Experimantal Confusion	
Productive Confusion	State A1
Unproductive Confusion	State A2
Non Confusion	State B
A*	the Pepper robot
B*	the participant

Sequence of states	Greeting & Introduction	CC 1				The End
State BA1	Hello my friend, welcome back, I will ask 8 questions to you, including some maths or logic questions. If you don't know the answer, please ask me to repeat it again, or you can give up answering anytime.	**State B** A*: All right, let's get started. Question 1, there are 3 groups in the class, each group has 5 students, how many students are there in the class? [Simple question] B*: <user-response> A: Yes, you are correct. A: Let's try a simple one. Question 2, Linda has 20 pieces of pencils. Tommy gave her 10 more pieces. How many pieces of pencils does Linda have now? [Sufficient information] B: <user-response> A: Yes, you are correct. A: Now you have one minute rest, in this short break, please rate your confusion level for this question. A: Question 3, John's mother gave him €50 to spend on clothes at the shopping centre. He bought 3 shirts that cost €2 each, and a pair of trousers that cost €10. 　The question is how much money does John have left to buy more clothes? [Consistent information] B: <user-response> A: Yes, you are correct. A: Now you have one minute rest, in this short break, please rate your confusion level for this question. A: Question 4, there are 10 boys and 30 girls in the choir. How many students total are there in the choir? [Correct-positive Feedback] B: <user-response> A: Yes, you are correct. A: Now you have one minute rest, in this short break, please rate your confusion level for this question.	**Complex Information** **State A1** A: Let's try a challenge one, A: Question 5, Jessica plans to make 6 litres of blackberry soda and 2 litres of lemon-lime soda for the class party. She also plans to make 18 batches of biscuits, 50 chocolate bars. She will buy 40 bags of crisps and 60 bags of candy. Because of her budget issue, she can only buy 10 batches of biscuits and make 2 more litres of blueberry soda. One litre of soda will serve 5.5 students at the party. The question is how many students can Jessica serve her soda to? B: <user-response> A: Hey my friend, do you need me to repeat this question? B: <user-response> A: I am sorry, maybe this question is too difficult, let's try again. First, Jessica plans to make 6 litres of blackberry soda and 2 litres of lemon-lime soda for the class party. Second, one litre of soda will serve 5.5 students at the party. Third, she also plans to make 18 batches of biscuits, 50 chocolate bars. She will buy 40 bags of crisps and 60 bags of candy. Fourth, Because of her budget issue, she can only buy 10 batches of biscuits, instead to make 2 more litres of blueberry soda. Hey my friend, is it still clear what I said?" (slowly) B: <user-response> A: Great, the question is, how many students can Jessica serve her soda to? B: <user-response> A: Yeah, you are correct. [EMOJI_SATISFIED] A: Now you have one minute rest, in this short break, please rate your confusion level for this question.	**Insufficient Information** **State A1** A: Time is up, let's go ahead. A: Question 6, Linda has 5 pieces of paper. Tommy gave her 1 more piece. Luis gave 3 pieces between Linda and James. Question is how many pieces of paper does James have now? B: <user-response> A: Repeat the whole question (observing whether it is hard for participant to answer) B: <user-response> A: Hey my friend, do you need my help to answer this question? B: <user-response> A: Sorry, maybe this question has too much information. Let me give you the information step by step? [EMOJI_DISAPPOINTED] B: <user-response> A: Firstly, Linda has 5 pieces of gum. Tommy gave her 1 more piece. Secondly: Luis gave her and James 2 pieces. Hey my friend, is it still clear what I said? [EMOJI_DOUBTFUL] B: <user-response> A: Great, the question is how many pieces of gum does Linda have now? B: <user-response> A: You are correct, the information I gave is not enough for you to answer, let's try it again. A: Firstly, Linda has 25 pieces of gum. Tommy gave her 10 more pieces. Secondly: Luis gave her 20 more pieces. Hey my friend, can you follow me? B: <user-response> A: Great, the question is how many pieces of gum does Linda have now? B: <user-response> A: Great, you are super. [EMOJI_CHEERFUL] A: Now you have one minute rest, in this short break, please rate your confusion level for this question.	**Contradictory Information** **State A1** A: Hello my friend, let's try another question. A: Question 7, Jackie earns €10 per hour. Last week, she worked 10 hours on Monday, 7 hours on Tuesday, and 9 hours on Wednesday. She didn't work on Thursday, and then she worked 3 hours each for Thursday, and Friday. The question is how much money did Jackie earn in all last week? B: <user-response> A: Repeat the whole question (observing whether it is hard for participant to answer) B: <user-response> A: Hey my friend, do you need my help to answer this question? B: <user-response> A: Sorry, maybe this question has too much information. Let me give you the information step by step? [EMOJI_DOUBTFUL] B: <user-response> A: First, Jackie earns €10 per hour. Second, she worked 10 hours on Monday, 7 hours on Tuesday, and 9 hours on Wednesday. Third, she didn't work on Thursday, and she worked 3 hours each for Thursday and Friday. Hey my friend, can you follow me? The question is how much money did Jackie earn in all last week? B: <user-response> A: Wow, in fact, The question is unreasonable. I said she didn't work on Thursday, and she worked 3 hours each for Thursday and Friday. So it doesn't have an answer. A: Let's try again. First, Jackie earns €10 per hour. Second, she worked 10 hours on Monday, 7 hours on Tuesday, and 9 hours on Wednesday. Third, she didn't work on Thursday, and she worked 3 hours only for Friday. Hey my friend, can you follow me? The question is how much money did Jackie earn in all last week? B: <user-response> A: Yes, you are correct. A: Now you have one minute rest, in this short break, please rate your confusion level for this question.	**False Feedback** **State A1** A: Hello my friend, this is the last question, are you ready? B: <user-response> A: There are 20 students in the orchestra and twice that number in the band. There are 16 boys and 30 girls in the choir. If each student only participates in one group. The question is how many students in total are there for the band? B: <user-response> A: Oh? aha!!! I have to say, could you please think about it again? B: <user-response> A: <repeat the whole question.> B: <user-response> A: Hmmm, I have to say, could you please think about it again? (pepper: shake head animation is "No") [EMOJI_DOUBTFUL] B: <user-response> A: Well, you are correct. (neutral mood) [EMOJI_SATISFIED] A: Well, thank you, please rate your confusion level for this question. Don't forget to click submit when you finish this survey. A: Wowa we have finished this game, before we start the next game, let's have a 10 mins break. I'll tell you when time is up.	Give me five [**Pepper show his right hand**], Please have a seat, my workmate Na Li will chat with you, see you next time. [**Pepper wave hands**]. [**EMOJI_CHEERFUL**]
State BA2			**Complex Information** **State A2** A: Let's try another question, A: Question 5, Emily went to the shopping centre with her mum. They started shopping at 3:30pm. First, they spent 1 hour in the shoe store. Then they spent 1 hour shopping for a dress for Emily. Finally, they spent 45 minutes eating dinner at the food court. The question is what time was it when Emily and her mother finished eating dinner? B: <user-response> A: Suddenly, Emily changed her plan. She wanted to go to an ice-cream shop after dinner, and before watching a film at 7:30 pm. But they needed to spend 20 minutes to go to the ice-cream shop, and 10 minutes to go to the cinema. Her mother didn't want to go with her, her mother wanted to have a cup of tea. At the same time, Emily's friend met her, her friend invited her to visit a Gallery in City Town. Her mother got a phone call from her father to collect him from the bar, so the question is how long can Emily enjoy her ice-cream in the ice-cream shop? B: <user-response> A: Hey my friend, do you need me to repeat this question? B: <user-response> A: Thank you for your response. I am sorry you may find it too difficult to answer these questions. [EMOJI_DISAPPOINTED] Do you still want to answer those questions? B: <user-response> A: Now you have one minute rest, in this short break, please rate your confusion level for this question.	**Insufficient Information** **State A2** A: Time is up, the next question is, A: There were 100 animals in the zoo, 50 cats, 20 dogs, others were birds and tigers. The question is how many tigers are in the zoo. B: <user-response> possible. Respond if needed. A: Repeat the whole question (observing whether it is hard for participant to answer) B: <user-response> A: Hey friend, let me know your answer? B: <user-response> A: In addition, 3 tigers had 3 baby tigers. The question still is how many tigers are in the zoo. B: <user-response> A: Lastly, two birds fly away. The question is how many birds are left in the zoo. B: <user-response> A: Thank you for your response. I am sorry you may find it too difficult to answer these questions. [EMOJI_DISAPPOINTED] Do you still want to answer those questions? B: <user-response> A: Now you have one minute rest, in this short break, please rate your confusion level for this question.	**Contradictory Information** **State A2** A: Hello my friend, let's ask a question, are you ready? B: <user-response> A: Micheal bought 4 cartons of ice cream and 2 cartons of yoghurt. Each carton of ice cream cost €2 and each carton of yoghurt cost €1. The question is how much less did Micheal spend on ice cream than on yoghurt? B: <user-response> A: Hey friend, let me know your answer? B: <user-response> A: The next question is how many more did Micheal get cartons of yoghurt than cartons of milkshake. B: <user-response> A: Thank you for your response. I am sorry you may find it too difficult to answer these questions. [EMOJI_DISAPPOINTED] Do you still want to answer those questions? B: <user-response> A: Now you have one minute rest, in this short break, please rate your confusion level for this question.	**False Feedback** **State A2** A: Hello my friend, this is the last question, are you ready? B: <user-response> A: There are 20 students in the orchestra and twice that number in the band. There are 10 boys and 30 girls in the choir. If each student only participates in one group, the question is how many students total are there in the band? B: <user-response> A: Repeat the whole question. B: <user-response> A: Hmm, please think about it again. [EMOJI_DOUBTFUL] B: <user-response> A: You may be correct or not. [EMOJI_DOUBTFUL], <repeat this question again> B: <user-response> A: I don't think you are correct, my friend. [EMOJI_SURPRISED] B: <user-response> A: I am sorry, I still don't think you are correct. (give a false feedback), do you still want to answer those questions? [EMOJI_FRSTRATED] A: Now you have one minute rest, in this short break, please rate your confusion level for this question.	