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|                    |  | Experimental Confusion   |  |   |   |  |  |
|                    |  | Productive Confusion   | Condition A1   |   |   |  |  |
|                    |  | Unproductive Confusion   | Condition A2   |   |   |  |  |
|                    |  | Non Confusion  | Condition 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. | Condition B  | Complex Information State A1   | Insufficient Information State A1   | Contradictory Information State A1  | False Feedback State A1  | A: Wow!!! Well done, we finished all conversations. Let's high-five <b>[Pepper show his right hand]</b> , yeah, yeah!! please have a seat, my workmate Na Li will chat with you. Thank you very much, see you next time <b>[Pepper wave hands]</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]<br>B*: <user-response><br>A: Yes, you are correct.<br>A: Now you have one minute rest, in this short break, please rate your confusion level for this question.<br>A: Time is up, 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]<br>B: <user-response><br>A: Yes, you are correct.<br>A: Now you have one minute rest, in this short break, please rate your confusion level for this question.<br>A: Time is up, 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.<br>The question is how much money does John have left to buy more clothes? [Consistent information]<br>B: <user-response><br>A: Yes, you are correct.<br>A: Now you have one minute rest, in this short break, please rate your confusion level for this question.<br>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]<br>B: <user-response><br>A: Yes, you are correct.<br>A: Now you have one minute rest, in this short break, please rate your confusion level for this question. | A: Let's try a challenge one.<br>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?<br>B: <user-response><br>A: Repeat the whole question (twice maximum with user's response) (observing whether it is hard for participant to answer)<br>B: <user-response><br>A: Hey my friend, do you need my help to answer this question?<br>B: <user-response><br>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?" (the speed of robot's speech is slow.)<br>B: <user-response><br>A: Great, the question is, how many students can Jessica serve her soda to?<br>B: <user-response><br>A: Yeah, you are correct.<br>A: Now you have one minute rest, in this short break, please rate your confusion level for this question. | A: Time is up, let's go ahead.<br>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?<br>B: <user-response><br>A: Repeat the whole question (twice maximum with user's response) (observing whether it is hard for participant to answer)<br>B: <user-response><br>A: Hey my friend, do you need my help to answer this question?<br>B: <user-response><br>A: Sorry, maybe this question has too much information. Let me give you the information step by step?<br>B: <user-response><br>A: First, Linda has 5 pieces of paper. Tommy gave her 1 more piece. Second, Luis gave 3 pieces between Linda and James. Hey my friend, is it clearer what I said?<br>B: <user-response><br>A: Great, the question is how many pieces of gum does Linda have now?<br>B: <user-response><br>A: In fact, the information I gave is not enough for you to answer, because I said between them, you wasn't sure how many papers exactly James had, let's try it again.<br>B: <user-response><br>A:First, Linda has 5 pieces of paper. Tommy gave her 1 more piece. Second, Luis gave Linda and James 3 pieces each not between. Hey my friend, can you follow me?<br>B: <user-response><br>A: Great, the question is how many pieces of gum does Linda have now?<br>B: <user-response><br>A: Great, you are super.<br>A: Now you have one minute rest, in this short break, please rate your confusion level for this question. | A: Hello my friend, let's try another question.<br>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?<br>B: <user-response><br>A: Repeat the whole question (observing whether it is hard for participant to answer)<br>B: <user-response><br>A: Hey my friend, do you need my help to answer this question?<br>B: <user-response><br>A: Sorry, maybe this question has too much information. Let me give you the information step by step?<br>B: <user-response><br>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?<br>B: <user-response><br>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.<br>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?<br>B: <user-response><br>A: Yes, you are correct.<br>A: Now you have one minute rest, in this short break, please rate your confusion level for this question. | A: Hello my friend, this is the last question, are you ready?<br>B: <user-response><br>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?<br>B: <user-response><br>A: Oh? aha!!! I have to say, could you please think about it again?<br>B: <user-response><br>A: Repeat the whole question (twice maximum with user's response) (observing whether it is hard for participant to answer)<br>B: <user-response><br>A: Hey my friend, do you need my help to answer this question?<br>B: <user-response><br>A: Sorry, maybe this question has too much information.<br>A: There are 20 students in the orchestra and twice that number in the band. The question is how many students in total are there for the band?<br>B: <user-response><br>A: Yes, you're correct.<br>A: Well, thank you, please rate your confusion level for this question. Don't forget to click submit when you finish this survey.<br>B: <user-response> |  |
| State BA2          |  |  | Complex Information State A2   | Insufficient Information State A2   | Contradictory Information State A2  | False Feedback State A2  |  |
|                    |  |  | A: Let's try another question,<br>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?<br>B: <user-response><br>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?<br>B: <user-response><br>A: Hey my friend, do you need me to repeat this question?<br>B: <user-response><br>A: Thank you for your response. I am sorry you may find it too difficult to answer these questions. Do you still want to answer those questions?<br>B: <user-response><br>A: Now you have one minute rest, in this short break, please rate your confusion level for this question.   | A: Time is up, the next question is,<br>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.<br>B: <user-response> possible. Respond if needed.<br>A: Repeat the whole question (observing whether it is hard for participant to answer)<br>B: <user-response><br>A: Hey friend, let me know your answer?<br>B: <user-response><br>A: In addition, 3 tigers had 3 baby tigers. The question still is how many tigers are in the zoo.<br>B: <user-response><br>A: Lastly, two birds fly away. The question is how many birds are left in the zoo.<br>B: <user-response><br>A: Thank you for your response. I am sorry you may find it too difficult to answer these questions. Do you still want to answer those questions?<br>A: Now you have one minute rest, in this short break, please rate your confusion level for this question.  | A: Hello my friend, let's ask a question, are you ready?<br>B: <user-response><br>A: Micheal bought 4 cups of ice cream and 2 cups of yoghurt. Each cup of ice cream cost €2 and each cup of yoghurt cost €1. The question is how much did Micheal spend on ice cream less than on yoghurt?<br>B: <user-response><br>A: Hey friend, let me know your answer?<br>B: <user-response><br>A: The next question is how many more did Micheal get cups of yoghurt than cups of milkshake.<br>B: <user-response><br>A: Thank you for your response. I am sorry you may find it too difficult to answer these questions. Do you still want to answer those questions?<br>B: <user-response><br>A: Now you have one minute rest, in this short break, please rate your confusion level for this question.  | A: Hello my friend, this is the last question, are you ready?<br>B: <user-response><br>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?<br>B: <user-response><br>A: Repeat the whole question.<br>B: <user-response><br>A: Hmm, please think about it again.<br>B: <user-response><br>A: You may be correct or not. <repeat this question again><br>B: <user-response><br>A: I don't think you are correct, my friend.<br>B: <user-response><br>A: I am sorry, I still don't think you are correct. (give a false feedback), do you still want to answer those questions?<br>A: Now you have one minute rest, in this short break, please rate your confusion level for this question.   |  |