

Appendix A: Detailed Procedure for ToM Tasks

Diverse Desires

Wellman and Liu's (2004) diverse desires task assesses whether the individual understands that other people can have desires that differ from his/her own. The child is shown a doll and a page depicting a carrot and a cookie. "Here's Mr. Jones. It's snack time, so, Mr. Jones wants a snack to eat. Here are two different snacks: a carrot and a cookie." The child is asked the own-desire question: "Which snack would you like best? Would you like a carrot or a cookie best?" If the child chooses the cookie (carrot): "Well, that's a good choice, but Mr. Jones really likes carrots (cookies). He doesn't like cookies (carrots). What he likes best are carrots (cookies)." The child is asked the target question: "So now it's time to eat. Mr. Jones can only choose one snack, just one. Which snack will Mr. Jones choose? A carrot or a cookie?" The child is asked the other's desire control question: "Which snack does Mr. Jones like best? Carrots or cookies?" The second (analogue) version of the diverse desires task was identical to the first except that the child was told it was playtime and that "Teddy" the teddy bear wanted a toy to play with and could choose between a doll and a truck.

Diverse Beliefs

Wellman and Liu's (2004) diverse beliefs task assesses whether the individual understands that other people can have beliefs that differ from his/her own. The child is shown a doll and a page depicting bushes and a shed. "Here's Mr. Jones. Mr. Jones wants to find his cat. His cat might be hiding in the bushes or in the shed." The child is asked the own-belief question: "Where do you think the cat is? In the bushes or in the shed?" If the child chooses the bushes (shed): "Well, that's a good idea, but Mr. Jones thinks his cat is in the shed (bushes). He thinks his cat is in the shed (bushes)." The child is asked the target question: "So where will Mr. Jones look for his cat? In the bushes or the shed?" The child is asked the other's belief control question: "Where does Mr. Jones think his cat is? In the bushes or the shed?" The procedure for the second diverse beliefs task was identical to the first except that the child was told that "Teddy" was looking for the jam which might be in the cupboard or in the fridge.

Knowledge Access

Wellman and Liu's (2004) knowledge access task assesses if the individual understands that whether or not someone knows something depends on whether they have had access to the relevant information. The child is shown a nondescript opaque plastic box with a closed drawer containing a small plastic toy dog inside. "Here's a drawer. What do you think is inside the drawer?" (The child's answer is immaterial.) The drawer is opened and the child is shown the content of the drawer: "Let's see ... it's really a dog inside!" The drawer is closed and the child is asked the control question: "Okay, what is in the drawer?" A doll is produced: "Mr. Jones has never seen inside this drawer. Now here comes Mr. Jones." The child is asked the target question: "So, does Mr. Jones know what is in the drawer?"; followed by the memory question: "Did Mr. Jones see inside this drawer?" To be scored correct, the child must answer "dog" to the control question and "no" to both the target and memory questions. The procedure for the second knowledge access task was identical to the first except that the props were the teddy bear and a nondescript case containing a cracker biscuit.

Contents False Belief

Wellman and Liu's (2004) contents false belief task assesses whether the individual understands that people can hold false beliefs about reality. The child is shown a clearly identifiable closed Band-Aid box with a small plastic toy pig inside. "Here's a Band-Aid box. What do you think is inside the Band-Aid box?" "Let's see ... it's really a pig inside!" The Band-Aid box is closed and the child is asked the control question: "Okay, what is in the Band-Aid box?" A doll is produced: "Mr. Jones has never seen inside this Band-Aid box. Now here comes Mr. Jones." Then the child is asked the first target question (others false belief): "So what does Mr. Jones think is in the box? Band-Aids or a pig?" Followed by the memory question: "Did Mr. Jones see inside this box?" and the second Target Question (own false belief): "What did you first think was inside the Band-Aids box before we opened it? Band-Aids or a pig?" The procedure for the second contents false belief task was identical to the first except that the props were the teddy bear and a Smarties box with crayons inside.

Low Verbal False Belief

To check the child's understanding of "thought bubbles", the child is shown two pictures, one depicting a girl thinking about a bottle (a girl with an attached thought bubble containing a bottle) and the other depicting a girl holding a bottle and is asked "Which girl is thinking about a bottle?" The child is shown a picture of a boy holding a fishing rod with the line going into the water and a flap (which depicts a plausible obstruction (reeds)) that covers what is on the end of the line (a boot). "See this water? Look. It has fish in it. This is Fred. Fred thinks he has caught a fish on the fishing-line. Can you cover Fred with your hand while we have a look at what is really on the fishing-line?" This emphasizes Fred's ignorance of what is on the fishing-line. After the flap is replaced, the child is shown a separate picture of Fred with a blank thought bubble above his head. Next to this picture are four small pictures. Two of these pictures are of distracter items, one shows the content of Fred's belief (a fish) and the other shows the actual object (a boot). Then the child is asked the target question: "Can you point to what Fred thinks is on the fishing-line?" Followed by the control question: "Can you point to what is really on the fishing-line?" To be scored correct, the child must point to the fish in response to the target question and to the boot in response to the control question. The procedure for the second low verbal false belief task was identical to the first except that the protagonist Charlie thinks there is a fish under the reeds when it is really a mermaid.

Appendix B: Detailed Procedure for Visual PT Tasks

Level 1 Visual PT

The level 1 visual PT task involves the ability to infer what objects another person does and does not see. The child is shown a card (7cm x 10cm) and told: "Here's a card, it has a picture on one side and a different picture on the other side" (a house on one side and a cat on the other). The child is shown one of the pictures and asked: "What is this called?" The process is repeated for the picture on the opposite side of the card. A doll is introduced as Mr. Jones and the child told: "Mr. Jones is going to sit over here" (opposite side of the table from the child). The card is held vertically between the child and Mr. Jones so that the picture of the cat faces the child and the child is asked: "Which picture does Mr. Jones see, the cat or the house?" The orientation of the card is reversed and the question repeated. Then the child is asked the control question, "Which picture do you see, the cat or the house?" The procedure for the second level 1 visual PT task was identical to the first except that the props were a teddy bear and a card with picture of a truck on one side and a dog on the other.

Level 2 Visual PT

The level 2 visual PT task involves the ability to recognize that an object that is simultaneously visible to both self and other will nonetheless give rise to different visual impressions if their viewing circumstances differ. The materials for the level 2 task were identical to the level 1 task and the procedures also closely matched. The child is shown a picture on a card (a turtle) and asked to name it. To confirm that the child understands the meanings of the terms 'right-way-up' and 'upside-down' the child is asked "can you turn this card so that you see it right-way-up?" and then "can you turn this card so that you see it upside-down?" As in the level 1 task, Mr. Jones is introduced and placed opposite the child. The card is placed flat on the table so it is right-way-up to the child and upside-down to Mr. Jones and the child is asked: "Which way does Mr. Jones see the turtle, right-way-up or upside-down?" The card is turned so it is upside-down to the child and right-way-up to Mr. Jones and the question repeated. Then the child is asked the control question, "Which way do you see the turtle, right-way-up or upside-down?" The procedure for the second level 2 visual PT task was identical to the first except that the props were a teddy bear and a card with picture of a car.

Level 3 visual PT

The materials for the 'level 3' task were similar to the level 2 task and the procedures also closely matched. The child is shown a picture on a card (a dog) and asked to name it. To confirm that the child understands the meanings of the terms 'right-way-up' and 'upside-down' the child is asked "can you turn this card so that you see it right-way-up?" and then "can you turn this card so that you see it upside-down?" As in the level 2 task, Mr. Jones is introduced and placed opposite the child. "Here is a different card; it has a picture of a dog and a picture of a truck on it, one is right-way-up and the other is upside-down." (on the same side of the card) The card is placed flat on the table between the child and Mr. Jones so that one of the pictures faces the child right-way-up. "Which picture does Mr. Jones see upside-down, the dog or the truck?" "Which picture does Mr. Jones see right-way-up, the dog or the truck?" Then the child is asked the control question, "Which picture do you see right-way-up, the dog or the truck?" The procedure for the second level 3 visual PT task was identical to the first except that the props were a teddy bear and a card with a picture of a house and a picture of a cat.

Array Visual PT

The array visual PT task assesses the ability to infer what an array of objects would look like from another spatial location. The child is shown a piece of paper (21cm x 21cm) and told: "Here's a sheet of paper with four coloured circles on it (the array), three circles are yellow and one is blue, can you show me which one is blue?" A doll is introduced as Mr. Jones and the child told: "Mr. Jones is going to sit over here" (opposite side of the table from the child). The array is placed on the table between the child and Mr. Jones. A card containing a series of four scaled down (6cm x 6cm) versions of the array shown from 0°, 90°, 180°, and 270° orientations is placed between the child and the array. "Here's a card that has four smaller versions of the piece of paper on it, they are the same, just smaller." Then, pointing to each of the scaled down versions in turn: "Which way does Mr. Jones see the piece of paper: like this, like this, like this, or like this?" This process is repeated with the array in a different orientation. Then the child is asked the control question, "Which way do you see the piece of paper: like this, like this, like this, or like this?" The materials and procedure for the second array visual PT task were identical to the first except that the prop was a teddy bear.

Appendix C: Detailed Procedure for Emotional PT Tasks

Initial Emotion Labelling Task

The child is shown a piece of paper with pictures of two faces, one happy, one sad (gender matched to that of the child). The experimenter points to one of the faces and asks, "How does s/he feel?" Then the experimenter points to other face and asks, "How does s/he feel?" (If the child is incorrect, the correct answer is provided and the task repeated until the child agrees that the faces show the correct emotion.) Next the child is shown another piece of paper on which the location of the faces has been switched the experimenter asks the child to "Show me the happy face?" followed by "Show me the sad face? (If the child is incorrect, the correct answer is provided and the task repeated until the child points to the correct face for both emotions.)

Emotional PT Task

The child is then asked, "Who is your best friend?" (If the child does not respond, the child is asked 'who do you like to play with?' If they provide more than one name, the first one they mention is used.) "Now I am going to tell you some short pretend stories about you and _____. After each story, I will ask how you and _____ would feel. I want you to point to the face that shows how you would each feel. If you think that the person would be happy, point to the happy face or say happy. If you think that the person would be sad, point to the sad face or say sad." "Ok, here is the first story, you and _____ are playing with your toys and someone walks by and steps on them. Your favourite toy gets broken, but all of _____ toys are okay. How does _____ feel? How do you feel?" (If the child vocalizes an answer other than happy or sad, the child is asked to point to the face that shows how the person would feel.) "Here is the second story, when you are out on the playground, everyone wants to play with you and no one wants to play with _____. How do you feel? How does _____ feel?"

The procedure for the second set of emotional PT task was identical to the first except that the stories were as follows: "You and _____ both make houses out of blocks and then leave to get some more blocks. When you come back, someone has knocked down your house but _____ house is still there. How does _____ feel? How do you feel?", and "Someone in your class is having a birthday party. You are invited, but _____ is not invited to go. How do you feel? How does _____ feel?"