i dont like that she is so robotic. no facial expessions. the voice is really robotic as well	A useful tool that has a high chance of helping a lot of people
Good work! Hope to see better version soon	Still a bit robitic	Speaking super casually with a machine voice feels weird...	Creepy model
I think it still in it protortpe stage.	Good	Interesting, has potential for a lot more without a doubt	Personally don't have the patience to use them and would rather google or speak to a real person
Looks a bit stiff in the face but overall competent and friendly.	Unnecessary; reading would be faster if on a website.	Its fine	The agent abbreviates words wrong and uses bad English. She was difficult to understand
I dont like the proportions of the avatar, how it is dress and mainly speaks to slow	Good	functional	It does not look nice and has a terrible way of speaking
The organization's conversational agent is not annoying to listen to.	I like her, maybe it would be nice if she would tell you how to specify an answer she doesn't get	Responses are accurate and easy to understand	I think the conversational agent is frightening
It looks a bit scary.	Seems very prepared and capable for answering a person's questions.	Answers are too colloquial	It can be very useful if the algorithm has been trained for a while.
Ok	Too slow, boring voice tone, far away from human interaction	The answers are way too colloquial and try to hard to be approachable, it is rather off-putting	it's useful in the way that basic infor is required but not longer explanation
It was nice, but it felt like it was less efficient than looking at the website.	a little too formal, but useful for receiving information	The animation looks cheap and old which made me expect not really qualitative answers	Sometimes the abbreviations make unclear the conversational agent's words.
I hate Siri and Alexa bc those things do not work for me very well consequently this agent would use	I think it is rather unnecessary as long as it cannot actually make reservations etc.	weird, I don't think someone would talk like that	The answers given were very good. However, the voice and clothes were not appropriate
Overall, great but it talks monotone.	I don't like her, she looks very unhealthy	I would not like to communicate with a robot	Don't use the colloquial abbreviations. A real person wouldn't talk like this in a first conversati
Its good, and direct	well done!	Is weird having a formal/informal assistant	Shecommunicates clearly and accurate. Maybe less abbreviations

Nice	Very good!	funny	cool idea but I don't know if it is more useful to just google the website
I like her	Ok	improve!	i think it is informal and a little creepy
Is in progress?	hope to see more soon	she speaks weird compared to what she shows	I think is too informal and laggy
well done	nice	Talks too much	I would not use it
ok	a little bit too distant and polite	she looks like zombie	Good, but still prototype I guess
A little distant	Yeah, good overall	it was fun, but I don't think a real avatar would speak like this	too informal
it is a good approach	I am not sure the stage of it, but she is too formal	she is weird in a way	too much slangs
works	She is very nice and informative	i dont like her	I personally think that's too informal for a machine
she is nice!	she is very descriptive	she's kind of oldie trying to be modern in a weird way	she is informal, I wonder if she can chat about other things
Friendly but she speaks too much	I don't completely like her voice, but she speaks politely	she's very cool!	no facial expression and speaks too informal
Try other ways of interacting	It would work as an informative avatar, but it is not something I would use constantly	I don't like her robotic voice, neither her way of speaking	Very nice
Needs improvement	She's a bit formal	she should talk normally	ok
is weird not having facial expressions from her side	Weird and distant, but it could be nice if improvement is done	Strange	I would say she is too colloquial
she´s okay	She is nice, maybe too wordy, but she is friendly, the only thing I don't like is her face	very colloquial I think. I would prefer more politeness	I think scripts must be changed
She talks too much and looks childish	a little bit annoying with too much politeness, but she's nice	too much abbreviations	I can't imagine this avatar in a Lab

Nice work	She is very polite, I think I like her, although her face is dour	Got ya? she speaks with too many slangs	Her lenguage is fun but not real
Good	Add facial expressions	her face is creepy	She speaks too fast and informal that I feel weird
I dont understand her purpose	I like her politeness but her voice is robotic and her face weird	Fine	She is too informal for the BMS
Nice job	I don't think she is distant for being formal. She is nice	Cheap	Fun although is not common to have an avatar like this
Nice, her face a little bit static but she is nice overall	I like her I understand! Gives a lot of feedback	meh	haha too approachable
good	I would dress her differently and give expressions to her face	voice and mouth movement is not the same. she needs facial expression, but good	Fun experience, but I'm sure this can work in a real situation
I would add features and more information	Good! I think the animation can improved, but overall good	I guess this is a prototype, although she should speak normally	everything was weird
very robotic	the animation is crappy	Her appereance is weird	I felt she didnt care about me by talking and being like that
nice	she is nice, I dont think she is that formal or distant		She´s too cool for a professional environment
good	good improvement, but I still would like to see her finished		too informal
Laggy	Fine		try something less robotic
Robotic, very robotic	I think it might be helpful for companies.		ok
			I dont understand the purpose of the avatar
			Not my first choice

Appendix 13: Cultural index, category and country

Personal Index Culture	Personal Categorization	Country	National Categorization
-0.71	individualistic	Germany	individualistic
0.57	collectivistic	Germany	individualistic
0.14	collectivistic	Germany	individualistic
-2.29	individualistic	Germany	individualistic
-0.14	individualistic	Germany	individualistic
0.00	individualistic	Germany	individualistic
-0.14	individualistic	Germany	individualistic
0.14	collectivistic	Germany	individualistic
-0.43	individualistic	China	collectivistic
0.43	collectivistic	Indian	collectivistic
-1.29	individualistic	China	collectivistic
-0.43	individualistic	Vietnamese	collectivistic
1.14	collectivistic	Romanian	collectivistic
0.14	collectivistic	Indian	collectivistic
0.29	collectivistic	Sweden	individualistic
-1.71	individualistic	The Netherlands	individualistic
0.43	collectivistic	Indian	collectivistic
-1.00	individualistic	The Netherlands	individualistic
1.29	collectivistic	Italian	individualistic
-0.57	individualistic	Germany	individualistic
-0.86	individualistic	Indian	collectivistic
-2.00	individualistic	The Netherlands,Other	individualistic
-0.43	individualistic	Germany	individualistic
0.86	collectivistic	Germany	individualistic
1.57	collectivistic	Germany	individualistic
-3.29	individualistic	Mexico	collectivistic
0.86	collectivistic	Germany	individualistic
-0.71	individualistic	Mexico	collectivistic
-0.14	individualistic	Germany	individualistic
-1.29	individualistic	Vietnam	collectivistic
0.71	collectivistic	Italian	individualistic
-2.14	individualistic	Mexico	collectivistic
-0.43	individualistic	Finnish	individualistic
-3.43	individualistic	China	collectivistic
-2.43	individualistic	Mexico	collectivistic
-1.57	individualistic	Mexico	collectivistic
-0.14	individualistic	Germany	individualistic
-1.71	individualistic	Mexico	collectivistic
0.29	collectivistic	Mexico	collectivistic
-2.57	individualistic	Mexico,Germany	individualistic
-1.14	individualistic	The Netherlands	individualistic
-2.14	individualistic	Germany	individualistic
-0.86	individualistic	Germany	individualistic
-0.71	individualistic	Germany	individualistic

0.29	collectivistic	Germany	individualistic
-0.86	individualistic	Sweden	individualistic
1.14	collectivistic	Mexico	collectivistic
0.00	individualistic	The Netherlands	individualistic
-1.29	individualistic	Germany	individualistic
-0.71	individualistic	Germany	individualistic
-2.43	individualistic	Germany	individualistic
-1.57	individualistic	Germany	individualistic
1.00	collectivistic	The Netherlands	individualistic
0.00	individualistic	Mexico	collectivistic
-2.29	individualistic	The Netherlands	individualistic
-2.86	individualistic	The Netherlands	individualistic
-1.71	individualistic	The Netherlands	individualistic
-1.29	individualistic	Mexico	collectivistic
-1.43	individualistic	Bulgaria	collectivistic
-0.71	individualistic	Germany	individualistic
-1.86	individualistic	Malta	individualistic
-1.57	individualistic	Indonesia	collectivistic
-2.14	individualistic	India	collectivistic
0.57	collectivistic	The Netherlands	individualistic
-4.86	individualistic	The Netherlands	individualistic
1.57	collectivistic	The Netherlands	individualistic
2.00	collectivistic	US	individualistic
-0.14	individualistic	The Netherlands	individualistic
1.71	collectivistic	The Netherlands	individualistic
-1.14	individualistic	Indian	collectivistic
-1.14	individualistic	Indian	collectivistic
-1.43	individualistic	The Netherlands	individualistic
-0.43	individualistic	The Netherlands	individualistic
-1.86	individualistic	Cyprus	individualistic
1.00	collectivistic	The Netherlands	individualistic
0.14	collectivistic	Mexico	collectivistic
-2.00	individualistic	The Netherlands	individualistic
1.71	collectivistic	The Netherlands	individualistic
-3.00	individualistic	The Netherlands	individualistic
2.29	collectivistic	China	collectivistic
-2.00	individualistic	The Netherlands	individualistic
0.00	individualistic	Germany	individualistic
0.43	collectivistic	The Netherlands	individualistic
-0.29	individualistic	The Netherlands	individualistic
-2.00	individualistic	Mexico	collectivistic
0.57	collectivistic	The Netherlands	individualistic
-1.43	individualistic	Mexico	collectivistic
0.14	collectivistic	Germany	individualistic
-0.71	individualistic	Germany	individualistic
1.14	collectivistic	The Netherlands	individualistic
-1.86	individualistic	The Netherlands	individualistic
1.00	collectivistic	The Netherlands	individualistic

-1.71	individualistic	The Netherlands	individualistic
0.00	individualistic	The Netherlands	individualistic
1.43	collectivistic	The Netherlands	individualistic
-2.57	individualistic	The Netherlands	individualistic
-3.00	individualistic	The Netherlands	individualistic
1.57	collectivistic	The Netherlands	individualistic
-1.43	individualistic	Mexico	collectivistic
1.00	collectivistic	The Netherlands	individualistic
1.14	collectivistic	The Netherlands	individualistic
1.00	collectivistic	The Netherlands	individualistic
-0.57	individualistic	The Netherlands	individualistic
-1.00	individualistic	The Netherlands	individualistic
1.57	collectivistic	The Netherlands	individualistic
1.71	collectivistic	The Netherlands	individualistic
1.00	collectivistic	The Netherlands	individualistic
-1.29	individualistic	The Netherlands	individualistic
1.14	collectivistic	The Netherlands	individualistic
0.57	collectivistic	Finland	individualistic
2.14	collectivistic	The Netherlands	individualistic
2.00	collectivistic	The Netherlands	individualistic
-0.57	individualistic	The Netherlands	individualistic
1.29	collectivistic	The Netherlands	individualistic
2.43	collectivistic	The Netherlands	individualistic
-3.71	individualistic	The Netherlands	individualistic
-1.29	individualistic	Mexico	collectivistic
0.86	collectivistic	The Netherlands	individualistic
-1.29	individualistic	The Netherlands	individualistic
1.43	collectivistic	The Netherlands	individualistic
-1.14	individualistic	Mexico	collectivistic
-0.43	individualistic	Mexico	collectivistic
-1.14	individualistic	Mexico	collectivistic
-0.86	individualistic	Mexico	collectivistic
-0.71	individualistic	Mexico	collectivistic
0.00	individualistic	Mexico	collectivistic
-0.57	individualistic	Mexico	collectivistic
-0.57	individualistic	Mexico	collectivistic
-0.71	individualistic	Mexico	collectivistic
-3.14	individualistic	Mexico	collectivistic
1.29	collectivistic	Mexico	collectivistic
-0.43	individualistic	Mexico	collectivistic
-1.00	individualistic	The Netherlands	individualistic
0.86	collectivistic	Mexico	collectivistic
-1.14	individualistic	Mexico	collectivistic
-2.29	individualistic	Mexico	collectivistic
-1.43	individualistic	Mexico	collectivistic
1.71	collectivistic	The Netherlands	individualistic
-3.29	individualistic	Mexico	collectivistic
0.43	collectivistic	Mexico	collectivistic

0.71	collectivistic	The Netherlands	individualistic
-3.14	individualistic	The Netherlands	individualistic
0.86	collectivistic	Mexico	collectivistic
-1.43	individualistic	Mexico	collectivistic
2.29	collectivistic	The Netherlands	individualistic
0.00	individualistic	The Netherlands	individualistic
-0.29	individualistic	The Netherlands	individualistic
1.00	collectivistic	Mexico	collectivistic
1.14	collectivistic	Mexico	collectivistic
2.57	collectivistic	The Netherlands	individualistic
1.14	collectivistic	Mexico	collectivistic
0.00	individualistic	Mexico	collectivistic
-1.29	individualistic	Mexico	collectivistic
1.00	collectivistic	Mexico	collectivistic
0.71	collectivistic	Mexico	collectivistic
0.43	collectivistic	The Netherlands	individualistic
1.29	collectivistic	The Netherlands	individualistic
-0.86	individualistic	Mexico	collectivistic
-0.57	individualistic	The Netherlands	individualistic
-1.57	individualistic	The Netherlands	individualistic
1.57	collectivistic	The Netherlands	individualistic
2.57	collectivistic	The Netherlands	individualistic
2.29	collectivistic	The Netherlands	individualistic
0.86	collectivistic	Germany	individualistic
-0.29	individualistic	The Netherlands	individualistic
0.57	collectivistic	The Netherlands	individualistic
1.86	collectivistic	The Netherlands	individualistic
-1.29	individualistic	Mexico	collectivistic
1.86	collectivistic	The Netherlands	individualistic

Appendix 14: Indirect Effects toward intention to use