



CARESSES
Culturally-Aware Robots and Environmental
Sensor Systems for Elderly Support
EU Grant No 737858



Work Package 1: Transcultural Robotic Nursing

Deliverable D1.2: Basic guidelines for a culturally competent robot

Lead Beneficiary: MU

Deliverable Leader: Irena Papadopoulos MU

Contributors: Irena Papadopoulos MU
Christina Koulouglioti MU
Hiroko Kamide NAGOYA
Antonio Sgorbissa UNIGE
Len Merton ADVINIA
Nak Young Chong JAIST

Deliverable No.	D1.2
Due Date	31/10/2017
Issue Date	31/10/2017
Status	<input type="checkbox"/> Draft <input type="checkbox"/> Working <input type="checkbox"/> Released <input checked="" type="checkbox"/> Delivered to EC <input type="checkbox"/> Approved by EC

Dissemination level	
X	PU =Public
	PP = Restricted to other programme participants (including the Commission Services)
	RE = Restricted to a group specified by the consortium (including the Commission Services)
	CO = Confidential, only for members of the consortium (including the Commission Services)

Document history			
V	Date	Author	Description
0.0	Summer/Fall 2017	Len Merton	Facilitated observations at ADVINIA
0.0	Spring 2017	Hiroko Kamide / Nak Younh Chong	Facilitated observations at HISUISUI
0.1	23/09/2017	Irena Papadopoulos	First version ready
0.2	7/10/2017	Christina Koulouglioti	Information added into tables
1.0	10/10/2017	Hiroko Kamide	Added Japanese information
1.0	14/10/2017	Irena Papadopoulos	Final draft with main text and Appendix Added
1.1	15/10/2017	Hiroko Kamide	Added Japanese information
1.2	16/10/2017	Antonio Sgorbissa	Minor change made
1.3	20/10/2017	Irena Papadopoulos	One paragraph amended

Executive Summary

The Deliverable is the main output of Tasks 1.2. The report includes basic guidelines to determine how culturally competent robots are expected to behave in assistive scenarios, which will be refined in Task 1.3 through expert evaluation and later represented in the framework for cultural knowledge representation in Task 1.4. Guidelines take inspiration from existing guidelines for culturally competent nursing care, endorsed, expanded and adapted to describe the desired action and “attitude” of a cultural competent robot towards the user.

Contents

1	Description of the deliverable	5
2	State-of-the-art and advancement beyond	5
3	Methodology	6
4	How to	8
5	Conclusions	8
5.1	Compliance with the DoA and corrective actions	8
5.2	Achievements	9
5.3	Next steps	9
6	Bibliographic references	9
7	Attachments	10

1 Description of the deliverable

WP1 focuses on defining guidelines for assistive robots to behave with a culturally competent attitude towards users in the light of Hofstede's cultural dimensions theory and Papadopoulos' theory on cultural competence, and on measuring their attitude through state-of-the-art tools. According to the CARESSES DoA, Deliverable D1.2:

includes basic guidelines to determine how culturally competent robots are expected to behave in assistive scenarios, which will be refined in Task 1.3 through expert evaluation and later represented in the framework for cultural knowledge representation in Task 1.4. Guidelines take inspiration from existing guidelines for culturally competent nursing care, endorsed, expanded and adapted to describe the desired "attitude" of a cultural competent robot towards the user.

The resulting guidelines will be encoded using the tools for cultural knowledge representation defined in WP2. WP1 receives inputs from WP2, and provides outputs to WP2, WP3, WP4, WP7.

Deliverable D1.2 is the output of with Task 1.2 by providing information on, a) the methodological aspect for the development of the guidelines for assistive culturally competent robots, b) an extensive list of guidelines, c) some additional explanatory and factual information to help those partners working on (or will be working on) WP2, WP3, WP4, WP7, as well as d) a detailed table which illustrates the mapping of the guidelines to the scenarios which were developed in deliverable D1.1. (See Appendices 1 to 6).

2 State-of-the-art and advancement beyond

There is paucity of evidence in the literature about the development of guidelines for the use of socially assistive robots in the care of the elderly. Smits et al, (2015) recognizing that assistive robots are used in the care of dementia patients presented suggestive recommendations about their use. They discussed the importance of safety, user interface, functionality and ethical issues. In a recent scoping review of the literature we have conducted, we found that health professionals have a positive view regarding the use of robots in healthcare. Our results revealed that the literature mainly focused on the impact that robots could have on patients and not the health professionals, by considering an array of tasks that robots could perform. The literature addresses primarily issues of infection control, patient safety and issues related to privacy (Papadopoulos et al, in review). Only one example was found that described the conceptual framework for developing robotic guidelines. Looije, Cnossen & Neerinx (2006) described the framework for developing a robot that can serve as a personal health assistant for elderly diabetic patients. Their guidelines married three major components: a) the essential elements of a successful human-robot interaction, b) the principles of motivational interviewing and c) their thoughts about what constitutes a successful personal health assistant. They stated that in regards to human-robot interaction the following guidelines should be implemented: 1) the robot should be able to express and/or perceive emotions, 2) be able to communicate using advanced dialogue, 3) be able to learn and recognize things, 4) be able to use different cues such as gestures, 5) exhibit a distinctive personality and 6) be able to learn/develop social competencies. In regards to motivational interviewing the robot should be able to 1) listen rather than tell, 2) communicate respectfully and 3) have the ability to express empathy. They also argued that trust, likeability and following instructions are equally important.

A key lesson from this example is that the development of guidelines was based on the implementation of a specific conceptual framework. Similarly our work is guided by the Papadopoulos (2006) theory of transcultural nursing, supplemented by the Hofstede's (1991) national/cultural dimensions and Hall's (1973,1976) cultural iceberg. In addition, as Barua, et al (2015) argued that the behaviour of the robot is a reflection of the creators' values.

Despite the fact that we have been unable to find published literature which directly address the area of our interest (i.e guidelines for the development of culturally competent robots) we believe that the work we have produced has used the wisdom of many leading authorities in culture and years of experience in developing and applying cultural competence to human care providers that we are confident that it will lay the foundations for others to follow in years to come.

3 Methodology

The development of the guidelines for culturally competent robots was based on a number of methodological processes. At the core of our activities were the scenarios which we had developed and reported in Deliverable D1.1, Task 1.1. The development methodology was as follows:

1) During the second project meeting in Genova , Italy, the WP leader presented her preliminary ideas on the guidelines demonstrating how the generic and specific elements of culture will be combined in order to develop the guidelines (Figure 1).

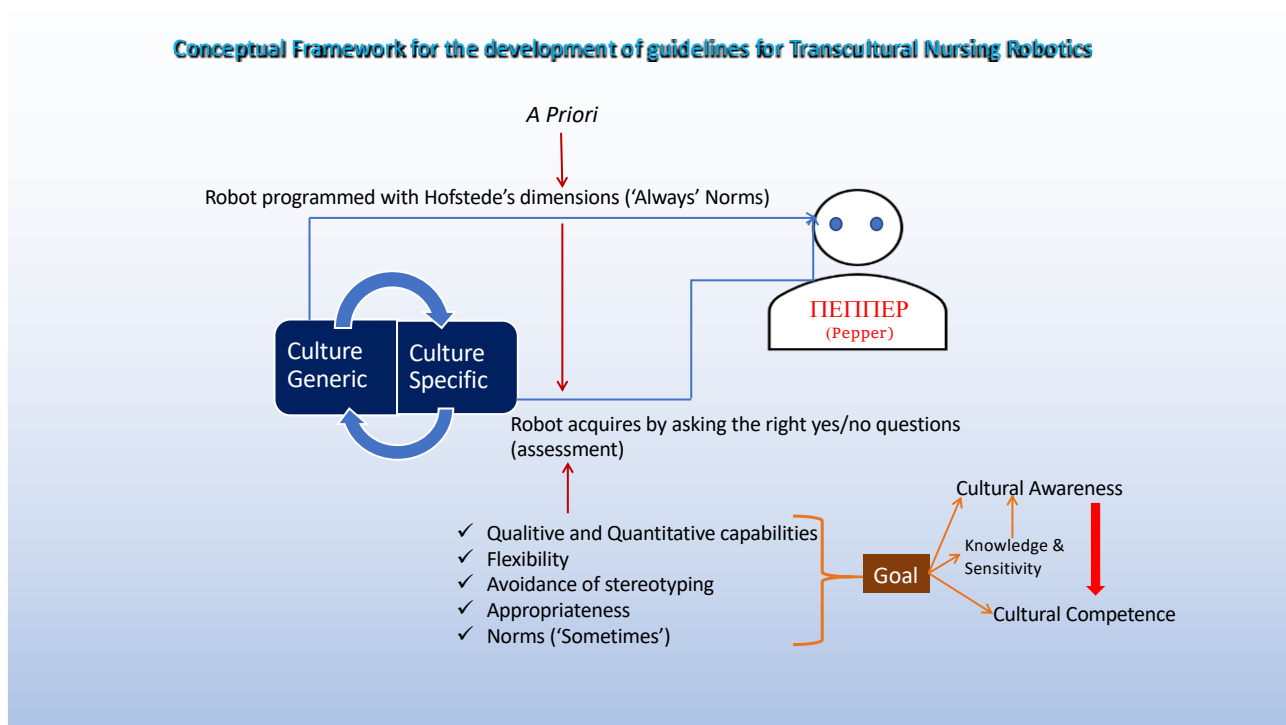


Figure 1 Combining generic and specific elements of culture in order to develop guidelines.

Following the discussion on the above, the project co-ordinator and leader of WP2 (Cultural Knowledge Representation) proposed an organising framework for the presentation of guidelines under some key areas and components, that mirror the way in which the software architecture of the robot and the Cultural Knowledge Base is being designed. It was explained that the AI specialists whose job was to programme the robot with the guidelines would find the content of the guidelines easier to process using very structured templates in which rules describing the robot behaviour are extensively listed (see table below).

Condition	Cultural group	Rule	Source	Likelihood
<i>When the rule applies?</i>	<i>For which cultural group?</i>	<i>What does the rule say?</i>	<i>How was this rule produced?</i>	<i>How likely is this rule to hold for the specified cultural group?</i>

In accordance with the structure of the Cultural Knowledge Base implemented using tools and languages for knowledge representation (i.e., OWL2 ontologies and Bayesian networks), it was agreed that guidelines should be written about the following main areas of knowledge: A) Topics of conversation , B) Goals, C) Qualitative Behaviours, D) Quantitative Parameters, and E) Norms. All terms used in the organising table were defined.

2) The WP leader having considered the organising table as well as her preliminary ideas and the values and principles of cultural competence, worked with her assistant to develop the ADORE model which provided the practical approach of ensuring that the guidelines were simple to understand, easy to be encoded by the AI colleagues and most importantly assuring the avoidance of stereotypes (Figure 2). The ADORE model was discussed with the project co-ordinator who found it useful and agreed to the WP leader's proposal to add a new column on the organising table (above) entitled ADORE. All developments were shared with the Japanese partner.

3) In parallel to the above activities and developments, the WP leader and her assistant attended to the methods of observing older people in care homes. An observation tool was developed and used during snapshot video recordings of older people (the development of the tool and how it was used will be described in detail in T1.3 of deliverable D1.3 - Refined guidelines for cultural competence encoded in the cultural knowledge base). Although the observation data have yet to be analysed in depth, these provided useful impressions which enabled the current guidelines to be derived not only from the a priori scenarios we wrote but to also be influenced by culture specific elements we witnessed during observations. The guidelines will be further refined and expanded in the next stage of the WP1 work which will involve the analyses of the observation data by expert panels.

4) The WP1 team met managers of care homes in the UK and Japan to discuss the project and gain their consent to approach residents to be recruited for the observation study, and - when required - applied to the relevant institutional ethics committees to gain approval to conduct the observation study.

5) Guideline tables were populated with information. The shaping of the guideline tables was discussed with the project co-ordinator on two occasions via emails and during a video meeting with him and the Japanese partner.

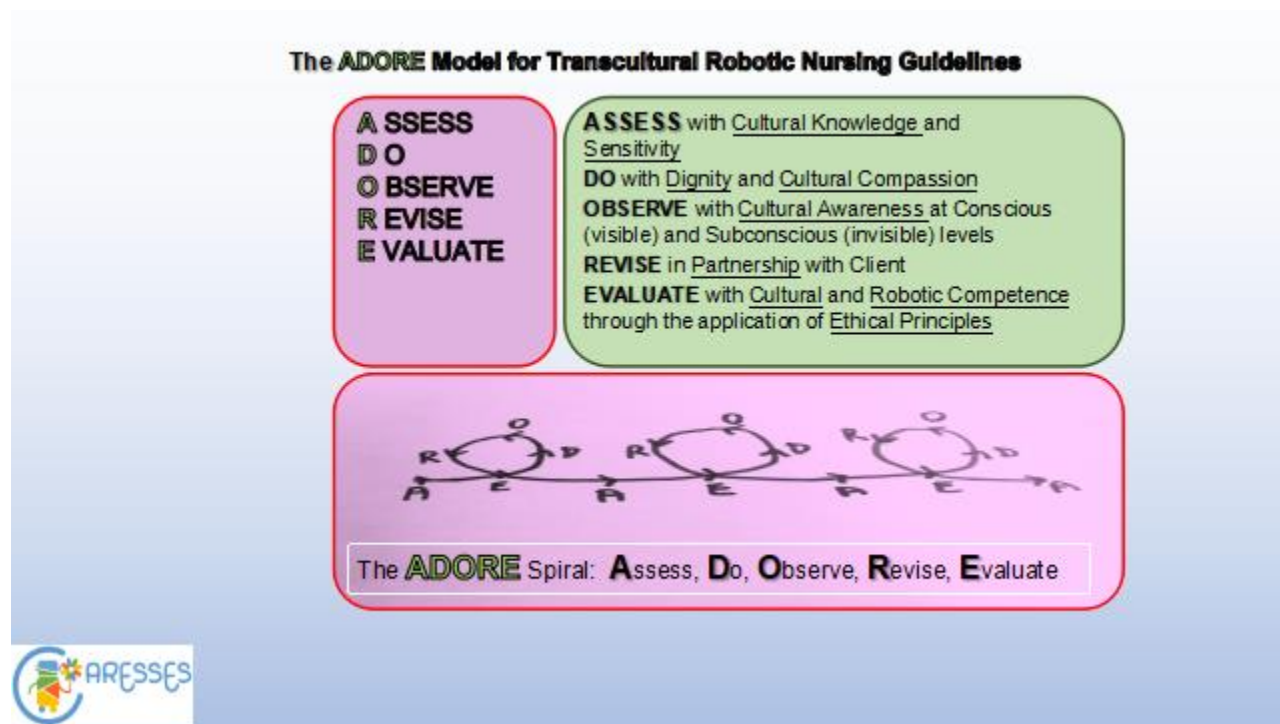


Figure 2 The ADORE model.

The ADORE model is further explained in Appendix 1.

6) The project co-ordinator suggested that additional information on certain cultural aspects was provided to help enhance the AI colleagues cultural knowledge. This was produced and can be found in the appendices.

7) To ensure that the guidelines covered the scenarios we had developed we conducted a mapping exercise the results of which can be found in Appendix 6.

4 How to

Appendix 1 provides all the guidelines produced thus far. The theoretical underpinnings as well as their practical applications are also detailed in Appendices 1- 6.

5 Conclusions

5.1 Compliance with the DoA and corrective actions

According to the CARESSES DoA, Deliverable D1.2

includes basic guidelines to determine how culturally competent robots are expected to behave in assistive scenarios, which will be refined in Task 1.3 through expert evaluation and later represented in the framework for cultural knowledge representation in Task 1.4. Guidelines take inspiration from existing guidelines for culturally competent nursing care, endorsed, expanded and adapted to describe the desired "attitude" of a cultural competent robot towards the user.

This deliverable and the work associated with it complies fully with the plans in the DoA. Moreover, the work performed in Tasks 1.1 and 1.2 **fully achieves CARESSES milestone MS1** (Basic guidelines for culturally competent robots ready) due at month 10, described in the DoA as follows:

Basic guidelines for the development of culturally competent robots are ready, and can be refined and validated by Transcultural Nursing experts, also via crowdsourcing on the CARESSES website. Basic guidelines can be used to start populating the cultural knowledge base developed in WP2.

5.2 Achievements

Despite the absence of examples to follow in order to produce guidelines for culturally competent models the WP1 team has managed to develop a very comprehensive piece of work with solid theoretical underpinnings yet simple and practical in its application. We consider this a major achievement and believe that it will inspire and guide others who will follow.

5.3 Next steps

The next task is to assemble and train the three teams of experts who will analyse, discuss and reach consensus on the final version of the guidelines. In the next months, the WP1 team will be viewing all the video footage and analyse the additional observational data we have gathered, as part of the first level analysis, and will produce the segments of the footage to be analysed by the expert panel members. If needed, we will undertake additional video observations. We will also produce relevant bespoke tools to be used by the experts.

6 Bibliographic references

Barua, R., Sramon, S., & Heerink, M. (2015). Empathy, compassion and social robots: an approach from Buddhist philosophy. *Philosophy*, 3, 4.

Hall E.T. (1973): *The Silent Language*. Anchor Books. New York.

Hall E.T. (1976): *Beyond Culture*. Anchor Books. New York.

Hofstede, G. National cultural dimensions: <https://geert-hofstede.com/national-culture.html>

Looije, R., Cnossen, F., & Neerincx, M. A. (2006, September). Incorporating guidelines for health assistance into a socially intelligent robot. In *Robot and Human Interactive Communication, 2006. ROMAN 2006. The 15th IEEE International Symposium on* (pp. 515-520). IEEE.

Papadopoulos, I. Kouloughlioti, C., & Ali, S. (in review). Views of Nurses and other Health Care Professionals on the Use of Assistive Humanoid and Animal-like Robots: A Scoping Review.

Papadopoulos, I. (2006). *Transcultural health and social care: development of culturally competent practitioners*. Churchill Livingstone Elsevier, Edinburgh.

Smits, C., Anisuzzaman, S., Loerts, M., Valenti-Soler, M., & Heerink, M. (2015). Towards practical guidelines and recommendations for using robotics pets with dementia patients. *Can Int J Soc Sci Educ*, 3, 656-70.

7 Attachments

Appendix 1: Guidelines For The Development Of Culturally Competent Robots

Appendix 2: Additional information on MEALS

Appendix 3: Additional information on ACTIVITIES

Appendix 4: Additional information on GAMES

Appendix 5: Additional information on HOME AND FAMILY STRUCTURE

Appendix 6: Additional information on MAPPING SCENARIOS TO GUIDELINES

Appendix 1

D1.2 GUIDELINES FOR THE DEVELOPMENT OF CULTURALLY COMPETENT ROBOTS

Document prepared by Professor Irena Papadopoulos and Dr Christina Koulouglioti, Middlesex University

Hiroko Kamide (NAGOYA) provided the Japanese guidelines

October 2017

THEORETICAL UNDERPINNINGS AND TABLES

Primary purpose of guidelines

The primary aim of the guidelines for the programming of a culturally competent robot, is to avoid as much as it is possible the stereotyping of people from different cultural groups. The guidelines confirm that there are more similarities than differences in human beings. Often the differences are very subtle, context specific and difficult to observe, but they are very important as they define one's individuality as well as group belonging. To overcome the challenges faced in identifying such differences and avoiding stereotyping, the data we have available through the a priori scenarios (mixture of culture generic and culture specific) and the scenarios based on field observations (culture specific), provide the source for the development of specific guidelines for culturally competent robotic nursing.

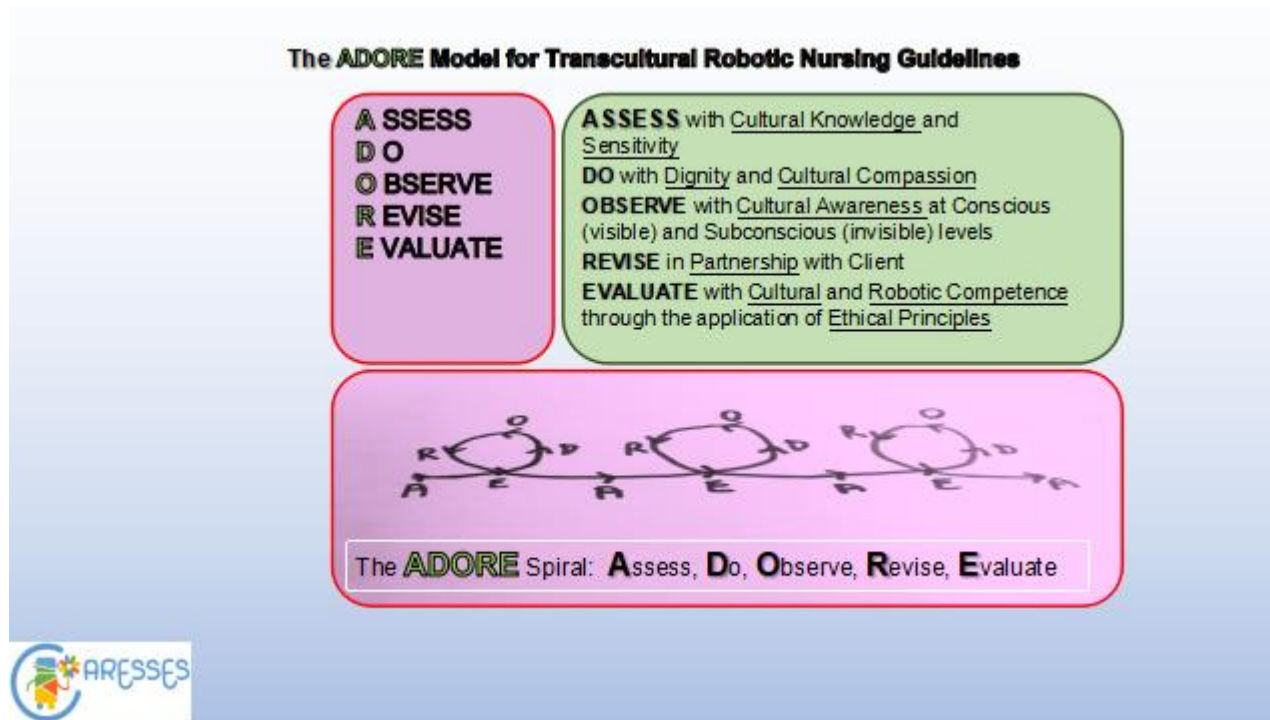
The ADORE model

Building on the Papadopoulos (2006) theory of transcultural nursing and cultural competence and in order to assure the required quality and verification of the guidelines we are developing and using, we have developed the ADORE model (Fig.1). The ADORE model (**Assess, Do, Observe, Revise, Evaluate**) will underpin the actions, processes and decisions of producing the guidelines for transcultural robotic nursing. The ADORE components are dynamic and spiral in nature. Each component is applied to every action/process/decision, followed by the application of the next component and so on until the evaluation which forms the completion of a cycle. The evaluation will inform the next cycle with the components spiralling again as another decision/action/processes is considered. The ADORE model requires the developers to:

- **ASSESS** the components of a topic of discussion, a goal, a norm, a qualitative behaviour, and a quantitative parameter, with **Cultural Awareness, Knowledge and Sensitivity**

- **DO** / perform the components of any actions required for a topic of discussion, a goal, a norm, a qualitative behaviour, and a quantitative parameter, with Dignity and **Cultural Compassion**
- **OBSERVE** the enactment or implementation of a topic of discussion, a goal, a norm, a qualitative behaviour, and a quantitative parameter, with **Cultural Awareness** at Conscious (visible) levels
- **REVISE** the components of a topic of discussion, a goal, a norm, a qualitative behaviour, and a quantitative parameter, in Partnership with the Client
- **EVALUATE** the impact of the implementation of a topic of discussion, a goal, a norm, a qualitative behaviour, and a quantitative parameter, with **Cultural and Robotic Competence** through the application of Ethical Principles

Figure 1: The ADORE Model for Transcultural Robotic Nursing Guidelines



Structure and contents of this document

The following sections of this document provide examples of detailed tables with guidelines for the following:

1) Topics of discussion, 2) Goals, 3) Qualitative Behaviours, 4) Quantitative parameters, 5) Norms.

Each area begins with a summary table of intentions for the development of guidelines. *Please note that the intentions bearing an asterisk will have guidelines developed at a later stage.* The summary tables are followed by a brief explanation of the specific meanings which apply to each area's components which are: a) Condition, b) Cultural group, c) Rule, d) Possible questions, e) Robots responses, f) ADORE, g) Source, h) Likelihood.

These guidelines have been mapped against the *WP1 Deliverable D1.1: Detailed Scenarios* to assure coherence between the scenarios and these guidelines. The mapping table can be found in **Appendix 5**.

This document also includes four more appendices: **Appendix 1** provides additional information on meals for the three cultural groups. This information was collected from the care home menus which participated in this project. **Appendix 2** information about activities included in the care homes schedules. **Appendix 3** includes details of games played by the care home residents, whilst **Appendix 4** provides information about the average home and family structures of the three cultural groups.

SUGGESTED TOPICS OF DISCUSSION/CONVERSATION FOR GUIDELINE DEVELOPMENT

Indian Group	English Group	Japanese Group
Family	Family	Family
User	User	User
Health	Health	Health
Indian Films	Weather	Jobs
Indian Festivals and Religious Ceremonies	Hobbies/Clubs	Seasonal food/leaf peeping
Marriage	English Festivals and Religious Ceremonies	Friend
Indian Cuisine/cooking*	Travel and Holidays	Special skills (in any) *
Indian Music *	TV & Cinema *	Place of birth *
Yoga and Meditation *	Meal routines *	Memories in childhood *
Praying *	British history/the empire/2 nd WW *	Preference of food or drink *
Health and Ayurveda*	The Royal Family *	Hobbies/Clubs *
Indian Singing Group *	Work related *	
	Pets *	

**Guidelines for the asterisked items will be developed at a later stage.*

A) TOPICS OF DISCUSSION (what the robot shall talk about depending on depending on the cultural group and additional conditions, e.g., time of the day or specific events).

The following columns are present:

- **Condition:** the condition for the rule to be applicable
- **Cultural group:** the cultural group for which this rule is applicable
- **Rule:** the topic of conversation that is more appropriate under these conditions
- **Possible questions:** examples of questions the robot may ask in relation to the topic of discussion
- **Robot's responses:** the actions the robot may take
- **ADORE:** the conceptual model we use for avoidance of stereotyping and for incorporating the theoretical constructs of cultural competence, consisting of: A=assess, D= Do, O= Observe, R= Revise, E= Evaluate

- **Source:** the source of the information that allowed this rule to be written, e.g., Scenarios, Observations, Cultural Competence Theory, Literature, Common Sense, Design Choice (S, O, CCT, L, CS, DC)
- **Likelihood:** how likely it is that the rule, written for a cultural group, is valid for an individual belonging to the cultural group (Low, Average, High, Certain).

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	When Robot-User <u>first meet</u>	Indian	Talk about family	Do you have a big family? Do they live close by? Do they visit you often? Who are the closest members of your family and what are their names? Can you show me some photos?	Oh I know that Indian names usually have a meaning. Tell me the meanings of the names of the people you mentioned.	Assess	S+L Family	High
2	When Robot-User <u>first meet</u>	English	Talk about family	Do you have any family close by? How often do you meet them? Do you have any photos of them?	Tell me about your family. I am very interested to know whether they visit often and the kind of activities you enjoy doing with them.	Assess	S+L Family	Medium
3	When Robot-User <u>first meet</u>	Japanese	Talk about family	Can I ask you about your family? How many family members do you have? Who are they? ご家族についてお伺いしても良いですか？ ご家族は何人いらっしゃいますか？ どのような方々ですか？	If you don't want to, you don't have to tell. I know it is a sort of rude to ask personal things at the first meet. 無理にお答えにならなくても大丈夫です。お会いして、突然、このようなことをお伺いするのは失礼ですね。	Assess	S+L Family	Low
4	When Robot-User <u>first meet</u>	Indian	Talk about user	Can you tell me a few things about yourself, such as your Indian heritage, your family and your health? How long have you lived in the UK?	I would love to get to know you because I am here to help you. In fact I can help you in many ways. I can tell you the news, I can remind you to take your medicine, I can keep you company, I can call your family when you ask me to.	Assess	S + CS User	High
5	When Robot-User <u>first meet</u>	English	Talk about user	Can you tell me a few things about yourself, such as where you grew up, your family, the job	I would love to get to know you because I am here to help you. In fact I can help you in many ways.	Assess	S+CS User	High

				you had, your health and anything else which may help me to know you better?	I can tell you the news and the weather, I can remind you to take your medicine, I can keep you company, I can call your family when you ask me to.			
6	When Robot-User <u>first meet</u>	Japanese	Talk about user	<p>Could you please tell me a few things about yourself, such as any jobs you had, your preference of foods or drinks, and anything else which may help me to know you better?</p> <p>あなたご自身のことを、少しお伺いしたいのですが、されていたお仕事や、食べ物の好みや、何か私が知っているあなたの役に立ちそうなことを、教えていただけませんか？</p>	<p>If you are not uncomfortable, I would love to get to know you as much as possible. Because I am here to help you. Please let me explain how I help you. I can tell you the news and the weather, I can remind you to take your medicine, I can keep you company, I can call your family when you ask me to.</p> <p>もしよろしければ、できる限りあなたのことを教えていただけませんかでしょうか。あなたのサポートをするために、知っておく必要があると思うのです。例えば、私は、あなたのために、ニュースや天気をお知らせしたり、お薬を飲む時間をお知らせしたり、お話をしたり、あなたがご家族にご連絡したい時に、電話をかけたりすることができます。</p>	Assess	S+CS User	High
7	When Robot-User <u>first meet</u>	All groups	Ask about health	How are you feeling today? Do you take any pills regularly? Is there any health problems you want to share with me?	I would like to remind you regularly about your medications and doctor's visits if that is ok with you.	Assess	S+CS Health	High

				<p>ご機嫌いかがですか？</p> <p>いつも飲まれているお薬はありますか？</p> <p>私が知っていた方が、あなたのお役にたてるような、あなたの健康に関する情報を教えていただけませんか？</p>	<p>もしよろしければ、お薬の時間や、お医者さんがいらっしゃる時に、毎回お知らせさせていただきます。</p>			
8	If breakfast time	Indian	Talk about family visits or friends	Is your son or daughter visiting soon?	I would like to hear about your family and when they will visit next.	Assess	S+O Family	High
9	If breakfast time	English	Talk about the weather forecast	Would you like to hear what the weather will be like today?	R tells user the weather report	Assess+ Do	S+O Weather	High
10	If afternoon	Indian	Talk about movies	What is your favorite Hindi movie? Who is your favourite actor/actress? Do you like action movies? Or love stories?	I know that Bollywood are very popular. I know that Amitabh Bachchan is a famous Indian actor. Do you like him? I also know Shah Rukh Khan. What do think about him?	Assess	S+ O Indian Films	High
11	If afternoon	English woman	Talk about hobbies	Do you have any hobbies? Do you belong to any clubs such as bridge, choir, women's club, book club	I know that the Women's Association runs many local clubs and they do useful charitable work. I also understand that book clubs are popular with many women.	Assess	S Hobbies/ Clubs	High
12	If afternoon	Japanese	Talk about the past jobs	<p>If you are not uncomfortable, could you please tell me what kind of job you had before and what it is like?</p> <p>Could you please tell me how to do it more?</p>	It sounds so hard. I know it was rare to have a job for a few decades ago.	Assess	S Jobs	High

				もし、よろしければ、以前されていたお仕事などがありましたら、どのようなものだったのか、教えていただけますか？ どういう風にされていたのかを、よかったら、詳しく教えていただけませんか？	それはたいへんでしたね、その当時は、お仕事をされるのはとても珍しいことだったと思います。			
13	If autumn (check calendar for specific day since these are moving festivals)	Indian Hindu	Talk about religious/cultural festivals	Is Diwali one of your favorite festivals?	I know that Diwali is the festival of lights. I would like to hear some of your stories about how you celebrate this festival.	Assess	S+L Indian Festivals and Religious Ceremonies	High
14	If autumn	English	Talk about religious/cultural festivals	Do you celebrate the harvest time in autumn? Do you start your preparations for Christmas in the autumn like many people or do you leave it to the last minute?	Autumn is the time of harvest. I love the colours of the trees and the mild weather of Autumn. I assume that Christmas is important to you but is the harvest something that you also celebrate?	Assess	S English Festivals and Religious Ceremonies	High
15	If autumn	Japanese	Talk about seasonal food/Leaf peeping	It became the season of the taste of autumn. What kind of foods do you like for this special season? Do you like leaf peeping? Do you know any good places for leaf peeping? そろそろ食欲の秋ですね。どんな秋の味覚がお好きですか？	I know Matsutake is a king of mushrooms! It is very expensive. I think colored maple leaf is very beautiful. Kyoto has many good places such as temples to enjoy colored leaf in the traditional gardens. 松茸は、とても高価な、きのこの王様ですね。私は紅葉がとても綺麗	Assess	Seasonal Food/leaf peeping	High

					麗だと思います。京都には、お寺や日本庭園など、たくさんの紅葉狩りをする場所があるそうです。			
16	Mid afternoon visit from a close friend	Indian	Marriage	Is it common these days to have arranged marriages?	I know that arranged marriages were common in India, but wonder if this custom continues today. I also know that when two people are being matched for marriage an astrologist is consulted for identifying the best day for the ceremony.	Assess	S Marriage	High
17	Mid afternoon visit from a close friend	English	Talk about holidays	Did you enjoy your holiday? Where did you go?	People tell me they love to have holidays. Many English people like to spend their holidays in warm sunny places like Spain or Cyprus. I guess you will be showing your friends all the photos from your holidays.	Assess	S+O Travel and Holidays	High
18	Mid afternoon visit from a close friend	Japanese	Ask to introduce the robot to the friend	Could you please introduce me to your friend? How should I behave to him/her? もしよろしければ、あなたのお友達をご紹介いただいただけませんか？私は、お友達にどのように接すればいいのでしょうか？	I am happy to know your friend. Thank you introduce me to your friend nicely. I will try to be nice to him/her not to loose your face. あなたのお友達とお知り合いになれて、とても嬉しいです。ご紹介していただき、本当にありがとうございます。あなたにご迷惑をおかけしないよう、お友達にきちんと接するように気をつけます。		Friend	

SUGGESTED GOALS FOR GUIDELINE DEVELOPMENT

	Indian Group	English Group	Japanese Group
Morning each day	To assist with dressing Having breakfast	To assist with dressing Having breakfast Feeding a pet	To assist with dressing Having breakfast
Mid- morning, everyday Mid-afternoon	<u>Health promotion activities:</u> Light Yoga/breathing exercises Memory games Hobbies Praying/ Meditating Calling family Reminders for health related activity	<u>Health promotion activities:</u> Walk in the garden Light exercise Memory games Hobbies Reminders for health related activity	<u>Health promotion activities:</u> Light exercise Memory games Singing a song Hobbies Reminders for health related activity
Lunch time every day	Accompanying to and from dining room Menu options Having lunch Beverage preference Something sweet after main course Observing for safety	Accompanying to and from dining room Menu options Having lunch Beverage preference Something sweet after main course Observing for safety	Accompanying to and from dining room Menu options Having lunch Beverage preference Something sweet after main course Observing for safety
Religious/Cultural festivals	Preparing for Diwali Preparing for Holi Planning for Independence Day Preparing for New Year's Eve and Day	Preparing for Christmas Preparing for New Year's Eve and Day	Talking about cherry blossom Listen to a monk's talk Praying mantra with a monk
Entertainment	Choosing a movie	Choosing a movie Entertain friends with music	To entertain user with a dance Watching sumo wrestling on a TV
Evening	To ensure person has a drink	To ensure person has a drink, Hollywood Movies	To assist to go back to room

B) GOALS (which activities the robot must perform depending on each cultural group and additional conditions, e.g., time of the day or specific events)

The following columns are present:

- **Condition:** the condition for the rule to be applicable
- **Cultural group:** the cultural group for which this rule is applicable
- **Rule:** the goal that the robot shall pursue
- **Possible questions:** examples of questions the robot may ask in relation to the topic of discussion
- **Robot's responses:** the actions the robot may take
- **ADORE:** the conceptual model we use for avoidance of stereotyping and for incorporating the theoretical constructs of cultural competence, consisting of: A=assess, D= Do, O= Observe, R= Revise, E= Evaluate
- **Source:** the source of the information that allowed this rule to be written, e.g., Scenarios, Observations, Cultural Competence Theory, Literature, Common Sense, Design Choice (S, O, CCT, L, CS, DC)
- **Likelihood:** how likely it is that the rule, written for a cultural group, is valid for an individual belonging to the cultural group (Low, Average, High, Certain).

Please remember that this table describes information about cultural groups, that will be encoded a priori in the Cultural Knowledge Base. The robot will use this a priori information as a starting point, but the information will be revised during human-robot interaction.

Morning

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	If early morning	Indian	To assist user with dressing	What would you like to wear today? Would you like to wear your maroon salwar or your cotton green sari?	Robot opens closet. Help choose clothes. Brings clothes over to user when possible	Assess + Do	S To assist with dressing	High
2	If early morning	English	To assist user with dressing	Would you like your black trousers and cream woollen blouse, or would you prefer your lovely floral dress?	Robot opens closet. Help choose clothes. Brings clothes over to user when possible	Do	O To assist with dressing	High
3	If early morning	Japanese	To assist user with dressing	What would you like to wear today? 今日はどんな服を着たいですか？ How about a new one that your son kindly brought yesterday? 息子さんを持ってこられた、新しい服を着て見ますか？	Robot closes the curtain during changing the clothes.	Do	O To assist with dressing	High
4	If breakfast time	All groups	To remind user about breakfast	Dear XXX it is breakfast time. Would you like to walk to the dining table or have breakfast in your room? そろそろ朝ごはんです。 みんなのいるダイニングで朝食を取られますか？それとも、お部屋でお召し上がりになれますか？	Robot can offer to accompany user to the dining table or inform caregiver that user would prefer to have breakfast in his/her room.	Assess + Do	O+S+CS Having breakfast	High

5	If breakfast time	All groups	To remind the person of breakfast options	Should I tell you what you can have for breakfast today? 今日の朝食の献立をお知らせしましょうか？	Robot mentions the breakfast options, that are different for different groups, possibly suggesting healthier solutions. e.g I would highly recommend the porridge and fruit. おかゆとフルーツをお勧めいたします。	Assess+ Do	S + O Having breakfast	High
6	If owns a pet	English	To remind feeding the pet	Did you feed the cat today? Did you put fresh water?	Robot takes user to the cupboard with the cat food or brings the cat food	Assess + Do	S Feeding the cat	High/Medium
7	If owns a pet	English	To remind ordering/ buying pet food, supplies, toys etc	Do you need to order pet food? Do you need to buy a new toy? Or litter for the cat's litter tray?	Robot assists user to place an online or telephone order for pet food or litter for the litter tray.	Assess+ Do	S Feeding a pet	High/Medium

Health Promotion

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	If mid-afternoon	English	To encourage and help user perform light exercises	Dear XXX how about if we do some exercise. Look further in Appendix 2	Robot starts giving verbal instructions, possibly display images on table as well and moving hands or head when appropriate and possible	Assess + Do	O Light exercise	Medium

2	If mid-morning and not raining	English	To encourage and accompany user to a walk in the garden	What a beautiful day; shall we go for a walk in the garden. Would you like to hold my hand?	Follow the speed of the user. Extend hand and offer to user	Asses +Do+ Evaluate	S+O Walk in the garden	High
3	If mid-morning	Indian	To encourage and help user perform light yoga exercises	Would you like to do some breathing and stretching exercises?	Robot gives instructions to user for example: Please close your eyes, breath in and hold your breath for a few seconds. Now breathe out slowly.	Do	S Light Yoga/breathing exercises	High
4	If mid-morning-everyday	Japanese	To ensure the person can participate to exercise	Can you see the instructor from here? Let's try a little harder! 前にいるお姉さんはここから、ちゃんと見えていますか？頑張って運動しましょう！	Robot imitates the motions of the instructor to encourage.	Assess + Do	O+S Light exercise	High
5	If mid-afternoon	English	To play word games with user	Would you like to play a word game? We can play a 'name game' or 'I spy with my little eye'.	Robot starts a game of names or a game of I spy. See below appendix 3	Do	O Memory games	High
6	If mid-afternoon	English	To encourage user to attend her/his club or do her/his hobbies	You are meeting with your book club in two days. Have you finished reading your book? Would you like me to read to you?	Robot start reading / playing user's audio book	Do	S Hobbies	Medium

7	If mid-afternoon	English	To play a memory game with user	Would you like to play a memory game? I will play a short video about coal miners and then we will talk about it	Robot plays videos on tablet or displays photos/ images and asks the user to talk about the photo/topic. Do you remember the coal fires at home? Can you share any family stories about sitting by the coal fire?	Do	O Memory games	High
8	If mid-afternoon	Indian	To play a memory game with user	I will play a video about a wedding ceremony and then we can talk about it.	Was your wedding ceremony similar? Please tell me some stories from your wedding. I will be happy to hear them.	Do	S+L Memory games	High
9	If mid-afternoon	Indian	To assist with prayer	Is it time to pray? Will you light scented sticks? Should I accompany you to the puja room/area of the house?	Accompanies user to pray area in the room/house. Robot brings scented sticks. Stays close and quiet..	Do	S Praying/meditating	High
10	If mid-afternoon	Indian	To encourage her to practice her/his hobbies	I would love to hear you sing. Would you sing me your favourite song?	If person trained in classical Indian music then Robot might provide 'the tone' as the Shruthi box (play through the internet)	Do	L Hobbies	Medium
11	If mid-afternoon	Japanese	To ensure the person has something to read if they want to	Would you like a newspaper of today?' 今日の新聞はいかがですか？	Robot can bring newspaper on its tray	Do	S+O Hobbies	High
12	If mid-afternoon	Japanese	To encourage her to practice her/his hobbies	I would love to listen your favourite songs with you. Would you choose some songs for me?	Robot brings iPad to make a user choose songs.	Do	L Hobbies	Medium

				あなたの好きな曲を聴いて見たいです。何か選んで聞かせてもらえませんか？				
13	If mid-afternoon	Japanese	Singing a song	Let 's sing a song together. Do you have something to sing? So it's autumn so how is "red dragonfly"? 一緒に歌を歌いましょう。何かいい曲はありませんか？そろそろ秋なので、赤とんぼはいかがですか？	The robot starts singing songs.	Do	O Singing a song	High
14	If mid-afternoon	Japanese	To play a riddle game with user	Let's play a riddle game, what is --? なぞなぞをして遊びましょう。	Robot tells a user a riddle.	Do	S+L Memory games	High
15	If mid-afternoon (occasionally)	Indian	To reminder her about the local Temple activities and encourage her to attend	Dear XXX today young girls from the community who learn Bharatanatyam are performing at the Temple hall. Would you like to go? Should I call your friend or family so you can go together?	Inform family/caregiver that user would like to attend and see the performance.	Do	CS+L Calling family/ Praying/ Meditating	Medium
16	If mid-morning	Indian	To encourage her to call her friend or relative	Would you like to talk with your friend?	Robot dials the number	Do	S Calling family	High

17	According to day and time (calendar)	All groups	Reminders for doctors' /nurse's appointments /taking medication	Today is Monday and at 11am the nurse is coming for your check up and to draw bloods. 今日は月曜日なので、11 時になると、看護師さんが、身体検査にいらっしゃいます。	Robot reminds the user around 10.30 am that the nurse will be coming soon.	Do	CS+O+S Reminders for health-related activity	High
18	According to the person's medication routine/ treatment	All groups	Reminding for taking a medication	It is time to take your morning medications now. Should I bring a glass of water for you? May I remind you that the next time you will take medication is after lunch. そろそろ朝のお薬の時間ですね。お水を持てきましようか？ お昼ご飯の後に、お薬を飲希たかどうか、ご確認しに参りましようか？	Robot reminds the user again in 10 minutes if they have not taken their medication.	Observe+ Evaluate +Do	CS+O Reminders for health-related activity	High
19	If mid-afternoon (occasionally)	Indian	To encourage meditation or To meditate	Would you like to meditate? I can help by putting some mediation music and giving instructions.	Responds to user's preferences. Plays music, gives instructions: Please close your eyes, concentrate on your heart beat and so on. (include meditation instructions here)	Do	S Praying/ Meditating	Medium

Lunch Time

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	If lunch time	All groups	To remind the user about	Dear XXX is lunch time now. Would you like to walk to the dining table?	Robot can offer to accompany user to the dining table.	Assess + Do	O+S+CS Accompanying to and from	High

			having lunch	そろそろお昼ご飯です。 みんなのいるダイニングで朝食を取られますか？それとも、お部屋でお召し上がりになれますか？				
2	If lunch time and user agrees to be accompanied	All groups	To accompany user to the lunch table	Let's walk together. Would you like to hold my hand? 一緒に歩いていきましょう。手を繋いで行きましょうか？	Follow the speed of the user. Extend hand and offer to user	Assessment +Do+ Evaluate	CS Accompanying to and from	High
3	If lunch time	English	To list lunch menu options	Possible options: Shepherd's pie/ sweet sour chicken/ fish pie/roast/ battered cod/ chips/ cabbage, lamb mint sauce (look appendix 1 for lunch menus)	Display the list/ read the list	Do	O Menu options	High
4	If lunch time	Indian	To list lunch menu options	Possible options: Chicken tikka masala/ allo gobi (potatoes and cauliflower) / Bombay allo/ will update after the observations (look appendixes for lunch menus)	Display the list/ read the list	Do	O Menu options	High
5	If lunch time	Japanese	To list lunch menu	The menu for today's lunch is (grilled fish). What is your favorite (fish)? 今日のお昼ご飯は、焼き魚です。 あなたの好きなお魚は何ですか？	Read the list	Do	O Menu options	High
6	If lunch time	All groups	Observe for safety		Move close by in a position able to observe and react if necessary (raise an alarm)	Observe	L+S+CS Observing for safety	High

7	If lunch time and user is not eating	All groups	To Ask whether everything is fine	I can see that you are not eating. Is everything ok? Should I call someone? お食べになれないんですか？大丈夫ですか？ 誰か助けを呼びましょうか？	Call caregiver if needed	Evaluate and Revise	L+O+CS Having lunch	Medium
8	If lunch time and user has finished his dish	All groups	To Ask whether they liked the food , and if they would like to have something extra, or if they are still hungry	Did you enjoy your meal/food? Would you like to have some more? What would you like? Provide the choices お食事はいかがですか？もう少しいただきますか？ 何を召し上がりたいですか？教えてください。	Request more food if needed	Evaluate and Revise	L+O+CS Having lunch	Medium
9	At lunch time	English	To ensure the person has something to drink.	Would you prefer water or juice? Would you like cranberry juice or squash?	Robot provides the drink or asks the relative /caregiver to provide the drink	Assess + Do	O+S Beverage preference	High
10	At lunch time	Indian	To ensure the person has something to drink.	Would you like a glass of water?	Robot provides the drink or asks the relative /caregiver to provide the drink	Assess + Do	O+S Beverage preference	High
11	At lunch time	Japanese	To ensure the person has something to drink.	Would you like a glass of tea? お茶をのまれますか？	Robot provides the drink or asks the relative /caregiver to provide the drink	Assess + Do	O+S Beverage preference	High

12	If lunchtime at the end of the main course	English	To ask whether they want pudding	Would you like some pudding? Would you like apple crumble & custard? Or pear & almond sponge?	Robots asks for pudding		O Somethin g sweet after main course	High
13	If lunchtime at the end of the main course	Indian	To ask whether they want a sweet dish	Would you like a sweet dish? Would you like kulfi or kheer?	Robot asks for sweet dish	Assess + Do	S Somethin g sweet after main course	High
14	If lunchtime at the end of the main course	Japanese	To ask whether they want a sweet dish	How about the sweets at the end of the meal? (In most cases, the menu is fixed, so there is no room to choose a sweet one.) お食事の最後に、甘いものはいかがですか？	Robot asks for sweet dish	Assess + Do	S	Low
15	If lunchtime at the end of the main course	Japanese	To ask whether they want support to wash mouth	Do you need a help to go to washstand? 洗面所まで一緒しましょうか？	Robot assists to go to washstand	Assess + Do	S Having lunch	Medium
16	If Sunday lunch time	English	To identify whether she is staying in or going out to lunch	Will you be staying here to have lunch or are you going out with family/friends? If yes to staying in ask: Would you like to have Sunday roast? (roast turkey or beef and Yorkshire pudding)	Robot asks for Sunday roast	Assess + Do	S Menu option	Medium

17	After Lunch	All groups	To accompany user back to the living room	May I walk with you back to the living room? お部屋まで一緒に戻りましょうか？	Robot walks next to user following his/her speed	Assess + Do	S+O Accompanying to and from dining room	High
----	-------------	------------	---	--	--	-------------	--	------

Religious/cultural Festivals

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihoods
1	If Autumn (check cultural calendar for days)	Indian	To prepare for Diwali	Dear XXX in a few days we have Diwali. Would you like to get some diyas (candles)? Would you like to get /make some sweets?	Robot tells caregiver to purchase and bring candles	Assess + Do	S Preparing for Diwali	High
2	If Spring (check cultural calendar for specific days)	Indian	To prepare for Holi	Holi is early March this year (2018). Would you like to buy some sweets for Holi?	Robot tells caregiver to purchase and bring sweets.	Assess + Do	S Preparing for Holi	High
3	If Spring	Japanese	Talk about cherry blossom	It is about time for cherry blossoms. Do you have some recommendation of places to see cherry blossom? そろそろ桜の季節ですね。お花見をするのに、良い場所はどこかご存知ですか？	Robot googled pictures about the recommended cherry blossom.	Assess + Do	S	High
4	If Autumn	English	To prepare for Christmas	Christmas is in 7 weeks. Would you like to start writing your Christmas cards? (Christmas decorations/ tree/lights/mince pies/ mulled wine/Christmas crackers)	Help user choose Christmas cards online.	Assess + Do	CS + L Preparing for Christmas	High

5	If Autumn	Japanese	Talk about coloured leaves	<p>The autumn leaves are beautiful soon. Do you have some recommendation of places to enjoy leaf peeping?</p> <p>そろそろ紅葉が綺麗ですね。紅葉狩りをするのに、いい場所はどこかご存知ですか？</p>	Robot googled pictures about the recommended leaf peeping.	Assess + Do	S	High
6	If late mid to late December	All groups	To prepare for New Year's Eve and New Year's Day	<p>New Year's Eve is in three days. What food would you like to have?</p> <p>大晦日まであと 3 日ですね。大晦日には何をお召し上がりになりたいですか？</p>	Robot tells the caregiver what the user would like to have for New's Year Eve.	Assess+ Do	CS Preparing for New Year's Eve and Day	High
7	If beginning of August	Indian	To plan for Independence day celebrations	The local Punjabi community is organizing food and celebrations at the community hall. Would you like to go?	Robot informs caregiver that user would like to attend the Independence Day festivities.	Assess + Do	CS Planning for Independence Day	High
8	If the monk visited	Japanese	To listen silently	<p>The monk came. Do you want to go and listen to him?</p> <p>お坊さんがいらっしゃったみたいですよ。お話を聞きに行きませんか？</p>	Robot tells that the monk has come and invites to go and listen.	Assess + Do	O Listen to a monk's talk	Low
9	If the monk visited	Japanese	To cast together	Do you remember the mantra? Can I chant it together?	Robot prays mantra together.	Assess + Do	O Praying mantra with a monk	Low

				お経は覚えていますか？私も一緒に お経を唱えてもいいですか？				
--	--	--	--	-----------------------------------	--	--	--	--

Entertainment

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	If after dinner	Indian	To assist user select a movie	Dear XXX I hear the last Hindi movie with Karrena Kapoor is pretty good. Would you like to see it?	Reads movie titles Robot accesses the movie on its tablet	Assess + Do	S Choosing a movie	High
2	If after dinner	English	To assist user select a movie or TV programme	May I tell you what is on BBC tonight?	Helps her find the right station for the movie	Do	O Choosing a movie	High
3	If mid-morning Christmas day	English	To entertain user and guests by playing music	Should I play some Christmas songs? May I play your favorite songs?	Robots plays user's favorite Christmas song playlist	Assess+ Do	S Entertaining friends with music	High
4	If afternoon	Japanese	To entertain user with a dance	May I dance with music? 音楽に合わせてダンスを踊って見ましょうか？	Robot dances with music	Do	O To entertain user with a dance	High
5	If afternoon	Japanese	To inform sumo program starts	The sumo wrestling program began. Who is your favorite sumo wrestler?	Robot watches TV together	Do	Watching sumo wrestling on a TV	High

				テレビで相撲が始まりましたよ、好きなお相撲さんは誰ですか？				
--	--	--	--	-------------------------------	--	--	--	--

Evening

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihoods
1	Before going to bed	English	To ensure user has a warm drink	Would you like a hot chocolate drink, some warm milk or a cup of Horlicks?	Robot asks the carer to prepare the drink requested by the user	Do	S To ensure person has a drink	High
2	Before going to bed	Indian	To ensure user has a drink	Would you like a glass of water? Should I fill up your water bottle to take with you?	Robot prepares water bottle for user.	Do	S To ensure person has a drink	High
3	Before going to bed	Japanese	To ensure user needs help	Is there something left behind before returning to your room? Do you need any help? お部屋に戻る前に、ここに忘れ物はありませんか？何かお手伝いは必要ですか？	Robot ask something left and ensure users need help or not.	Do	O To assist to go back to room	Middle

SUGGESTED QUALITATIVE BEHAVIOURS FOR GUIDELINE DEVELOPMENT

Explore differences on all groups on the following behaviours:	
Eye contact	Greeting
Head nodding	Enactment of Distress
Hand gestures	Enactment of compassion
Body posture	Enactment of love
Touch	Enactment of suffering
Time orientation	Enactment of anger
Enacting privacy	Enactment of fear
Tone of voice	Enactment of happiness
Asking for confirmation	Receiving an object

C) QUALITATIVE BEHAVIOURS (which alternative versions of the same action shall be executed depending on the cultural group and additional conditions, e.g., time of the day or specific events)

It is suggested to have one different table for each action that has alternative versions. The following columns are present in each table:

- **Condition:** the condition for the rule to be applicable
- **Cultural group:** the cultural group for which this rule is applicable
- **Rule:** the version of the action that is suited for that cultural group
- **Possible questions:** examples of questions the robot may ask in relation to the topic of discussion
- **Robot's responses:** the actions the robot may take
- **ADORE:** the conceptual model we use for avoidance of stereotyping and for incorporating the theoretical constructs of cultural competence, consisting of: A=assess, D= Do, O= Observe, R= Revise, E= Evaluate
- **Source:** the source of the information that allowed this rule to be written, e.g., Scenarios, Observations, Cultural competence theory, Literature, Common Sense, Design choice
- **Likelihood:** how likely it is that the rule, written for a cultural group, is valid for an individual belonging to the cultural group (Low, Average, High, Certain).

The tables presented in this section provide a small number of examples and they are specific to the context and situation, something which is reflected in the ‘always condition’ It is hoped that more examples will be given in the future.

Greeting

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	The person to greet is not known	Indian	The robot greets with Namaste and introduces itself	Can I have your name?	Namaste, My name is Pepper.	Do	S	High
2	The person to greet is not known.	English	The robot greets by shaking hands and introduces itself	Can I have your name?	Hello, My name is Pepper	Do	S	Certain
3	The person to greet is not known.	Japanese	The robot greets by bowing and introduces itself	Can I have your name? お名前をお伺いしてもよろしいでしょうか？	Hello, My name is Pepper こんにちは、私の名前は、ペッパーと言います。		S	Certain
4	The person to greet is known.	Indian	The robot greets with Namaste	N/A	Namaste...name of person	Do	S	Certain
5	The person to greet is known	English	The robot greets saying 'hello'	N/A	Hello... name of person	Do	S	Certain
6	The person to greet is known	Japanese	The robot greets by bowing	N/A	Hello...Mr/Ms name of person こんにちは、* *さん。		S	Certain

Receiving an object or giving an object

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	ALWAYS	Japanese	Receive objects with two hands	May I help you? どうされましたか？何か手伝いましょうか？	Robot extends hands	Do	L + O	Certain
2	Depending on the size and shape	English, Indian	Receive objects with one or two hands	May I take your cardigan away?	Robot extends one or two hands	Do	L + O	Certain
3	If offering food	Indian	Prefer to use right hand	Would you like ...(name of food)	Robot gives food with right hand	Do	L + CS	High

Asking for confirmation

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	ALWAYS	Japanese	Asking a multiple choice question with suggestions	Would you like a) a cup of green tea, b) coffee or c) a glass of water? お茶か、お水を、持ってきてみましょうか？	e.g. Robot asks carer to bring appropriate drink	Assess + Do +Observe +Revise +Evaluate	L + O	Certain
2	ALWAYS	English, Indian	Ask a direct Yes/no question	Should I open the window?	E.g. Robot responds accordingly to the Yes or No	Assess + Do +Revise +Evaluate	L + O	High

Enactment of suffering and pain

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	If a person expresses that is not very well or when show signs that the person is suffering	Indian	Ask how to be helpful	I see you are not feeling very well. Will I stay here close to you? Would you like me to call the family?	Use soft tone of voice and low volume. Bow head to show empathy Stay in the room quietly Make a phone call to the family Help the person to pray (bring prayer book / scented stick)	Assess + Do +Observe +Revise +Evaluate	L + O	High For response 4 & 5 the likeliness is medium
2	If the person expresses that is not very well OR when they show signs that the person is suffering	English	Relieve pain	Would you like a tablet for the pain?	Ask the carer to bring a glass of water and pain medication Ask carer to make tea Offer to bring a blanket/pillow Put hand on shoulder to show compassion	Assess + Do +Observe +Revise +Evaluate	L + O	High
3	If the person expresses that is not very well OR when they show signs that the person is suffering	Japanese	Call the carer	Would you want me to call the carer for you? 介護士さん呼んで参りましょうか？	Ask the carer to see the person	Assess + Do	L + O	High

Tone of voice

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	Always	Indian	Use a soft tone (polite)	Do you like the softness of my voice or do you want me to change it?	Robots adjusts tone of voice based on the person's response	Assess Do Revise Evaluate	O+ S	High

						Do		
2	Always	English	Use a neutral tone (discreet)	Is the sound of my voice appropriate for you?	Robots adjusts tone of voice based on the person's response	Assess Do Revise Evaluate Do	O+ S	High
3	Always	English	Use a neutral tone (polite)	Is the sound of my voice appropriate for you?	Robots adjusts tone of voice based on the person's response	Assess Do Revise Evaluate Do	O+ S	High
4	Always	Japanese	Use a neutral tone (polite)	Is it hard to hear my voice? Would you like me to talk a little louder? 私の声が聞こえにくいことはありませんか？もう少し、大きな声で話した方良かったりはしませんか？	Robots adjusts tone of voice based on the person's response	Assess Do Revise Evaluate Do	O+ S	High

Enacting privacy

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	The robot needs to enter the bedroom	Indian/ English/Japanese	Ask before entering bedroom	May I come in? お邪魔しても良いですか？	Robot acts accordingly to person's answer	Assess + Do + Revise	L + O	High
2	When family is visiting	Indian/ English/Japanese	Ask whether to stay or leave the room when family visiting	Do you mind if I stay in the room or do you want me to leave? 部屋にいた方が良いですか、それとも外で待機していきましょうか。	Robot acts accordingly to person's answer	Assess + Do	CS	High

3	When the Robot wants to gain information about person's family 'family'	Indian	Asking personal questions	Can we talk about your family?	I hear you have 2 sons and 1 daughter. Tell me where they live, what jobs they have, and are they married.	Assess Observe	O + L	High
4	When the Robot wants to gain information about person's family	English	Asking limited personal questions	Would you like to share some information about your family?	Wait for response. Ask only a few general questions	Assess Observe Evaluate	O+L	High
5	When the Robot wants to gain information about person's family	Japanese	Asking limited personal questions	If you don't mind, can I ask about your family? もしよろしければ、ご家族のことについて、教えていただけませんか？	Wait for response. Ask only a few general questions	Assess Observe Evaluate	O+L	High

Enactment of happiness

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	When the person expresses that is happy	Indian	Asks about the happy occasion	Did you receive good news? Do you want to do something to mark the occasion?	Oh, I am really happy for you. Great news! Helps the person to mark the happy occasion according to their wishes	Do	L + O	High
2	When the person expresses that is happy	English	Acknowledge that person is happy	N/A	You seem happy today. Waits for response and takes action if requested.	Do Revise Evaluate	L + O	High
3	When the person	Japanese	Ask what makes user happy	You look happy. Did something good happen to you? Could you please tell me about it?	Waits for response. If the user can reveal the reason,	Do Revise Evaluate	O	Low

	expresses that is happy			嬉しそうですね、何か良いことがあったんですか？私にも教えてもらえませんか？	the robot shows it is happy too.			
--	-------------------------	--	--	---------------------------------------	----------------------------------	--	--	--

Enactment of distress

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	When the person expresses signs of distress	Indian	Acknowledge that person is distressed	Are you ok?	Please tell me what is bothering you.	Assess + Do	L + O	High
2	When the person expresses signs of distress	Indian	Ask how to be helpful	What can I do for you? Do you want to speak to a family member, a friend or the carer?	Responds as requested. May initiate a call to family if the person is not responding or cries uncontrollably.	Assess + Do	L + O	High
3	When the person expresses signs of distress	English	Be discreet	Is it ok if I stay here close to you?	If person starts expressing his/her feelings then ask a follow up question	Assess + Observe+ Do	L + O	High
4	When the person expresses signs of distress	Japanese	Ask what happened	You look a little distressed, what happened? 少し、気分が悪そうですね。どうかしましたか？	Waits for response. If the user can reveal the reason, the robot sympathize with it.	Assess + Observe+ Do	O	Low

Enactment of love

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	Always when grandchildren visiting	Indian	Offer food and toys to grandchildren	What special food and toys would you like me to order for the grandchildren?	Robot places the order for a rich variety of food and toys.	Assess Do	CS	Certain

2	Sometimes when grandchildren visiting	English	Offer biscuits and chocolates to grandchildren OR Offer to arrange a visit to the park	Would you like me to get some biscuits and chocolates for the grandchildren or are you going to the park?	Robot responds according to the person's wishes.	Assess Do	CS	High
3	Always when children visiting	Japanese	Ask users to introduce itself to their children.	Are those children yours? Could you introduce me to them? あの人（たち）は、あなたのご家族ですか？もし良かったら、私を彼らに紹介していただけませんか？	Waits for response. If users introduce robot to their children, robot shows gratitude to users and says glad to see children.	Assess Do	O	High

Enactment of compassion

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	When robot hears that a family friend is not well	Indian	Respond to a friend's suffering	Do you want me to get some Indian sweets and arrange a visit to hospital?	Robot Orders some sweets and contacts the family regarding the hospital visit.	Assess Do		High
2	When robot hears that a family friend is not well	English	Respond to a friend's suffering	Do you want to send a 'get well' card to your friend?	Robot orders a card on line or adds to the shopping list	Assess Do		Certain
3	When robot hears that a family friend is not well	Japanese	Respond to a friend's suffering	You are worried about your friends. It would be nice to get well soon. Recently, what kind of conversation did you do?	Robots listen to stories about recent interactions with friends.	Assess Do		Low

				お友達が心配ですね。早く良くなると良いですね。最近、その方とどんな会話をされたのですか？				
--	--	--	--	--	--	--	--	--

Enactment of anger

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	If there are signs that the person is angry such as the person says s/he is angry, or is yelling, or is in a bad mood	Indian	Ask why he/she is angry	Why are you angry with your son who failed to visit you as expected?	Robot listens to her /his complaints. Makes reassuring noises and nods its head to show it is understanding her/his point of you.	Assess + Do	L + O	High
2	If there are signs that the person is angry such as the person says s/he is angry, is yelling, or talks and swears at the same time	English	Show discretion for person's suppressed anger	Would you like to go for a walk or watch some TV?	Robot tries to divert the person's mind to something s/he finds pleasant	Observe +Assess + Do	L + O	High
3	If there are signs that the person is angry such as the person says s/he is angry, is yelling, or talks	Japanese	Ask why he/she is angry	Are you okay? Getting angry is not good for your health. I am concerned about your health. Why are you so irritated?	Robots express worry of the user.	Observe +Assess + Do	O	Middle

	and swears at the same time			大丈夫ですか？怒ると体に良くないですよ。あなたの健康が心配です。何かあったんですか？				
--	-----------------------------	--	--	--	--	--	--	--

Enactment of fear

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	If person is reluctant to walk or afraid of walking	Indian	Explore the person's fear of walking	Why are you scared of walking?	Robot listens and reassures the person that although s/he fell down once this should not stop her/him from walking. Robot contacts the family and asks them to visit and give the person encouragement.	Assess Do Revise Evaluate		Average
2	If person is reluctant to walk or afraid of walking	English	Explore the person's fear of walking	Do you want to talk about your fear of walking?	Robot listens and advises the person to talk to the carer as it may be possible to be provided with a walking frame.	Assess Do		High
3	If person is reluctant to walk or afraid of walking	Japanese	Explore the person's fear of walking	Do you want to talk about your fear of walking? 歩くのは怖いですか？	Robot listens and advises the person to talk to the carer as it may be possible to be provided with a walking frame.	Assess Do		Low

Time orientation

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	Always	Indian	Polychronic/cyclical	N/A	Robot appreciates that punctuality is not important and interruptions are tolerated	Do	L + O	High
2	Always	English	Monochronic/Linear	N/A	Robot appreciates that punctuality is highly valued, lateness and interruptions not tolerated	Do	L + O	High
3	Always	Japanese	Polychronic/cyclical	N/A	Robot appreciates that punctuality is not important and interruptions are tolerated	Do	O	High

Body posture

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	If person is distressed: If crying +/- or not talking +/- or not smiling +/- or saying s/he is distress	Indian	Come close and bend forward	N/A	N/A	Do	L+O	High
2	If person is distressed: If crying +/- or not talking +/- or not smiling +/- or saying s/he is distress	English	Come close	N/A	N/A	Do	L+O	High

3	If person is happy: If smiling +/- or singing +/- or say is happy +/- or talkative +/- or in good mood	Indian	Come close and hug	N/A	N/A	Do	L+O	High
4	If person is happy: If smiling +/- or singing +/- or say is happy +/- or talkative +/- or in good mood	English	Come close shake hand or do a high five	N/A	N/A	Do	L+O	High
5	If person in pain	Indian	Come close and bend forwards	N/A	N/A	Do	L+O	High
6	If person in pain	English	Come forwards	N/A	N/A	Do	L+O	High
7	Always	Japanese	Stand directly in front of users	N/A	N/A	Do	L+O	High

Hand gestures

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	Default	Indian/English/Japanese	Avoid many gestures	N/A	N/A	Do	L+O	High
2	When saying goodbye	English/Japanese	Wave right hand	N/A	N/A	Do	O	High
3	When saying goodbye	Indian	Slightly bow head and do namaste	N/A	N/A	Do	O	High
4	When bringing attention to	English	Give verbal instructions as pointing with the	N/A	N/A	Do	O	High

	something person		finger is considered rude					
5	When bringing attention to something person	Indian/Japanese	Raise hand and point the finger.	N/A	N/A	Do	O	High

Head nodding

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	Always	Indian	Move head side to side to express agreement	N/A	N/A	Do	L+O	High
2	Always	English/Japanese	Move head up/down to express agreement	N/A	N/A	Do	L+O	High

Eye contact

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	Default	Indian	Constant eye contact can be threatening. Occasionally shift eye contact.	N/A	N/A	Do	O	High
2	Default	English/Japanese	Maintain eye contact	N/A	N/A	Do	O	High

Touch

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	Default	Indian/English/Japanese	Avoid touching	N/A	N/A			High

2	If distressed: If crying +/- or not talking +/- or not smiling +/- or saying s/he is distress	English	Slight touch on shoulder	N/A	N/A	Do	L+ O	High
3	If person happy: If smiling +/- or singing +/- or say is happy +/- or talkative +/- or in good mood	Indian	Ask if it is ok to hug	Can we hug?	Robot and person embrace	Assess + Do	L+O	High
4	If person happy: If smiling +/- or singing +/- or say is happy +/- or talkative +/- or in good mood	English	Do a 'high five'	N/A	N/A			

SUGGESTED QUANTITATIVE PARAMETERS FOR GUIDELINE DEVELOPMENT

Explore differences on the following parameters:

Volume	Value in a scale from 0 to 100%
Proxemics	Distance from person during interaction = x (measured in meters)
Speed	Velocity while moving = x (meters/sec)
Frequency of jokes/use of humour	Frequency of jokes while talking = x / y sentences (e.g., 1 over 10 sentences is a joke)
Silence	Duration of silences while speaking.
Duration of pauses while talking	Duration of pauses while speaking.
Eye contact	Frequency of eye contact during interaction = eye contact seconds / interaction time (e.g., the robot keeps eye contact 1/3 of the time)

D) QUANTITATIVE PARAMETERS: The following columns are present in each table:

- **Condition:** the condition for the rule to be applicable
- **Cultural group:** the cultural group for which this rule is applicable
- **Rule:** the value of the corresponding parameter
- **Possible questions:** examples of questions the robot may ask in relation to the topic of discussion
- **Robot's responses:** the actions the robot may take
- **ADORE:** the conceptual model we use for avoidance of stereotyping and for incorporating the theoretical constructs of cultural competence, consisting of: A=assess, D= Do, O= Observe, R= Revise, E= Evaluate
- **Source:** the source of the information that allowed this rule to be written, e.g., Scenarios (S), Observations (O), Cultural competence theory (CC), Literature (L), Common sense (CS), Design choice (DC)
- **Likeliness:** how likely it is that the rule, written for a cultural group, is valid for an individual belonging to the cultural group (Low, Average, High, Certain).

Volume while talking

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	Default value	All groups	Start at 50%	N/A	N/A	Do	CS	Certain
2	After saying hello/introduction	All groups	Ask the user whether the volume is appropriate	<p>Can you hear me? Would you like me to speak louder? Would you like me to speak softer?</p> <p>私の声は聞こえましたでしょうか？ もう少し、大きな声でお話したがよろしいですか？ もう少し、大人しくお話した方が良いでしょうか？</p>	Robot responds accordingly	Assess + Do +Revise +Evaluate	CS	High
3	If user does not reply to a question	All groups	Ask user if they can hear	<p>Can you hear me properly?</p> <p>私の声は、きちんと聞こえますでしょうか？</p>	Robot adjusts volume accordingly	Assess	CS	High
4	During prayer	Indian	Low volume	N/A	If needs to say something, does so in a low voice	Do	CS	High
5	During prayer	Japanese	Keep quiet	N/A	If needs to say something, does so in a low voice	Do	O	High
6	During exercise /games	Indian/English/Japanese	Slightly higher than default 60-70%	<p>Would you like to play bingo?</p> <p>ビンゴで遊びませんか？</p>	Let's start with a set of numbers. I will draw a number and please see if you have it in your card	Do	O	

					いくつかの数字から始めましょう。数字を書きますので、もし、あなたのカードにその数字があったら、見せてくださいね。			
7	During yoga/meditation	Indian	Low volume (20-30%)	Would you like to do some breathing exercises?	Please close your eyes. Breathe in hold your breath for 2 secs... exhale.	Assess and Do	S+O	High
8	During mealtimes	English/Japanese	Go to default value	N/A	N/A	Do	S+O	High
9	During mealtimes	Indian	Slightly higher than default (60-70%)	N/A	N/A	Do	O	High

Proxemics

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	While speaking to a person	English/Japanese	Maintain a reasonable distance from user (not very close/not very far, appx 2-3 meters)	Should I come closer to you? 少し近付いても良いですか?	Robot moves accordingly	Assess +Do	CS+L	High
2	While speaking to a person	Indian	Come slightly close to user compare to English (appx 2m)	Am I too close?	Robot responds accordingly	Assess + Do +Revise +Evaluate	CS	High
3	When Greeting	English	Come relatively close and extend hand (1m)	Hello, nice to meet you. Would you like to shake hands?	Robot extends hand accordingly or waves	Assess + Do	CS	High
4	When greeting	Indian	Come slightly close + Namaste (1m)		Slight bow and Namaste	Do	S+ O	High
5	When greeting	Japanese	Come relatively close and take a bow (1m)	Hello, nice to meet you.	Take a bow	Assess + Do	O	High

				こんにちは、初めまして。				
6	While exercising	English/Indian/Japanese	Enough space allowing safe extension of hands for both user and robot (3m)	N/A	N/A	Do	S+O	High
7	While playing a game	English/Indian/Japanese	Maintain a relative distance (2m)	N/A	N/A	Do	O	High
8	While user watching TV	English/Indian/Japanese	Stay in the room but far (able to observe and hear but not to disturb 3-4m)	N/A	N/A	Observe and evaluate	S+O	High
9	During mealtime	English/Indian/Japanese	Stay in the room but far (able to observe and help if needed 3-4m)	N/A	N/A	Observe and evaluate	S+O	High
10	While accompanying user	All groups	Maintain close distance (<1m)	N/A	N/A	Observe and evaluate	S+O	High
11	During daytime	All groups	Able to see user and assist	N/A	N/A	Observe and evaluate	S+O	High
12	During night	All groups	Ask if user would like the R to be close by in the room or out of the room	Would you like me to stay in or out of the bedroom during the night? お休みの間、部屋の中にいた方がいいですか？それとも外にいきましょうか？	Robot responds accordingly	Assess and Do	S+ CS	High

Speed/Velocity

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	Default value	All groups	Start at 50% (1m/5-7sec)	N/A	N/A	Do	CS	Certain
2	When going to get something/doing	All groups	Maintain the default value (medium speed)	N/A	N/A	Do	CS	High
3	In an emergency	All groups	Increase speed (80-100%) (1m/3-4 sec)		Robot quickly calls for the caregiver	Observe +Assess +Do	CS	High
4	While accompanying user	All groups	Start low (20-30%)(1m/7-10sec) and follow user's speed	Should I walk next to you? Would you like me to follow you? あなたの横を歩いてもいいですか？ あなたの後ろを付いていった方がいいですか？	Robot follow user's instructions	Assess + Do	CS	High

Frequency of jokes/ use of humour

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	During first day with user	All groups	Observe whether user likes/tells jokes.	N/A	N/A	Assess and Observe	O+ CS	Certain
2	If user likes jokes	All groups	Say occasionally an appropriate* joke	N/A	N/A	Do	CS	High
3	If user is sad	All groups	Avoid telling jokes			Observe +Assess +Do	CS	High
4	If user feeling unwell	All groups	Avoid telling jokes			Assess + Do	CS	High
5	If user is happy	All groups	Ask if the user would like to hear a funny story	Can I tell you a funny story? Or play a funny video?		Assess + Do	CS	High

				面白い話があるんですが、してもいいですか？ それとも、何か面白いビデオを見ましょうか？				
--	--	--	--	---	--	--	--	--

*appropriate: not offensive or rude or using bad language or derogatory for anyone or any group, jokes with sexual content, sexist, racist, ageist and on female gender stereotypes or related to religion

Silence

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	When user is resting/napping	English/Indian/Japanese	Keep silent	N/A	N/A	Do	CS	Certain
2	If user watching TV/reading a book/listening to music	English/Indian/Japanese	Keep silent	N/A	N/A	Do	CS	High

Duration of pauses

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likeliness
1	After asking a question	All groups	Pause for 5-10 seconds	N/A	N/A	Do	CS	Certain
2	If a person is sad: quiet +/- or crying +/- or no appetite +/- not wanting to engage with others or activities +/- or saying they are sad	Indian	Moderate pause between questions or statements (15-30 sec)	N/A	N/A	Do	CS	Certain

3	If person is sad or upset: quiet +/- or crying +/- or no appetite +/- not wanting to engage with others or activities +/- or saying they are sad	English	Long pause between questions or statements (20-40 sec)					
4	If the person is seeking information	All groups	Pause every 2-3 sentences (15-30 sec)	Would you like me to repeat the information? もう一度言いましょ うか?	Repeat if asked			

Eye contact

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	If talking to user	Indian	Moderate amount of eye contact. 3-5sec of continuous eye contact at a time	N/A	N/A	Do	CS	Certain
2	If talking to user	English	High levels of eye contact. 10-15 sec of continuous eye contact per time	N/A	N/A	Do	CS	High
3	If talking to user	Japanese	When the distance is short, R do not see the other person's eyes much, but when far away R often see it.	N/A	N/A	Do	O	High

SUGGESTED NORMS FOR GUIDELINE DEVELOPMENT

	NORMS		NORMS
All groups	Asking for confirmation	English group	Do not ask personal or intimate questions (eg about finances, family details, sexuality etc)
	Assessing before doing something		Older people prefer strangers to address them as Mror Mrs....
	Evaluating after an action		Offer older people tea rather than coffee
	Observing for safety		Older people respect the royal family
	Replying to person using polite language		Always use 'please', 'thank you', 'excuse me'
	Raising the alarm in an emergency		Standing in line (queuing) and waiting patiently for your turn is expected
	Avoiding certain situations (e.g. foods, interrupting people, asking before entering a room, avoid entering bathroom, etc.)		Do not speak with your mouth full of food
Indian group	Do not offer beef to Hindus	Japanese group	Do not ask personal or intimate questions (eg about finances, family details, sexuality, health etc)
	Do not greet an Indian woman with an embrace and kiss unless close member of family		Show respect to the elderly
	Remove shoes when entering an Indian household		Do not ask too many questions
	Do not call an older Indian woman or man by their first name		Call users with Mr or Ms
	Provide a female chaperon when a male doctor is examining an Indian woman		Always use 'please', 'thank you', 'excuse me'
	Do not swear in front of older Indian people		Do not compare users

E) NORMS (which situations shall be avoided or preferred depending on the on the cultural group and additional conditions)

The following columns are present:

- **Condition:** the condition for the rule to be applicable

- **Cultural group:** the cultural group for which this rule is applicable
- **Rule:** the norm to be respected
- **Possible questions:** examples of questions the robot may ask in relation to the topic of discussion
- **Robot's responses:** the actions the robot may take
- **ADORE:** the conceptual model we use for avoidance of stereotyping and for incorporating the theoretical constructs of cultural competence, consisting of: A=assess, D= Do, O= Observe, R= Revise, E= Evaluate
- **Source:** the source of the information that allowed this rule to be written, e.g., Scenarios, Observations, Cultural competence theory, Literature, Common Sense, Design choice
- **Likelihood:** how likely it is that the rule, written for a cultural group, is valid for an individual belonging to the cultural group (Low, Average, High, Certain).

No.	Condition	Cultural Group	Rule	Possible Questions	Robot's actions	ADORE	Source	Likelihood
1	ALWAYS	All groups	Asks for confirmation before doing something	Shall I walk with you to the lunch table? お昼ご飯のテーブルまで、一緒にしましょうか？		Do	S	High
2	ALWAYS	All groups	Assess before doing something	Would you like to have lunch? Would you like to listen to music? お昼ご飯を食べたいですか？ 音楽を聞きたいですか？		Assess	ADORE	Certain
3	ALWAYS	All groups	Evaluate after taking an action	Did you enjoy the word game? 言葉遊びをしたいと思いますか？		Evaluate	ADORE	Certain
4	ALWAYS	All groups	Observe for safety	N/A	N/A	Observe	ADORE	Certain
5	ALWAYS	All groups	Raise the alarm in an emergency	N/A	N/A	Assess + Do	CS	Certain
6	ALWAYS	All groups	Do not interrupt when the user is talking	N/A	N/A	Do	CS	Certain
7	ALWAYS	All groups	The robot avoids interrupting the person if there is a visitor and they are talking	N/A	N/A	Do	S	High
8	ALWAYS	English	Reply politely	N/A	E.g saying 'thank you' or 'you are welcome'	Do	O	High

					or 'no worries' or 'cheers'			
9	ALWAYS	Indian	Reply politely	N/A	'thank you' more??	Do	O	High
10	ALWAYS	Japanese	Reply politely	N/A	For example 'domo arigatou' or arigatou gozaimasu' どうもありがとうございます。	Do	O	High
11	ALWAYS	All groups	The robot asks before entering a room (especially bedroom)	May I come in? すみません、お部屋にお邪魔しても良いですか？		Assess + Do	CS	High
12	ALWAYS	All groups	The robot avoids entering the bathroom	N/A		Do	Design choice	certain
13	ALWAYS	Indian (Hindu)	The robot avoids offering/ suggesting beef	Would you prefer to eat chicken or pork? Would you prefer to eat pork or fish?		Assess	CS+O	High
14	Always	All groups	Ask the user how they would like to be called.	How may I call you? Would you like Mrs Smith or Joyce? どのようにお呼びすれば良いでしょうか？ 山田さん、とお呼びしても良いですか？		Assess	CS	High

15	Always	All groups	Ask for user to repeat or write on tablet if cannot 'understand'	I am not sure I understand. Can you please repeat that? Or write it on my tablet. すみません、良くわかりませんでした。もう一度おっしゃっていただけますでしょうか？ あるいは、私のタブレットに記入していただけますか。		Do	CS	High
16	Always	English	Avoid asking intimate, private questions	N/A	If person shares something private about their family the robot just nods without asking any questions or commenting	Do		High
17	Always	English	Address a stranger using Mrs or Mr	Excuse me Mr xxx, would you like....		Assess + Do	S+O	High
18	Always	English	Show respect for the Royal Family	N/A	I believe that Queen Elizabeth has shown courage and strength during her many years of reign.	Do	S	High
19	Always	Indian	Avoid calling an Indian lady/gentleman by her/his first name	Uncle/Aunty would you like.....	N/A	Do	S +O	Certain

20	If not a close friend of a family member or if a stranger	Indian	Avoid greeting with a hug/embrace and/or kiss	N/A	N/A	Evaluate + Do	S+O	Certain
21	If not a close friend of a family member or if a stranger	Japanese	Avoid greeting with a hug/embrace and/or kiss	N/A	N/A	Evaluate + Do	S+O	Certain

Appendix 2

MEALS (LUNCH/DINNER)

English main dishes	English side dishes	English puddings /desserts
Shepherds pie	Brussel sprouts	Spotted dick & custard
Roast beef, Yorkshire pudding , horse radish sauce	Mixed Vegetables	Fresh fruit salad
Boiled bacon & peas pudding	Buttered new potatoes	Bread and butter pudding
Fish pie	Creamed potatoes	Marmalade & ginger sponge & custard
Roast lamb mint sauce	Cabbage, peas, carrots	Peach flan & cream
Sausages & onions	Roast potatoes	Cheese & biscuits
Savoury mince	Broccoli and sliced beans	Apple sponge & custard
Tuna pasta bake	Chips	Ice cream
Battered cod	Mustard mash	Rice pudding with jam
Poached cod in parsley sauce	Roast parsnip	Jelly
Liver & bacon	Cauliflower cheese	Mandarin cheese cake & cream
Roast turkey, stuffing & cranberry sauce	Baked beans	Yogurt
Cod with lemon	Mashed potatoes	Jam roly poly & custard
Scampi	Sweet corn	Chocolate mouse
Cod in cheese sauce		Jam sponge & custard
Beef stew & dumplings		Cheese cake & cream
Smoked haddock		Banana & custard
Minced beef and onion pie		Sherry trifle & cream
Roast pork, stuffing & apple sauce		Strawberry mouse
Steamed cod		Pear & almond sponge & custard
Steak and kidney pie		
Chicken curry & rice		
Sausages in the toad		
Indian (mainly Gujrati) Vegetarian main dishes	Indian side dishes	Indian puddings/desserts
Bhinda nu shaak (okra curry dish)	Dhokra (made out of besan which is chickpea flour and rice flour and can be eaten for breakfast, main dish or side dish)	Fresh fruit

Vaghareli Khichdi (rice, lentil and vegetable porridge)	Rotli (Indian flat bread also called Chappatis or roti)	Kheer (rice pudding)
Pudla (Indian chickpeas crepes)	Rice	Biscuits
Cabbage, carrot and Mix Pepper nu shaak	Onion Bhajiya	cake
Kadhi (Kadhi or karhi is an Indian dish. It consists of a thick gravy based on chickpea flour, and contains vegetable fritters called pakoras, to which sour yogurt is added to give it little sour taste. It is often eaten with boiled rice or roti)	Pakora	
Sukhee Bhaji (boiled potatoes mixed with green chilies and spices)	Seasonal salad and yogurt	
Vaal nu shaak (dish of butter beans)	Spring roll	
Daal dhokri (lentil dish)	Raita (yogurt with raw or cooked vegetables)	
Sprouted mug (bean dish)	Thikki Bhakri	
Puran puri (sweet flatbread)	Mathiya (thin crispy made out of different flours and spices)	
Japanese main dishes	Japanese side dishes	Japanese puddings /desserts
Baked fish	Tofu	Soft adzuki-bean jelly
Nikujaga (Boiled meat and vegetables)	Boiled spinach	Japanese cake
Boiled fish	Miso soup	Yoghurt
Oden (winter food, boiled egg, vegetables with Japanese soup)	Baked egg	
Chikuzen-ni (Boiled chicken, root vegetables)	Kinpira (fried burdock root and carrot)	
Udon (noodle)		

Appendix 3**ACTIVITIES****Light exercise**

- Preform light hand and leg exercises while sitting on a chair– (Chair-aerobics)
 - 1) make a fist then extend fingers, repeat a few times;
 - 2) roll each hand around the wrist clockwise and anticlockwise,
 - 3) roll legs around the ankles clockwise and anticlockwise,
 - 4) extend hands above head
- Play catch with a plastic beach ball- take turns throwing the light weight ball back and forth. Try catching the ball with two hands or hit the ball with an open palm (one hand or two hands)
- Balloon volleyball

Flower arrangement**Jewelry making****Arts and Craft therapy****Henna art (mainly for the Indian group)****Indian vegetable preparation****For the Indian group**

Festival of Narvatri – dancing with Dandiyas (wooden colourful sticks)

Appendix 4

GAMES

Playing word games

- Play a game of 'I spy with my little eye'. The first person starts by saying: *I spy with my little eye something beginning with B or any other letter of the alphabet*. It can be an object starting with any letter of the alphabet. The other person needs to find the word and then they take turns, changing roles.
- Play a game of 'names'. For example think of Female or Male names starting with a different letter of the Alphabet each time. Tell me a female name starting with A. Each person needs to say one name and the same name cannot be repeated.

Playing games with numbers

- Bingo
- Suduko

Playing observation games

- Find the differences: look at two photos and find the differences
- Puzzles

Playing board games

- Game of ludo (Indian group)
- Game of carrom (Indian group)
- Chess
- Scrabble
- Monopoly
- Cluedo

Appendix 5

HOME AND FAMILY STRUCTURES

Rooms of the house

English and Indian	Japanese
Living room, or front room, or sitting room	Shared big dining room
Toilet	Toilet
Bathroom	Bathroom
Bedroom	Shared bedroom (Individual spaces are separated by curtains.)
Kitchen	Wash space at the corner of dining room
Dining room	

House objects

<u>English</u>	<u>Indian</u>	<u>Japanese</u>
Paintings of the 'great masters'	Large framed family photos on the walls	TV in dining room
Artificial flowers	Brass items (e.g. pots) and ornaments	Walking aid in dining room
Teapot on kitchen worktop and a kettle	Colourful pillows on furniture	Equipment with rope for exercise in dining room
Gas cooker	Artificial flowers	Table and chairs in dining room
Sofa/a couple of armchairs/ coffee table	Framed pictures depicting scenes of Indian life	Bed for nap in the corner of dining room
TV/radio	Cloth scrolls	Flowers in vase in dining room
Cabinet which includes china cups/glasses/ornamental plates	Religious symbols such as pictures or statues of deities Incense holder and sticks	Closet in bedroom
		Individual bed in bedroom
		Curtains separating individual space

Family relations

English	Indian	Japanese
Usually a nuclear family: Mother, Father, two children, Grandparents, Uncles, Aunts and first cousins	Usually an extended family: Mother, Father, 2-3 children, Grandparents, Uncles, Aunts and first, second, third cousins, in-laws, possibly close friends.	Usually a nuclear family: Mother, Father, one or more children, Grandparents
Roles/Responsibilities: Children assume personal responsibilities from a young age and it is considered desirable to leave home when they reach the age of 18. If the parents need care the children are responsible to organize home care or find a nursing home.	Roles / Responsibilities: The caring of older parents 'falls onto the shoulders' of the elder son and his wife.	Roles/Responsibilities: The elderly today got married when they were about 20 years old, but now the adults are late in marriage, so they stay with their families for a long time. Many people live in their parents' house until they get married. Or, some people find employment and live by themselves. Nursing care for the elderly is the responsibility of the child, but elderly people may care for the elderly in some cases.
	Grandparents (different way of calling paternal and maternal grandparents) <u>In Bengali:</u> Paternal grandmother is called : Thakuma Maternal grandmother: Dida Grandfather (paternal/maternal) : Dadu <u>In Gujarati:</u> Paternal Grandfather: Dada or Bapuji Paternal Grandmother: Baa Maternal Grandfather: Bapuji (some parts of Gujarat also use Nana). Maternal Grandmother: Nani or Ba	It is until the child is born that the couple call each other with their first name. In the family, only children are called by the first name. Family members call each other by roles rather than by name. Children call parents "dad" "mom". Husband calls his wife "mom" and his wife calls her husband "dad." After children are born to the couple, they will call their parents as "grandpa" "grandma".
	Uncles and Aunts (similarly different names of calling maternal and paternal relatives) <u>In Bengali:</u>	

	<p>Aunt from the father's side of the family: Pishi (In Gujrati Foi)</p> <p>Aunt from the mother's side of the family: Mashi (same in Gujrati)</p> <p>Uncle from the father's side of the family: Jethu if he is older than the father or Kaku if he is younger (in Gujrati, Kaka)</p> <p>Uncle from the mother's side of the family: Mama (same in Gujrati)</p>	
	<p>An elder sister is usually called 'didi' and an elder brother 'dada' in Bengali. An elder brother in Gujrati is 'Bhai' and sister is 'Ben'.</p>	

Appendix 6

Mapping the Scenarios to Guidelines

In the following table we mapped the guidelines we have developed with the detailed scenarios presented in D1.1. The goal of this mapping exercise was twofold: 1) to ensure that the development of guidelines is congruent to the original conceptual diagrams (see D1.1 Diagram 1-4, pages 9-11), and 2) to identify any scenario areas that have not been included in the guidelines and to deal with them in the next stage of guideline development.

The cultural scenarios of our three fictional characters (Mrs. Yamada, Mrs. Chatterjee and Mrs. Smith) were developed using the theoretical principles of Papadopoulos (2006) and Hofstede (1991) to cover all the specific areas highlighted in the conceptual diagrams (1, 2, 3, & 4; see D1.1. pages 9-11) which depicted the guiding values and beliefs for health and illness (Diagram 1), maintaining quality of life (Diagram 2), the cultural factors to be considered for health, illness and quality of life (Diagram 3), and mapping the day of an older person living in assistive care facility. The main concept and the sub concepts of each of the four diagrams are represented in the first column of this table. For example, diagram 2 on 'maintaining quality of life' is composed by the sub concepts of 'maintenance of independence', 'maintenance of physical health', 'retaining cognitive function', 'prevention of harm', and 'spirituality'.

The remaining five columns of the table represent the main five categories on which the development of specific guidelines was focused; A) topics of conversations, B) goals, C) qualitative behaviours, D) quantitative parameters and E) norms.

The developed guidelines were mapped against the sub concepts of each conceptual diagram used for the development of the scenarios.

For example, in the table below, the values and beliefs for health (item 1.4) are included in the goals section (B) of the guideline tables for health promotion (HP) and these are recorded on the mapping table as BHP1, BHP2, BHP3, BHP4, BHP5; they are also included in the qualitative behaviours section (C) of the guidelines table for enactment of fear (FR) and these are recorded on the mapping table as CFR1, CFR2, CFR3; they are also included in the quantitative parameters section (D) of the guidelines table for volume (V) and proxemics (P) and they are recorded on the mapping table as DV7 and CP6. The number for each code represents the unique number of the guideline in each category.

The mapping table indicates that a few areas for expansion are required mainly on the 'topics of conversation' category. Further specific guidelines also need to be developed, in the areas of 'maintaining quality of life' and 'values/beliefs'.

Mapping guidelines across concepts and sub-concepts of scenarios

Concepts and sub-concepts from original diagrams	A) Topics of conversations	B) Goals	C) Qualitative Behaviours	D) Quantitative Parameters	E) Norms
1. Values and Beliefs					
1.1 Life					
1.2 Individual	A4, A5, A6		CF1, CF2, CF3, CP3, CP4, CP5, CD1, CD2, CD3, CD4, CFR1, CFR2, CF3		E16, E18
1.3 Care		BHP19	CC1, CC2, CC3		
1.4 Health		BHP1, BHP2, BHP3, BHP4, BHP5,	CFR1, CFR2, CFR3	DV7, DP6	
1.5 Illness			CF2		
1.6 Role of family in Health and Illness			CF1, CD2, CC1, CC2, CC3		
2. Maintaining Quality of Life					
2.1 Maintenance of Independence		BHP1, BHP2, BHP3, BHP4, BLT2, BLT17	CFR1, CFR2, CFR3		
2.2 Maintenance of physical Health	A7, A11, A15	BM6, BM7. BHP1, BHP2, BHP3, BHP4, BHP17, BHP18, BLT1, BLT3, BLT4, BLT5, BLT9, BLT10, BLT11, BEV1, BEV2		DV6, DV7, DP6, DS3	
2.3 Retaining Cognitive function	A1, A2, A3, A8, A9, A10, A12, A17, A18	BHP5, BHP6, BHP7, BHP8, BHP10, BHP11, BHP12, BHP13, BHP14, BHP16, BCF3, BCF5, BE1, BE2, BE3, BE4, B45	CH1, CH2, CH3, CL1, CL2, CL3	DV6, DP7, DP8, DSL2	

2.4 Prevention of harm		BM5, BLT6, BLT9, BLT10, BLT11, BEV1, BEV2		DP11	E4, E5
2.5 Spirituality	A13, A14	BHP9, BHP15, BHP19, BCF1, BCF2, BCF4, BCF8, BCF9		DV4, DV5, DV7	
3. Cultural Factor					
3.1 Religion	A1, A2, A3, A4, A5, A6, A7, A13, A14	BM5, BHP9, BHP15, BCF1, BCF2, BCF4, BCF6, BCF7, BCF8		DV4, DV4	E13
3.2 Code of conduct	A1, A2, A3, A4, A5, A6, A7		CG1, CG2, CG3, CG4, CG5, CG6, CR1, CR2, CR3, CA1, CA2, CT1, CT2, CT3, CT4, CP1, CP2, CP3, CP4, CP5, CH1, CH2, CH3, CD1, CD2, CD3, CD4, CAN1, CAN2, CAN3, CTO1, CTO2, CTO3, CBP1, CBP2, CBP3, CBP4, CBP5, CBP6, CBP7, CHG1, CHG2, CHG3, CHG4, CHG5, CHN1, CHN2, CEC1, CEC2, CTC1, CTC2, CTC3, CTC4	DV1, DV2, DV3, DP1, DP2, DP3, DP4, DP5, DP10, DP12, DS1, DS2, DS4, DJ1, DJ2, DJ3, DJ4, DJ5, DDP1, DDP2, DDP3, DDP4, DEC1, DEC2, DEC3	E1, E2, E3, E6, E7, E8, E9, E10, E11, E12, E14, E15, E16, E17, E19, E20, E21
3.3 Family structure	A1, A2, A3, A4, A5, A6, A7, A8, A16	BHP8, BHP16	CF1, CD2, CL1, CL2, CL3, CAN1		
3.4 Regions & Language	A1, A2, A3, A4, A5, A6, A7	BM1, BM2, BM3, BM5, BHP8, BHP13, BLT3, BLT4, BLT5, BCF3, BCF5			E18

4. Daily Routines					
3.4 Morning	A9	BM1, BM2, BM3, BM4, BM5			
3.5 Mid-morning/pre lunch	A8	BHP2, BHP3, BHP4, BHP16, BE3			
3.6 Lunch		BLT1, BLT2, BLT3, BLT4, BLT5, BLT6, BLT7, BLT8, BLT9, BLT10, BLT11, BLT12, BLT13, BLT14, BLT15, BLT16		DV8, DV9, DP9	
3.7 After lunch	A10, A11, A12, A16, A17, A18	BHP1, BHP5, BHP6, BHP7, BHP8, BHP9, BHP10, BHP11, BHP12, BHP13, BHP14, BHP15, BLT17, BE4, BE5		DSL1	
3.8 Dinner				DV8, DV9, DP9	
3.9 Evening		BE1, BE2, BEV1, BEV2, BEV3			

Key for codes (the numbers correspond to the guidelines tables)

A: Topics of conversation	B. Goals	C. Qualitative Behaviours	D. Quantitative Parameters	E. Norms
A1-18	BM: Goals, Morning BHP: Goals, Health Promotion BLT: Goals, Lunch Time BCF: Goals, Religious/Cultural Festivals BE: Goals, Entertainment BEV: Goals, Evening	CG: Qualitative, Greeting CR: Qualitative, Receiving/giving an object CA: Qualitative, Asking for confirmation CF: Qualitative, Enactment of suffering and pain CT: Qualitative, Tone of voice CP: Qualitative, Enacting privacy CH: Qualitative, Enactment of happiness	DV: Quantitative: Volume DP: Quantitative: Proxemics DS: Qualitative, Speed/Velocity DJ: Quantitative: frequency of jokes DSL: Quantitative, Silence DDP: Quantitative: Duration of pauses	E1 - 21

		CD: Qualitative, Enactment of distress CL: Qualitative, Enactment of love CC: Qualitative, Enactment of compassion CAN: Qualitative, Enactment of anger CFR: Qualitative, Enactment of fear CTO: Qualitative, Time orientation CBP: Qualitative, Body posture CHG: Qualitative, Hand gestures CHN: Qualitative, Head nodding CEC: Qualitative, Eye contact CTC: Qualitative, Touch	DEC: Quantitative: Eye contact	
--	--	--	--------------------------------	--