

1 SCENARIOS

Supplementary Material 1 comprises the questions from the scenarios with artificial agents used in Part 1 - Preference as Explanee. From each pair of questions on the same row of the table, each respondent was randomly allocated one question. As a result, each participant was presented with four questions per scenario.

1.1 Diabetes scenario

The diabetes scenario has been adapted from Kaptein and colleagues [2].

DIABETES SCENARIO	
1a	The robot opened the sorting game. Why did the robot do that?
b1	Jimmy likes the sorting game.
g1	The robot wanted to play a game with Jimmy.
b2	Jimmy likes games.
g2	The robot wanted to make Jimmy happy.
2a	The robot told Jimmy to eat fruit and vegetables every day. Why did the robot do that?
b1	Jimmy did not know what food to eat.
g1	The robot wanted to teach Jimmy how to eat healthily.
b2	Jimmy was not eating healthily.
g2	The robot wanted to educate Jimmy about diabetes.
3a	The robot told Jimmy to measure his blood sugar when he is shaking and feels hungry. Why did the robot do that?
b1	Jimmy did not know when to measure his blood sugar.
g1	The robot wanted to teach Jimmy how to cope with hypos.
b2	Jimmy did not know how to cope with hypos.
g2	The robot wanted to teach Jimmy what to do when he is feeling unwell
4a	The robot started small talk with Jimmy about animals. Why did the robot do that?
b1	Jimmy likes to talk about animals.
g1	The robot wanted to make small talk with Jimmy.
b2	Jimmy likes to talk with the robot.
g2	The robot wanted to facilitate a conversation for Jimmy.
1b	The robot opened the quiz game. Why did the robot do that?
b1	Jimmy likes the quiz game.
g1	The robot wanted to play a game with Jimmy.
b2	Jimmy likes games.
g2	The robot wanted to make Jimmy happy.
2b	The robot told Jimmy to eat 150 grams of vegetables every day. Why did the robot do that?
b1	Jimmy did not know the proper amount of vegetables to eat every day.
g1	The robot wanted to teach Jimmy how to eat healthily.
b2	Jimmy was not eating healthily.
g2	The robot wanted to educate Jimmy about diabetes.
3b	The robot told Jimmy to take dextrose when he is having a hypo. Why did the robot do that?
b1	Jimmy did not yet know how to correct his blood sugar when he has a hypo.
g1	The robot wanted to teach Jimmy how to cope with hypos.
b2	Jimmy did not know how to cope with hypos.
g2	The robot wanted to teach Jimmy what to do when he is feeling unwell.
4b	The robot started small talk with Jimmy about outer space. Why did the robot do that?
b1	Jimmy likes to talk about outer space.
g1	The robot wanted to make small talk with Jimmy.
b2	Jimmy likes to talk with the robot.
g2	The robot wanted to facilitate a conversation for Jimmy.

1.2 Firefighting scenario

The firefighting scenario has been adapted from [1].

FIREFIGHTING SCENARIO	
1a	Claire got into the fire engine. Why did Claire do that?
b1	The equipment has been collected and the crew was ready to depart.
g1	Claire wanted to prepare and go to the fire.
b2	The fire alarm went off.
g2	Claire wanted to lead the firefighting team.
2a	Claire instructed the team to explore the situation. Why did Claire do that?
b1	More information about the situation was needed.
g1	Claire wanted to set the team to work.
b2	The team has not received the first instructions yet.
g2	Claire wanted to prepare the fire extinction.
3a	Claire queried bystanders. Why did Claire do that?
b1	Bystanders may have new information.
g1	Claire wanted to assess the situation.
b2	People might have new information.
g2	Claire wanted to get ready to put out the fire.
4a	Claire instructed to attack the fire from the inside. Why did Claire do that?
b1	Attack from inside house is more effective.
g1	Claire wanted to instruct the team about attack route.
b2	Team needed to know attack route.
g2	Claire wanted to instruct the team about the attack plan.
1b	Claire called the operator. Why did Claire do that?
b1	The operator may have new information.
g1	Claire wanted to prepare and go to the fire.
b2	The fire alarm went off.
g2	Claire wanted to lead the firefighting team.
2b	Claire instructed the team to prepare the equipment. Why did Claire do that?
b1	The equipment was not ready for use yet.
g1	Claire wanted to set the team to work.
b2	The team has not received the first instructions yet.
g2	Claire wanted to prepare the fire extinction.
3b	Claire queried team members. Why did Claire do that?
b1	Team members may have new information.
g1	Claire wanted to assess the situation.
b2	People might have new information.
g2	Claire wanted to get ready to put out the fire.
4b	Claire instructed the team to extinguish the fire with foam. Why did Claire do that?
b1	There was an explosion danger when using water.
g1	Claire wanted to instruct team about extinguisher.
b2	The team needed to know which extinguisher to use.
g2	Claire wanted to instruct the team about the attack plan.

1.3 Pancake scenario

The pancake scenario has been adapted from [1].

PANCAKE SCENARIO	
1a	The robot took the ingredients from the cupboard. Why did the robot do that?
b1	All ingredients were at home already.
g1	The robot wanted to collect all the ingredients.
b2	The robot did not collect all the ingredients yet.
g2	The robot wanted to collect everything it needs.
2a	The robot put eggs in the bowl. Why did the robot do that?
b1	The robot has not added the eggs yet.
g1	The robot wanted all ingredients in the bowl.
b2	Not all ingredients are in the bowl yet.
g2	The robot wanted to make a pancake batter.
3a	The robot loaded a dishwasher. Why did the robot do that?
b1	A dishwasher was available.
g1	The robot wanted to tidy up the kitchen.
b2	The kitchen was not tidy.
g2	The robot wanted to ensure that the kitchen is tidy.
4a	The robot heated the frying pan. Why did the robot do that?
b1	The frying pan was not heated.
g1	The robot wanted to bake pancakes.
b2	The pancake batter was ready.
g2	The robot wanted to prepare pancakes.
1b	The robot bought the ingredients. Why did the robot do that?
b1	Some ingredients were not at home
g1	The robot wanted to collect all the ingredients.
b2	The robot did not collect all the ingredients yet.
g2	The robot wanted to collect everything it needs.
2b	The robot put flour in the bowl. Why did the robot do that?
b1	The robot has not added flour yet.
g1	The robot wanted all ingredients in the bowl.
b2	Not all ingredients were in the bowl yet.
g2	The robot wanted to make a pancake batter.
3b	The robot manually washed the dishes. Why did the robot do that?
b1	A dishwasher was not available.
g1	The robot wanted to tidy up the kitchen.
b2	The kitchen was not tidy.
g2	The robot wanted to ensure that the kitchen is tidy.
4b	The robot put the batter in the frying pan. Why did the robot do that?
b1	The butter has melted.
g1	The robot wanted to bake pancakes.
b2	The pancake batter was ready.
g2	The robot wanted to prepare pancakes.

1.4 Shopping scenario

SHOPPING SCENARIO			
1a	The robot chose human-operated check-out till. Why did the robot do that?	1b	The robot chose self-service check-out till. Why did the robot do that?
b1	There were fewer people at the human-operated check out-tills.	b1	There were fewer people at the self-service check-out tills.
g1	The robot wanted to choose a till.	g1	The robot wanted to choose a till.
b2	The robot has not chosen a till yet.	b2	The robot has not chosen a till yet.
g2	The robot wanted to pay and leave the shop.	g2	The robot wanted to pay and leave the shop.
2a	The robot paid. Why did the robot do that?	2b	The robot waited for the cashier to scan all items. Why did the robot do that?
b1	The cashier finished scanning all items.	b1	There are some items that have not been scanned.
g1	The robot wanted to pay.	g1	The robot wanted to pay.
b2	The robot was at a till.	b2	The robot was at a till.
g2	The robot wanted to go to a till and pay.	g2	The robot wanted to go to a till and pay.
3a	The robot took a bus to the shop. Why did the robot do that?	3b	The robot walked to the shop. Why did the robot do that?
b1	The shop is far.	b1	The shop was near.
g1	The robot wanted to shop in a physical shop.	g1	The robot wanted to shop in a physical shop.
b2	It was more convenient to go to a physical shop.	b2	It was more convenient to go to a physical shop.
g2	The robot wanted to buy groceries.	g2	The robot wanted to buy groceries.
4a	The robot took a shopping trolley. Why did the robot do that?	4b	The robot took a shopping basket. Why did the robot do that?
b1	The robot's shopping list was long.	b1	The robot's shopping list was short.
g1	The robot wanted to grab a basket or a trolley.	g1	The robot wanted to grab a basket or a trolley.
b2	The robot did not have a trolley or a basket yet.	b2	The robot did not have a trolley or a basket yet.
g2	The robot wanted to pick up a trolley or a basket and collect all items on its list.	g2	The robot wanted to pick up a trolley or a basket and collect all items on its list.

REFERENCES

- [1] Maaïke Harbers. 2011. *Explaining agent behavior in virtual training*. Utrecht University.
- [2] Frank Kaptein, Joost Broekens, Koen Hindriks, and Mark Neerincx. 2017. Personalised self-explanation by robots: The role of goals versus beliefs in robot-action explanation for children and adults. *RO-MAN 2017 - 26th IEEE International Symposium on Robot and Human Interactive Communication* 2017-Janua, December (2017), 676–682. <https://doi.org/10.1109/ROMAN.2017.8172376>