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Does Culture Matter for the Design of Chatbots Promoting Blood Donation Behaviour? - The Difference in Perception of Culture-Tailored Conversation Styles

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Does Culture Matter for the Design of Chatbots Promoting Blood Donation Behaviour? - The Difference in Perception of Culture-Tailored Conversation Styles

Completed Research Paper

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Abstract

While blood products are a critical resource in healthcare systems, providing sufficient blood products is a worldwide challenge, especially so since the COVID-19 pandemic. As easy and timely access to information is crucial to convince (potential) donors to change their behaviour and become regular donors, chatbots can offer fast and easy access to information whenever (potential) donors need it. Due to their human-like design, chatbots can help motivating and convincing users to donate blood regularly to work against the ongoing, post-pandemic challenges in providing sufficient blood supply. Based on previous findings, we assume that users' perception of a blood donation chatbot can vary worldwide, in relation to the incorporated design features. As part of a design science study, we conducted an online between-subject experiment with participants from USA, Germany, South Africa and India. We could show a significant negative moderating effect of horizontal individualism in terms of the chatbot's individualistic conversation style and the perceived similarity in social group membership, implicating the so-called "contribution conflict" with regard to IS and culture.

Keywords: Blood services, chatbots, cultural influences, online experiment

Introduction

Blood is one of many important resources in healthcare. Providing sufficient blood products is challenging for all countries worldwide, especially so since the COVID-19 pandemic. Blood products cannot be produced artificially, but voluntary donations are necessary. In addition, a short shelf-life of the blood products makes fulfilling the demand that often varies over time even more difficult. Worldwide, blood donations significantly decreased during the COVID-19 pandemic and blood services could not educate and convince new donors personally (Chiem et al., 2022; Gammon et al., 2021; Veseli et al., 2022). In addition, mobile donation clinics could not operate, leading to critical deficits in blood donations. Staff shortages as experienced in many areas of the healthcare systems, mean an ongoing challenge for blood services in post-pandemic times. Still, easy and timely access to information is crucial to convince (potential) donors to change their behaviour and become regular donors (Asamoah-Akuoko et al., 2021). Chatbots can offer fast and easy

access to information whenever (potential) donors need it and allow staff to focus on tasks that can only be performed by humans (Müller and Reuter-Oppermann, 2022b). As all countries worldwide suffer from similar challenges within blood logistics, they all can potentially profit from IT support in general and more specifically from blood donation chatbots. Overall, the pandemic has proven the importance of information systems in healthcare practice once again. Due to their human-like design, chatbots can help motivating and convincing users to donate blood regularly to work against the ongoing, post-pandemic challenges in providing sufficient blood supply.

Previous research on blood donation chatbots and more comprehensive blood donation apps for Germany and the African countries South Africa and Ghana has indicated the need for culture-tailored designs (Müller and Reuter-Oppermann, 2022a; 2023). Differences in the perceived persuasiveness of design features for individualist vs. collectivist countries were detected: While personal features (e.g., rewards, reminders) dominated for users in an individualist country, those from a collectivist country preferred social features (e.g., social role, normative influence) (Müller and Reuter-Oppermann, 2023). Therefore, we assume that culture-tailored design features for blood donation chatbots are necessary to make them successful, but to the best of our knowledge, this has not been addressed in the literature before. With this work, we study the effects of using personal vs. social features in a blood donation chatbot in four different countries: USA, Germany, South Africa and India. These countries do not only differ geographically and in their size, social systems and general structure, but also in the design of their respective healthcare systems and the setup of their blood services. India, for example, is nine times larger than Germany, but is home to 17 times as many inhabitants. While India and USA experienced the highest COVID-19 rates during the pandemic, with the support of other countries like Germany, India profited from the public health insurance that was previously installed.

In order to motivate users to donate blood regularly, chatbots must be perceived positively in all countries, independent of the respective healthcare systems and country characteristics. Therefore, we investigate the design of a blood donation chatbot with respect to potentially necessary variations in design, in relation to the different countries. As part of a design science study, we conducted an online between-subject experiment with participants from all four countries. In summary, we address the following research question in this work:

How does the culture-tailored conversation style of blood donation chatbots influence users' intention to donate blood?

The remainder of the paper is structured as follows. The next section summarises the underlying foundations and the related work. Then, the research model and the hypotheses are presented, followed by the description of the applied methodology and the results. The paper closes with a discussion of the results and the limitations as well as an outlook on future research.

Foundations and Related Work

Cultural Differences on IS Perception and its Implications for Blood Donation IS

For an information system to be an effective practical solution, it must not only fulfil its purpose, but also be widely accepted and continuously used. The fact that due to cultural differences this prerequisite can be difficult to achieve is nothing new in IS research (Kappos and Rivard, 2008; Leidner and Kayworth, 2006). The main reason for this inhibition lies in the IS design and how it is perceived differently (Reinecke and Bernstein, 2013), which is why “culture” must be considered from the beginning of the IS design process. In order to understand how “culture” influences IS perception, it is necessary to know what it means in the IS context.

Prevalent Culture Understanding in IS Research

Even though there are many different and in part contradictory definitions of culture, the one of D. W. Straub et al. (2002) describing culture as a set of group members' shared values and G. Hofstede's (1980) conceptualisation of culture have prevailed in the IS field (Ford et al., 2003; Geeling et al., 2017; 2019). This is not

surprising for two reasons. First, in line with Schein's three-level model describing culture as manifestations of basic assumptions, values and artefacts and his argumentation that, in contrast to assumptions and artefacts, values are not only visible but also decipherable, they suit best for investigations and measures of culture (Schein 1985aa; 1985bb). In G. Hofstede's (1980) conceptualisation of culture, the reference group that provides value orientation is the nation in terms of its geographical boundaries, which is why the term "national culture" is common. G. Hofstede (1980, p. 260) describes it as "the collective programming of the mind which distinguishes the members of one human group from another." G. Hofstede's (2011) six value dimensions build the basis for this distinction. These are "power distance", "uncertainty avoidance", "individualism vs. collectivism", "masculinity vs. femininity", "long term vs. short term orientation" and "indulgence vs. restraint". This brings us to the second reason for the prevalence of G. Hofstede's (1980) conceptualisation of culture. By providing six scores for each country, these six value dimensions, originally emerged from a national-level analysis, facilitate comparisons between social groups from different countries (G. Hofstede, 2011). The underlying cultural values, which are comparable to social norms that guide how humans act and communicate with each other (Leidner and Kayworth, 2006), are also responsible for the behaviour of these groups (Schein, 1985a).

Cultural Differences in the Context of Blood Donation

Recent research found that national culture and its conceptualisation in individualism vs. collectivism is well transferable to the context of blood donation behaviour (Müller and Reuter-Oppermann, 2023). Due to the culturally driven variation in blood donation practices grounded on different conceptualisations of altruism (Ferguson et al., 2020; Ma et al., 2017), Müller and Reuter-Oppermann (2023) distinguish between an individualist and a collectivist blood donation culture. The latter represents the Black, Asian and Ethnic Minority (BAME) communities, whose motivation for donating blood is primarily out of reciprocity (knowing exactly whose life is being saved), whereas in Western communities (non-BAME), represented by the former, donors are not aware of the person they donated blood for (saving the life of strangers). The transferability becomes comprehensible when looking at the difference between individualist and collectivist cultures stemming from different political orientations and social structures across nations (G. Hofstede, 2001). While social behaviour in individualist cultures is mainly guided by individual needs like personal accomplishments following a self-driven approach separated from society, in collectivist cultures it is primarily influenced by group needs such as taking care of the group's position in society in exchange for loyalty from the group (G. Hofstede, 1980). Several cross-cultural studies of the theory of planned behaviour have demonstrated this interdependence by showing that social behaviour is primarily determined by attitudes in terms of individualists and by norms with regard to collectivists (e.g., Bontempo and Rivero, 1992). The latter, in contrast to the former, are therefore more willing to accept other opinions and comply with them (Chen et al., 1998; Srite and Karahanna, 2006).

Research Potential for the Investigation of Cultural Differences on Blood Donation Chatbot Perceptions

With regard to the perception of information systems, these cultural differences also play a role as demonstrated in online experiments with different healthcare app designs (use cases: fitness and blood donation) (Müller and Reuter-Oppermann, 2023; Oyibo and Vassileva, 2019). The online surveys of both studies revealed that while individualist cultures perceive personal features as most persuasive in terms of behaviour change, in the perception of collectivist cultures the persuasiveness of social features dominates. For instance, for the blood donation app, these features mapped to the techniques of the persuasive system design model (Oinas-Kukkonen and Harjumaa, 2009) comprise for example "reminders" and "rewards" with regard to personal features and "normative influence" as well as "social role" regarding social features (Müller and Reuter-Oppermann, 2023). For the same IS to be adopted from different cultures, knowledge about such cultural factors is crucial, because as both app experiments demonstrated, IS are not values-neutral but values-laden and thus can lead to different perceptions that designers should be aware of (Leidner and Kayworth, 2006). In line with this, many DSR and IS researchers, who made use of the link of Hofstede's dimensions to certain IS design aspects for the investigation of differences of users' perceptions and preferences between cultures, suggest that differences in fundamental cultural values might be the reason why IS perception varies across countries (e.g., Marcus and Gould, 2000; Reinecke and Bernstein, 2013; Singh

et al., 2006). With this in mind, we want to find out how the perception of a specific IS (i.e., blood donation chatbot) differs between cultures (i.e., USA, Germany, South Africa, India) when a particular design feature (i.e., chatbot's conversation style) is manipulated based on cultural differences regarding the value dimension "individualism vs. collectivism".

While most IS studies such as the aforementioned examples consider websites for cultural investigations, chatbots are largely unexplored. Furthermore, like in the examples above, most of these investigations are based on the assumption that IS perceptions are similar for people of the same culture without paying attention to the "ecological fallacy" trap of possibly substituting stereotypes (Robinson, 1950), making individual level analysis indispensable (Srite and Karahanna, 2006; D. W. Straub et al., 2002). Basically, the different scores of Hofstede's dimensions across countries ranging from zero to 100 express the general persistence of certain sets of values (G. J. Hofstede et al., 2010; Leidner and Kayworth, 2006), whose variation in magnitude is in fact influenced by each individual's degree of subscription to these cultural values and their aggregation to the collective (Srite and Karahanna, 2006; D. W. Straub et al., 2002). Therefore, for the examination of the impact of national culture on users' IS perception, we assess this kind of degree for each user. Moreover, according to this, in the following, we differentiate between cultures of higher (score above 50) and lower individualism (score below 50). The latter are represented by subjects from four different countries. We decided on USA (score: 91), Germany (score: 67), South Africa (score: 65) and India (score: 48) for two reasons (G. J. Hofstede et al., 2010). First, in the order they are presented, they globally sprawl over Western and Eastern cultures whose comparison is very common in cultural IS studies (Geeling et al., 2016). Second, in the context of blood donation, they are representatives of the aforementioned non-BAME or individualist and BAME or collectivist cultures (Müller and Reuter-Oppermann, 2023). Additionally, we respond to the call of Ford et al. (2003) to link Hofstede's dimensions to theory by following the suggestion of D. W. Straub et al. (2002) to opt for the social identity theory (SIT). We argue that SIT is particularly suited to address our research question, since "[e]spoused individualism / collectivism values are likely to influence the effect of in-group referents on behavior[u]r" (Srite and Karahanna, 2006, p. 697). With regard to human-computer interaction (HCI), the next section clarifies how this might also be applicable to chatbots and their effect on blood donation behaviour determined by the intention to donate blood as known from the theory of planned behaviour (Ajzen, 1991).

Social Identity and Similarity-Attraction Theory as a Lens for Culture-Tailored Chatbot Design

With the recent release of ChatGPT embodying generative artificial intelligence, the hype around chatbots as one of the most popular IS reignited again after the first development in the 1960s with the rule-based version of the chatbot ELIZA (Weizenbaum, 1966). The two main reasons for chatbot popularity in general are, on the one hand, its technological advances and, on the other hand, its ease of use since chatbots enable interaction through turn-by-turn conversations with text messages in natural language. With this capability, they mimic human conversation even though there is a software program behind (Dale, 2016). Thus, with their roots in healthcare via the psychotherapeutic chatbot ELIZA, it is not surprising that users can get the feeling of a human contact and assign personalities to chatbots to which they respond socially even if equipped with only rudimentary human-like cues (Nass et al. 1994; 1995; Nass and Moon 2000; Weizenbaum 1966). According to this phenomenon known as "Computers Are Social Actors" (CASA) paradigm (Nass et al., 1994), these subconscious user responses exhibiting social behaviour come from social cues elicited by design features derived from interpersonal communication (e.g., emojis and small talk) (Feine et al., 2019; Gnewuch et al., 2017). In terms of verbal cues, user reactions are triggered by content and style features that are linked in the way that for the same content (i.e., what is the message about) many different styles (i.e., how the message is expressed) are applicable (Collier, 2014; Feine et al., 2019; Walther, 2006). This is also true for blood donation chatbots whose message is to donate blood and save lives. Therefore, putting this all together, conversation style might be an essential design feature based on that users may feel a sense of (not) belonging to the chatbot representing cultural values through which users may (not) identify with and develop in-group and out-group behaviours according to SIT (Tajfel, 1970a; 1970b; 1978).

To the best of our knowledge, we are the first who investigate how users' perceptions of a chatbot are impacted by cues with regard to social group membership in terms of national culture or individualism / collec-

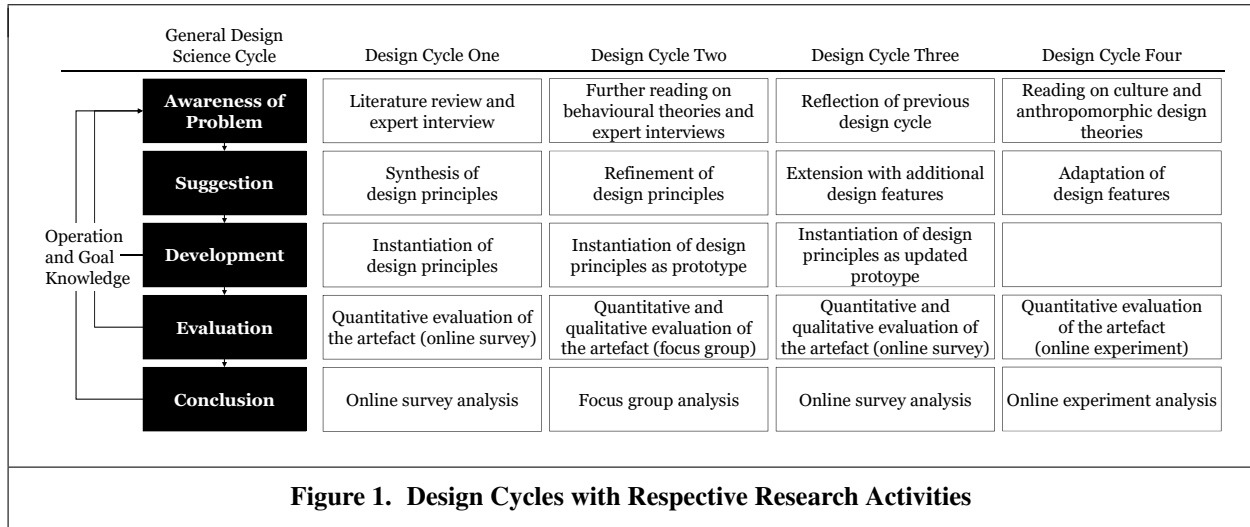
tivism in particular (e.g., in terms of organisational culture this was examined by Mirbabaie et al. (2020)). Generally, as far as we know, no research has been done with respect to SIT in the HCI combined with the blood donation context and only little exist for the understanding of how identification with culture links group membership to the individual's self-concept in the narrower and behaviour in the broader sense. According to SIT, an individual's self-concept originally is derived from affiliations to social groups with referents such as the country of origin that determines if the individual feels part of a group (in-group) or not (out-group) (Hogg, 1996; Tajfel, 1978). This means national culture is one out of several social categories (e.g., age, gender) to which individuals classify themselves and through which they define themselves relative to others with the help of its internalised characteristics. Drawing on CASA, it is reasonable to assume that individuals with high culture identification may (not) share cultural values with the chatbot being perceived as part of the in-group (out-group) depending on its conversation style aligned to individualistic / collectivistic traits. The more cultural values the user shares with the chatbot, the more similar the user feels to the chatbot (Gefen and Straub, 2001). This, in turn, leads to a stronger attraction to the chatbot as well as greater liking and trust according to the similarity-attraction theory (SAT) (Byrne, 1971). In HCI, simple similarity-attraction effects with regard to personality attributions to the chatbot (e.g., dominant / submissive) are widely observed (e.g., Al-Natour et al. 2005; 2006; Gnewuch et al. 2020; Hess et al. 2005). For instance, similarly to us, Gnewuch et al. (2020) investigated the perceptions of style as a verbal cue but instead of its influence on users' perceived similarity in social group membership, they focused on dominance as a facet of personality and how these perceptions impact users' self-disclosure behaviour in e-commerce.

In summary, we use SIT and SAT as a theoretical framework in order to examine how a chatbot's conversation style aligned to individualistic / collectivistic traits impacts users' perceived similarity in social group membership and how these perceptions influence their intention to donate blood, since we argue that culture-tailored designed chatbots, compared to existing ones without regard to culture, might serve as an even more persuasive and natural way to mobilise and support all types of donors, no matter where they come from.

Blood Donation Chatbots in Research and Practice

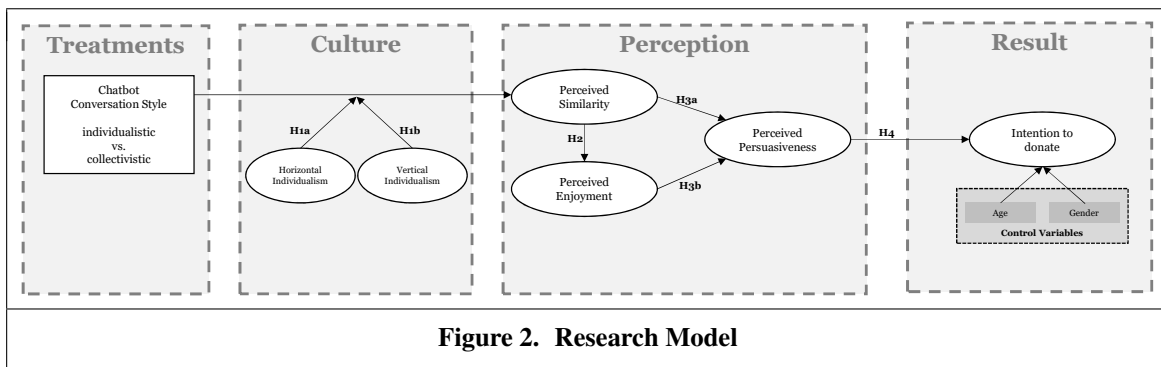
With regard to research and practice, to the best of our knowledge, generally little research has been done concerning the design of chatbots in the context of blood donation and no culture-tailored chatbot has been developed so far. In research, Roman et al. (2020) designed a chatbot particularly suited to a Brazilian blood donation centre and evaluated its design with the help of a user experience study with blood donors on site. In practice, the chatbot "Clara", representing a female doctor avatar, is available through the website of the American National Red Cross and, like the Facebook Messenger chatbot of the Canadian Blood Services (Canadian Blood Services, 2017), offers not only free text input to the user but also guidance in the form of website links and buttons (The American National Red Cross, 2022). Additionally, they partly represent some social cues like avatars and names, giving the user the feeling to talk to a blood service employee that answers their questions about donating blood and helps to book appointments. However, with respect to verbal cues and conversation style in particular, their style is not aligned to any culture traits that, when designed appropriately, could increase potential blood donors' willingness to donate blood and therefore may offer room for improvement regarding the design (Gregor and Hevner, 2013).

In contrast to them, the fourth design cycle in Figure 1 shows that for our design of a blood donation chatbot, we consider cultural interconnections from early on. Our present work as part of an ongoing design science research project is grounded on the research activities presented in design cycle (DC) four. In its preceding research activities, we first theoretically derived and evaluated the design requirements and design principles of blood donation chatbots (DC one), before we implemented them in a prototype version that we first tested with experts from different blood services (DC two) in order to take the chatbot's improved version based on the experts' feedback for the evaluation with our real target group of potential blood donors after that (DC three). In line with their predominantly positive feedback regarding our current chatbot design, this improved version builds also the basis for our last design cycle (DC four), where we adapted our design features, more specifically the chatbot's conversation style, to implement a culture-tailored design for evaluations in a chatbot experiment with potential blood donors from different countries.



Research Model and Hypotheses

This study aims to examine the relation of a chatbot’s culture-tailored conversation style (individualistic vs. collectivistic), in the following described as “individualistic conversation style” and “collectivistic conversation style”, on the user’s intention to donate blood. Following the social identity theory and the similarity-attraction theory, as shown in Figure 2, we derive a set of hypotheses on how the conversation style impacts the perceived similarity, perceived enjoyment and perceived persuasiveness of users. In this regard, we also investigate the moderation effect of horizontal and vertical individualism on the relation of conversation style and perceived similarity. We will outline and present the hypotheses in more detail in the forthcoming section.



Perceived Similarity

With respect to our selected countries representing cultures of higher and lower individualism, we theorise a moderating effect of horizontal and vertical individualism on the relation of individualistic conversation style and perceived similarity. In this regard and based on the SIT and SAT, we theorise that an individualistic conversation style that emphasises pro-self-framed messages (e.g., take control of **your health**) relates to the perceived similarity of users in individualist cultures. This implies that users from individualist cultures will perceive the conversation style aligned to individualistic traits as similar to their own values compared to a chatbot that presents a collectivistic conversation style. While horizontal individualism refers to individuals who value their uniqueness and independence (i.e., emphasis on egalitarianism), vertical individualism refers to individuals who seek autonomy and superior status within a society’s hierarchy (Triandis, 2001). Applied to the context of this study, individuals from individualist cultures will moderate the relation of an individualistic conversation style on the perceived similarity because they have a stronger tendency to re-

late the individualistic framing to themselves. For instance, in the context of COVID-19, numerous scholars investigated the effects of different conversation styles on behavioural outcomes, for example, complying with containment measures or caring for others (Čavojová et al., 2022), wearing masks (Lu et al., 2021) and general prevention measures (Card, 2022), showing mixed results with complex relations. In the context of this study, Evans and Ferguson (2013) have shown that self-benefitting motivations (e.g., experiencing good feelings about oneself after the act of donating blood) can positively impact behaviour. In addition, Gürhan-Canli and Maheswaran (2000) found a tendency of individuals to favour their products over foreign products. Against this background, we formulate the following two moderating effects:

H1a: Horizontal individualism has a moderating effect on the chatbot's individualistic conversation style leading to perceived similarity.

H1b: Vertical individualism has a moderating effect on the chatbot's individualistic conversation style leading to perceived similarity.

Perceived Enjoyment

In general, perceived enjoyment refers to an emotional attitude that reflects the degree to which users perceive using a system as an enjoyable and satisfying experience (Davis et al., 1992). Prior research has shown that attributes of interactivity and enjoyment, such as interpersonal attraction (Lew et al., 2018) and enjoyment (e.g., engagement), can affect behavioural outcomes (Bellur and Sundar, 2017; Ischen et al., 2020). Based on the similarity-attraction theory (Berscheid and Walster, 1969; Byrne, 1997), individuals are more likely to be attracted by others who are similar to themselves. In this regard, Moon and Nass (1996) have shown that these relationships also hold in human-computer-interactions by showing that users are more attracted to a computer that displays similar personality characteristics. In this context, the perceived similarity can act as an stimulus for an enjoyable interaction and influence users' perceived enjoyment (Al-Natour et al., 2011). Thus, we postulate:

H2: Perceived similarity increases the users' perceived enjoyment of the chatbot.

Perceived Persuasiveness

In the context of chatbot research, the perceived similarity can be related to the perceived persuasiveness. In general, persuasiveness refers to the computer's ability to impact users' beliefs and attitudes, such as changing users' attitudes towards donating blood (Lehto et al., 2012). In this regard, narrative persuasion is often used to describe how the beliefs, attitudes, intentions and behaviours of individuals are influenced (Bilandzic and Busselle, 2013). According to Ooms et al. (2019), being exposed to narratives that elicit feelings of similarity can have positive effects on the acceptance of beliefs and thus influence persuasion. Further, Shen et al. (2015) reveal in a meta-analysis related to the health conversation contexts that narratives positively impact persuasion. For example, Dragojevic et al. (2023) report that character accent can affect the persuasiveness of health narratives, mediated by the perceived similarity of individuals. Thus, we hypothesise:

H3a: Perceived similarity increases the users' perceived persuasiveness of the chatbot.

Further, the perceived enjoyment of the chatbot can be related to persuasiveness. Based on the unified theory of technology acceptance (Venkatesh et al., 2003), perceived enjoyment can act as an antecedent of intrinsic motivation (Davis et al., 1992) and can be related to persuasion. Koenig-Lewis et al. (2015) have shown that perceived enjoyment is mediated through perceived usefulness, which in turn positively affects behavioural intention. Additionally, Li and Mao (2015) show that hedonic values of chatbots such as perceived enjoyment positively impact social presence, which drives reuse intention and thus influences persuasion. Similarly, Ischen et al. (2020) found that interacting with a chatbot compared to a static website increases users' enjoyment, which, as a result, leads to a higher degree of persuasion. Therefore, we formulate the following hypothesis:

H3b: Perceived enjoyment increases the users' perceived persuasiveness of the chatbot.

Intention to Donate

The intention to donate refers to a conscious decision and can serve as a reporter for users' actual behaviour (Ajzen, 1991; K. S. Chin et al., 2019). In this regard, persuasion can impact the intention to donate by influencing users' beliefs and attitudes, which are determinants for behaviour (Fishbein and Ajzen, 1975; Oinas-Kukkonen and Harjumaa, 2009). Applied to the context of this study, if a chatbot is successful in persuading users to donate blood (i.e., users are more motivated), the intention to do so is also increased. For instance, Drozd et al. (2012) reveal that users' perceived persuasiveness positively affects the intention to use a health information system. Further, Pietrantonio et al. (2022) showed, in the context of COVID-19, that perceived persuasiveness positively impacts users' intention to comply with chatbots' recommendations. Against this background, we hypothesise:

H4: Perceived persuasiveness increases the users' intention to donate blood.

Methodology

To investigate the relationship of a chatbot's individualistic / collectivistic conversation style on the intention to donate via cultural influences' perceived similarity, perceived enjoyment and perceived persuasiveness, we conducted an online between-subject experiment in March 2023. The following sections outline our sample, data collection and measurements.

Experimental Procedure and Task

We implemented a structured dialog with specific tasks, similar to other studies published in IS research (e.g., Araujo, 2018; Brendel et al., 2022). In the beginning, all participants were informed about the general procedure on a briefing page (e.g., topic, task and duration). In this regard, all participants were aware that they were interacting with a chatbot and not an actual human. To check the awareness of the participants about the concept of the study, we included three comprehension checks (e.g., to examine that users were aware about the topic of blood donation). After successfully passing these checks, participants were randomly assigned to one of the two treatment designs (individualistic vs. collectivistic conversation style) and started to interact with the chatbot. The interaction consisted of three steps: (1) welcoming the participant, (2) exchanging information about blood donation and (3) ending the conversation and directing the user to the survey.

Experimental Treatments

For this experiment, we implemented our chatbots via Google Dialogflow and used the same language model with identical dialogues to train them. All participants were able to access this experiment with a range of different devices (e.g., tablets) because the website design was responsive. Further, both chatbots were able to process and understand numerous input variations of the users (e.g., word and syntax variability). The only difference between the chatbot designs was the conversation style (individualistic vs. collectivistic) (see Table 1). The conversation style was based on literature regarding the difference between individualistic and collectivistic style as well as individualism and collectivism in general, similar to Liebrecht et al. (2020) and Tang et al. (2022). For instance, we used differences in word and syntax variability to frame different individualistic (e.g., "With donating blood, the **own health** can be improved [...]. Can you imagine **how great you will feel** after donating blood?") and collectivistic (e.g., "**Many donors report** that donating blood has a positive effect on their blood pressure [...]. Wouldn't it be **great to be part of this donor community?**") counterpart dialogues.

Participants

In total, with the help of the platform Clickworker, we randomly recruited 487 users from Germany (n = 136), South Africa (n = 133), USA (n = 113) and India (n = 105) who participated in our experiment. Overall, we excluded 88 respondents who provided wrong answers to either one of our two attention checks (e.g., "Choose point 1 if you carefully read each question") or provided incomplete answers in our survey (e.g.,

	Individualistic Conversation Style	Collectivistic Conversation Style
1	“Donating blood means to prove morals and to take charge of the own health . How many lives can be saved with your one blood donation? ”	“Donating blood is an opportunity to help each other , especially in times of need. If one donates blood, up to three lives can be saved . Isn’t that a good feeling?”
2	“In addition to saving up to three lives, donating blood shows that one can take care of the own well-being . Do you know, if you donate blood, you can benefit from a possible health check?”	“Blood donations are a symbol of shared humanity and the bonds that connect each other as a donor community. Do you know, if you donate blood, you as part of this community can benefit from a possible health check?”
3	“With donating blood, the own health can be improved because it has a positive effect on blood pressure, boosts the performance and increases the sense of well-being. Can you imagine how great you will feel after donating blood?”	“ Many donors report that donating blood has a positive effect on their blood pressure, that it boosts their performance and that it increases their sense of well-being. Wouldn’t it be great to be part of this donor community? ”
4	“Take control of your health and make a positive impact by donating blood! Please continue to answer the questionnaire by clicking below.”	“Reduce blood shortage and visit the blood service today in supporting your community by donating blood! Please continue to answer the questionnaire by clicking below.”
Table 1. Exemplary Chatbot Messages for Both Experimental Conditions		

facing technical issues). The mean age of all participants was 35.3 years and 49.3 % were female. Our participants took under eleven minutes to complete the experiment and were compensated with 2 € for their participation.

Measures

To test our hypotheses, we used established constructs and items from the literature. We measured all items on a 7-point-likert scale ranging from 1 (“strongly disagree”) to 7 (“strongly agree”), including horizontal and vertical individualism (Triandis and Gelfand, 1998), perceived similarity (Piasentin and Chapman, 2007), perceived enjoyment (Koufaris, 2002), perceived persuasiveness (Lehto et al., 2012) and intention to donate (France et al., 2007). We evaluated every construct and item based on their Cronbach’s α , composite reliability (CR), average variance extracted (AVE), factor loading, mean, and standard deviation (SD) (Tables 2 and 3).

Due to Cronbach’s $\alpha > .80$ (Cortina, 1993), CR $> .70$, and AVE $> .50$ (Nunnally, 1970), all constructs demonstrate sufficient reliability. Further, all items provided sufficient factor loading, indicating sufficient indicator loading ($> .60$) (Gefen and Straub, 2005). Moreover, all constructs are above the recommended threshold of $.70$ for CR and Cronbach’s α (Nunnally, 1994).

In addition, all AVEs exceed the threshold of $> .50$ (Hair et al., 2006), indicating sufficient convergent validity. Lastly, discriminant validity is also supported since the square root of the AVE of each construct was higher than the correlations with all other constructs (Fornell and Larcker, 1981). In sum, our research model presents sufficient reliability and validity.

Results

To evaluate our derived hypotheses, we used the partial least square (PLS) regression method by using Smart PLS 4.0.9.0. PLS is widely accepted in experiment research and has several advantages, including fewer restrictive assumptions (Fombelle et al., 2016). Further, we applied structural equation modelling (SEM) to account for the possibility of measurement errors and the multidimensional structure of theoretical constructs (Bagozzi and Yi, 1988). As suggested by W. W. Chin (1998), we assessed the significance of the

Constructs and Items	Mean	SD	Loadings
Horizontal Individualism (Cronbach's $\alpha = .846$, CR = .895, AVE = .681) (adapted from Triandis and Gelfand (1998))			
I'd rather depend on myself than others.	5.542	1.390	.797
I rely on myself most of the time; I rarely rely on others.	5.661	1.255	.878
I often do "my own thing".	5.561	1.303	.794
My personal identity, independent of others, is very important to me.	5.739	1.268	.828
Vertical Individualism (Cronbach's $\alpha = .821$, CR = .882, AVE = .652) (adapted from Triandis and Gelfand (1998))			
It is important that I do my job better than others.	5.252	1.439	.721
Winning is everything.	4.393	1.808	.863
Competition is the law of nature.	4.805	1.661	.866
When another person does better than I do, I get tense and aroused.	3.627	1.840	.772
Perceived Similarity (Cronbach's $\alpha = .930$, CR = .956, AVE = .878) (adapted from Piasentin and Chapman (2007))			
My personality is similar to the chatbot I worked with.	3.877	1.775	.934
I share a lot in common with the chatbot.	3.871	1.821	.942
My personality is well suited for the personality or image of the chatbot.	4.090	1.774	.935
Perceived Enjoyment (Cronbach's $\alpha = .944$, CR = .960, AVE = .856) (adapted from Koufaris (2002))			
<i>I think the interaction with the chatbot...</i>			
is interesting.	5.200	1.574	.932
is enjoyable.	5.003	1.609	.933
is exciting.	4.794	1.701	.934
is fun.	4.843	1.682	.902
Perceived Persuasiveness (Cronbach's $\alpha = .847$, CR = .907, AVE = .795) (adapted from Lehto et al. (2012))			
The chatbot made me think about registering for blood donation.	5.320	1.532	.867
The chatbot is personally relevant to me.	4.910	1.653	.896
The chatbot makes me reconsider my thinking about blood donation.	5.180	1.651	.861
Intention to donate (Cronbach's $\alpha = .954$, CR = .966, AVE = .878) (adapted from France et al. (2007))			
I intend to sign a donor card in the near future.	5.116	1.604	.906
I intend to give blood.	5.366	1.594	.963
I have decided to give blood.	5.219	1.665	.945
I will try to give blood.	5.467	1.536	.933
<i>CR = Composite reliability, AVE = Average variance extracted, SD = Standard deviation</i>			
Table 2. Measurement of Constructs and Items			

corresponding path coefficients by using the bootstrapping resampling method with 5,000 samples. All relationships, path coefficients, R²-values and significance levels of our model are visualised in Figure 3.

The results show that the individualistic conversation style of our chatbot (individualistic vs. collectivistic) does not have a significant effect on the perceived similarity ($\beta = -.111$, $p = .159$). Further, the results reveal a significant negative moderation of horizontal individualism, meaning that **H1a** is contradicted ($\beta = -.203$, $p = .030$). In contrast, **H1b** is supported due to vertical individualism significantly moderating the effect of the individualistic conversation style on the perceived similarity ($\beta = .193$, $p = .027$). Additionally, our results reveal a significant effect of perceived similarity on the perceived enjoyment of the chatbot ($\beta = .247$, $p < .001$), supporting **H2**. Moreover, we find support for **H3a**, indicating a significant effect of the perceived similarity on the perceived persuasiveness ($\beta = .247$, $p < .001$). In addition, the results show that perceived enjoyment significantly affects perceived persuasiveness ($\beta = .487$, $p < .001$). Thus, **H3b** is also supported. Lastly, our results indicate a significant effect of the perceived persuasiveness on the intention to donate (β

Constructs	1	2	3	4	5	6	7
1. Horizontal Individualism	.825						
2. Intention to donate	.172	.937					
3. Perceived Similarity	.113	.512	.937				
4. Perceived Persuasiveness	.173	.624	.587	.875			
5. Vertical Individualism	.355	.379	.520	.395	.808		
6. Perceived Enjoyment	.169	.553	.700	.659	.455	.925	
7. Individualistic Conversation Style	.068	-.029	-.072	-.071	-.023	-.036	n.a.
n.a. = not applicable							
Table 3. Inter-Construct Correlations and Validities							

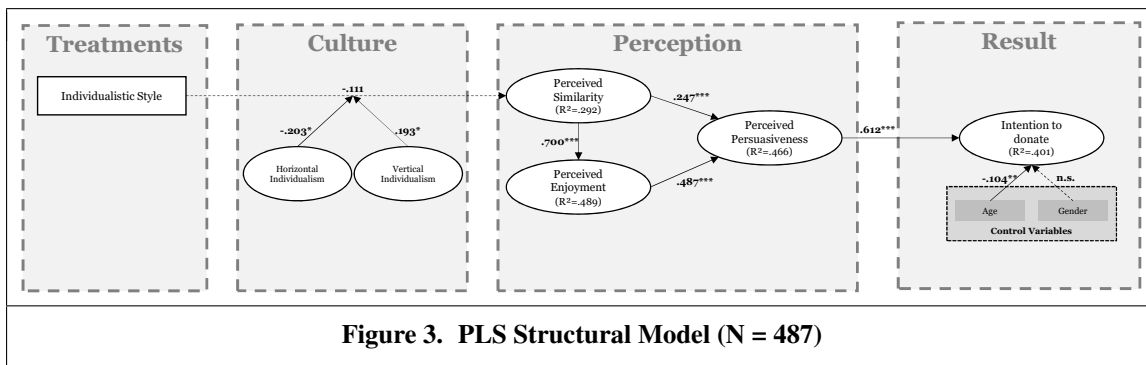


Figure 3. PLS Structural Model (N = 487)

= .612, $p < .001$), meaning **H4** is supported.

Furthermore, we conducted an analysis of our R^2 -values, indicating large powers ($> .26$) for perceived similarity ($R^2 = .292$), perceived enjoyment ($R^2 = .489$), perceived persuasiveness ($R^2 = .466$), and intention to donate ($R^2 = .401$) (Cohen, 1988). In addition, we investigated the influence of our control variables age ($\beta = -.104$, $p = .01$) and gender ($\beta = -.011$, $p = .875$) on the intention to donate, showing a significant influence of age.

Finally, we utilised an ANOVA to test if there are differences between the countries with regard to horizontal and vertical individualism. The results revealed a significant effect of the country for both variables, horizontal individualism ($F = 10.6$; $p < .001$) and vertical individualism ($F = 20.84$; $p < .001$).

Conclusion and Outlook

Discussion

Drawing on SIT and SAT, we examined how the culture-tailored conversation style of chatbots impacts users' perceptions of similarity in social group membership and how these perceptions affect their intention to donate blood. Even though there was no direct culture effect on the perceptions of the chatbot, the significant negative moderating effect of horizontal individualism in terms of the chatbot's individualistic conversation style and the perceived similarity in social group membership offers important implications. We only focus on a possible explanation for this kind of moderating effect because, comparing the survey items (Table 2), horizontal individualism, in contrast to vertical individualism, assesses an individual's in-group or out-group behaviour. Our finding that the more people of individualistic cultures, regardless of higher or lower individualism, identify themselves with horizontal individualism, the less they perceive to be similar to the chatbot regarding social group membership, counters the predictions of SAT as well as SIT and in-group behaviour. This in combination with the reverse finding that, when interacting with the chatbot aligned to collectivistic traits, these types of people perceive to be more similar to the chatbot, is a surprising effect for which we can offer a possible explanation. For us, this effect might be due to what Leidner and Kayworth (2006) call the "contribution conflict" with regard to IS and culture. According to them, this conflict occurs

when IS users' cultural values contradict their values generally attributed to IS designed for a particular purpose. In our case this is a chatbot for promoting blood donation behaviour whose conversation style was aligned to particular culture traits to match with the values of this particular culture. In line with Leidner and Kayworth's (2006) introduced contribution conflict, this matching may not be relevant since a chatbot for promoting blood donation behaviour may generally be viewed as a tool for fostering prosocial engagement, regardless of users' cultural background. According to E. Straub (1978) prosocial behaviour means benefitting other people through certain actions, which is saving other people's lives through giving blood in the context of blood donation. Comparing both culture-tailored conversation styles of the chatbot, it can be seen that the individualistic conversation style is clearly aligned to benefit the individual itself instead of other people, which is why this could lead to a contribution conflict. Moreover, this could also fit with many other researchers' empirical findings that people donate blood out of prosocial motivation or more specifically pure altruism and not for selfish reasons (e.g., Ferguson et al., 2020; Muthivhi et al., 2015).

Limitations

Our study comes with several limitations that can path the way for future research opportunities. First, our sample was composed of crowd workers coming from Germany, USA, South Africa and India, representing only a limited number of participants with different cultural backgrounds. As a result, future research should examine whether similar effects also occur in other countries. Further, we focused on measuring the short-term effects on the intention to donate, leaving room for longitudinal studies to investigate long-term and actual behavioural effects. Lastly, we focused exclusively on the perceived measurements and intentions. Still, investigating the relations between prior intentions and actual behavioural outcomes in research continues to be a topic of debate and investigation (Conner and Norman, 2022).

Future Research

One of the main conclusions of our work is that blood donation chatbots should in general be designed around a conversation style aligned to collectivistic traits like normative influence or other social features. Donating blood corresponds to pro-social behaviour as others benefit from one's donation. Therefore, users expect the chatbot to show pro-social behaviour and would not respond to personal or egoistic design features. In future research, we aim to extend our work to other areas in healthcare in which chatbots are already or could potentially be successfully used. We assume that when users can also but not exclusively profit personally, either directly or indirectly, from using a chatbot, this could lead to potentially different results. As addressed in previous research, we see the blood donation chatbot as an important feature of a more holistic blood donation app which offers additional benefits to a user. While the chatbot integrated into an app should always be designed with a pro-social focus, this is not necessarily the case for the app itself, as shown in previous research (Müller and Reuter-Oppermann, 2022a). Therefore, we want to further study the design of a blood donation app that includes a chatbot with respect to acceptances and preferences in different countries and cultures. That is, we will investigate the integration of a pro-social chatbot into a culture-tailored app and perform an on-site experiment with the support of project partners in South Africa.

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