



Intelligent Networked  
robot Systems for  
symbiotic Interaction  
with children with  
impaired  
DEvelopment

## **The Ideal Study Protocol**

INSIDE Internal Report

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## Ideal protocol

### Step by step protocol – with utterances

The child approaches a glass window on the door to look at the robot. The robot moves around the room and, ideally, “sees” that the door was opened and turns to the child but does not move towards the child (the child has to be the one approaching the robot the first time); to greet the child, the robot will select 1 sentence from table 1. For pilot 4, the session starts when the therapist says “Começar”; if the session starts with the keyword, the therapist must say the word before entering the room.

**Table 1**

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<b>Game:</b> Say hello
<b>Breakdown:</b> Greetings 1
<b>Sentence selection:</b> random
<b>Number of prompts:</b> 1

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<b>Sentences:</b>	Olá, eu sou o Astro. E tu, como é que te chamas?
	Olá! Qual é o teu nome? Eu sou o Astro.
	Olá! Sou o Astro. E tu, qual é o teu nome?
	Olá! O meu nome é Astro e o teu?

---

If the child does not say his/her name after that prompt, the robot randomly selects sentences from table 2 until a maximum number of 4 sentences.

**Table 2**

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<b>Game:</b> Say hello
<b>Breakdown:</b> Greetings 2
<b>Sentence selection:</b> random
<b>Number of prompts:</b> max. 4

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<b>Sentences:</b>	Eu sou o Astro e tu és o... / Eu sou o Astro e tu és a...
	Diz, diz-me o teu nome!
	Por favor, diz-me o teu nome!
	Eu sou o Astro, e tu?
	O meu nome é Astro, qual é o teu?
	Gostava TANTO de saber o teu nome!
	Escuta! Como te chamas?
	Como é que te chamas?

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After the child says his/her name and the therapist repeats it (Keyword), the robot should say the child's name. If the child still does not respond after the 4 prompts, the therapist says the child's name to move the session forward.

Once the keyword is spotted, the second stage begins ('invitation to play'). The robot will select up to 2 sentences from table 3, for each prompt level, and say the child's name (the robot must say the child's name at least twice, and randomly place the name before or after the sentence). Level 1 is just verbal.

**Table 3**

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<b>Game:</b> Say hello	
<b>Breakdown:</b> Invitation to play	
<b>Sentence selection:</b> randomly select 1 sentence	
<b>Number of prompts:</b> max. 2 sentences per prompt level (cf. table 4)	
<b>Sentences:</b>	Queres brincar comigo? Quero brincar contigo! Vamos? Queres fazer um jogo? Queres jogar comigo? Gostavas de brincar comigo? Vamos fazer um jogo?

---

After 2 prompts without a positive response from the child, the robot should continue to invite the child to play following the prompt sequence specified on table 4.

Alternatives: if the child is not responding because he/she is focused on the robot, e.g., is walking around it, gazing at its face or asking questions, the robot should continue with the prompts up to 4 times and only after these 4 times should it begin the sequence on table 4.

If the child is showing signs of fear, for example, being on the parents lap or hiding his/her face, then the robot should start adding prompts from table 4 after a single vocal request (in this case the robot must not move towards the child). If the child answers "No", the robot should initiate the new prompt levels but selecting sentences from table 5, using animations involving a sad face and stopping all movements. In this case the maximum level of prompts is 2. After that, the therapist intervenes.

**Table 4**

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<b>Add new prompt levels as specified in the "step by step" protocol</b>	
Level 2	vocal request + face animation
Level 3	vocal request + face animation + soft music
Level 4	vocal request + face animation + soft music + movement
	(Vocal request: The same as before, randomly select the sentences)

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**Table 5**

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**If the child says “No”, choose sentences from this table to pair with the sad face while engaging on the different prompt levels.**

**Number of prompts:** max. 2; after that, the therapist needs to intervene

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- Sentences:**
- ⊗ Ohh, não queres brincar comigo?
  - ⊗ Gostava tanto de brincar contigo...
  - ⊗ Brinca comigo, por favor.
  - ⊗ Anda brincar comigo. → how to differentiate expression: happy-sad??
  - ⊗ Sou teu amigo, anda brincar.
- 

The child must indicate that he/she wants to play with the robot; this can be done verbally or not. For example the child nods yes but does not say it or the child approaches the robot. Once the child indicates that he/she wants to play, the robot provides positive feedback choosing 1 of the sentences below.

**Table 6**

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**Game:** Say hello

**Breakdown:** Positive Feedback

**Sentence selection:** random

**Number of prompts:** 1

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- Sentences:**
- Boa!
  - Uau!
  - Fantástico!
- 

Once the child has accepted the robot's invitation to play, a new task begins. To make the transition between the “Say hello” and the following task, the robot must choose sentences from table 7 until he arrives at the correct position.

**Table 7**

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**Game:** Say hello

**Breakdown:** Transition 0

**Sentence selection:** random

**Number of prompts:** until the robot is at the correct position

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The robot should monitor if the child is following him when moving between activities. If not, the robot should stop and motivate the child using the sentences below

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- Sentences:**
- Anda! Vamos brincar!
  - Vamos brincar!
  - Anda brincar comigo!
-

During the ExplainActivity(Balls) the robot will give the necessary instruction for the ball game. The robot must select randomly one sentence from each group (table 8) choosing the groups in the same order: 1 sentence from group 1 followed by 1 sentence from group 2, then group 3 and group 4, then 5 and 6 in order to give a complete instruction. At the same time that the robot starts giving the instruction, the lights in the drawer are turned on to direct the child's attention to it.

**Table 8**

<b>Game:</b> Ball Game	
<b>Breakdown:</b> ExplainActivity(Balls)	
<b>Sentence selection:</b> 1 random sentence per group, groups in the same order	
<b>Number of prompts:</b> entire sequence = once.	
If after group 6 the child is not looking for the balls, then the robot must say 1 sentence from group 5 followed by one from group 6 until the child starts moving around the room searching for balls.	
<b>Group 1:</b>	Olha para a minha barriga! Já viste a minha barriga? Já olhaste para a minha barriga? Oohh! Olha a minha barriga!
<b>Group 2:</b>	Escuta! Ouve com atenção! Atenção! Ouve-me! Atenção! Vou dizer uma coisa. Escuta com atenção! Olha!
<b>Group 3:</b>	Vamos procurar bolas. Este é o jogo das bolas. Vamos brincar com bolas! Vais ter de procurar bolas. Vamos jogar com as bolas!
<b>Group 4:</b>	Estão 6 bolas escondidas. Estão 6 bolas na sala. Há 6 bolas escondidas na sala. Estão 6 bolas escondidas pela sala.
<b>Group 5:</b>	Procura as bolas. Encontra as bolas. Descobre as bolas.
<b>Group 6:</b>	Apanha as bolas e põe na minha barriga! Põe as bolas na minha barriga! Dá-me as bolas, põe na minha barriga! Já encontraste? Põe as bolas na minha barriga!

Quando encontrares, põe as bolas na minha barriga!

Quando encontrares, coloca as bolas na minha barriga!

---

If after group 4 the child starts searching for the balls, then group 5 can be skipped.

Each time the child places a ball in the drawer, the robot will choose 3 sentences from table 9, to provide positive feedback. The robot must randomly choose 2 sentences from group 1 and add a sentence from group 2. The sentence from group 2 depends on the number of balls missing.

**Table 9**

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**Game:** Ball Game

**Breakdown:** ActivityFeedback(Balls)

**Sentence selection:** randomly choose 2 sentences from group 1 and add sentence from group 2 (as appropriate for the number of balls missing)

**Number of prompts:** After each ball

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**Group 1:**

- Boa, estás a conseguir!
- Boa!
- Uau!
- Muito bem!
- É isso mesmo!
- Fantástico!
- Obrigado!
- Bom trabalho!
- Estás a ir bem!

---

**Group 2:**

- Procura outra!
- Já só faltam duas!
- Já só falta uma!

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When the antepenultimate/penultimate ball is placed in the drawer, the positive feedback sentences of group 1 should be followed by “Já só faltam duas!”/“Já só falta uma!” instead of “Procura outra!”.

If the child interrupts the activity because he/she is looking at the robot, or went to grab his/her parents, the robot will randomly select a sentence from table 10 until a new ball is placed on the drawer.

**Table 10**

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**Randomly select from this group of sentences until a new ball is placed in the drawer**

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<b>Sentences:</b>	Procura bem. Há mais bolas na sala! Continua! Ainda faltam bolas. Continua a procurar. Procura mais. Atenção! Procura mais. Olha! Ainda faltam mais. Dá-me mais bolas! Olha! Continua a procurar.
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IF there are only one or two balls missing AND the child is looking for the balls on the wrong part of the room, the robot will say one of the following sentences from table 11 while turning itself in the direction of the ball.

**Table 11**

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**Randomly select from this group while turning towards the ball: offering help + guidance feedback**

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<b>Sentences:</b>	Aí não, procura mais. Procura noutro sitio. Há uma bola escondida p'ra ali. Acho que está ali uma bola. Vê se não está ali uma bola. Procura ali!
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After the last ball is in the drawer, the robot will say one sentence from group 1 followed by one sentence from group 2 selected from table 12, with the name of the child before or after the sentence.

**Table 12**

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<b>Game:</b>	Ball Game
<b>Breakdown:</b>	EndActivity(Balls)
<b>Sentence selection:</b>	random
<b>Number of prompts:</b>	N/A or until the first ball is removed

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<b>Group 1:</b>	Boa! Já está! Muito bem! Uau! Conseguiste!
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<b>Group 2:</b>	Terminou, vamos arrumar as bolas na caixa vermelha. Vamos arrumar, põe as bolas na caixa vermelha. Terminou, ajuda a arrumar as bolas na caixa vermelha. Agora acabou, temos de arrumar as bolas na caixa vermelha.
	Obrigado!

Once the drawer has been emptied the robot says “Obrigado!” and starts moving towards the obstacle, while selecting random sentences from table below, followed by the child’s name. The robot should monitor if the child is following him when moving between activities. If not, the robot should stop and motivate the child using the sentences from table 13 (transition 1\_2).

**Table 13**

<b>Game:</b>	Transition
<b>Breakdown:</b>	Transition(1_2)
<b>Sentence selection:</b>	random – 1 sentence from group 1 followed by 1 sentence from group 2
<b>Number of prompts:</b>	until the robot is at the correct position
<b>Group 1:</b>	Anda brincar mais! Vamos brincar mais! Anda comigo! Vem comigo!
<b>Group 2:</b>	Tenho aqui outro jogo. Vamos fazer mais um jogo! Anda fazer outro jogo!
	Ups! Oh, oh!

Once the robot is close to the obstacle the “ask for help” task begins.

When the robot detects an object it should say “Ups!” or “Oh, oh!” (randomly) before the prompts.

To ask the child for help, the robot will choose one sentence from group 1 followed by a sentence from group 2 (see table 14); the two sentences will count as one prompt. When asking for help, the robot should not move the entire body towards the child, ONLY his head. After the second prompt the robot should add movement to the requests for help. There should be two types of movement: a side movement, where the robot moves parallel to the block, and this should be alternated with a back and forth movement.



**Table 14**

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**Game:** Help me 1

**Breakdown:** Ask4Help(obstacle)

**Sentence selection:** randomly select one sentence from group 1 followed by one sentence from group 2

**Number of prompts:** until the block is removed

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<b>Group 1:</b>	Ups! Não consigo passar, ajuda-me. Ajuda-me! Ajuda-me a passar! Estou preso, não consigo passar, ajuda-me. Podes ajudar-me? Por favor, ajuda-me! Oh, oh! Não consigo passar... ajuda-me! Ohh! E agora? Não consigo passar, ajuda-me! Ups! Assim não passo! Ajuda-me! Preciso da tua ajuda!
<b>Group 2:</b>	Podes tirar isto da minha frente? Consegues tirar isto do caminho? Tira isto do caminho, por favor! Preciso que tires isto do caminho!

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When the child removes the block the robot will select sentences from table 15 to thank the child for his/her help.

**Table 15**

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**Game:** Help me 1

**Breakdown:** EndActivity(obstacle)

**Sentence selection:** randomly select one sentence from group 1 followed by one sentence from group 2

**Number of prompts:** N/A

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<b>Group 1:</b>	Boa! Conseguiste! Obrigado! Uau! Fantástico! Muito bem! É isso mesmo!
<b>Group 2:</b>	Agora já consigo passar! Obrigado pela tua ajuda!

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With the block out of the way, the puzzle game can begin. The first thing the robot needs to do is direct the child's attention to the puzzle. The robot will randomly select sentences from table 16, up to 2 times.

**Table 16**

<b>Game:</b> Puzzle	
<b>Breakdown:</b> MotivateActivity(puzzle)	
<b>Sentence selection:</b> random (1 sentence from group 1, 1 sentence from group 2, and 1 sentence from group 3)	
<b>Number of prompts:</b> max. 2	
<b>Group 1:</b>	Olha para o ecrã que está em cima da mesa! Em cima da mesa está um ecrã!
<b>Group 2:</b>	Estás a ver o puzzle? Uau! Está ali um puzzle! Já viste que está ali um puzzle? Olha que giro, um puzzle!
<b>Group 3:</b>	Vamos fazer o puzzle! Anda montar o puzzle! Vamos brincar com o puzzle!

If the child does not start doing the puzzle after the 2 prompts, then the robot will select sentences from table 17, adding the child's name before the sentences (no specific face animations or movements should be added because the goal is to get the child to look and assemble a puzzle and not to direct the child's attention to the robot).

**Table 17**

<b>Randomly select one sentence from group 1 followed by sentence 2 until the first piece is placed on the puzzle</b>	
<b>Group 1:</b>	Faz o puzzle! Podes fazer o puzzle. Escuta. Já podes começar! Coloca as peças. Então? Não consegues? Tu consegues fazer!
<b>Sentence 2:</b>	Só tens de arrastar as peças para o sítio certo.

On previous pilots the children did not take long to assemble the puzzle and it is not realistic that the robot will be able to react to every piece that the child places correctly, but at least once (depending on the number of pieces) the robot should provide positive feedback just like during the ball game. So, at least once during the puzzle game the robot selects two sentences from table 18.

**Table 18**

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**Game:** Puzzle

**Breakdown:** ActivityFeedback(Puzzle)

**Sentence selection:** randomly select 2 sentences

**Number of prompts:** N/A

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**Sentences:**      Boa!  
                          Uau!  
                          Muito bem!  
                          E isso mesmo!  
                          Fantástico!  
                          Bom trabalho!  
                          Estás a ir bem!  
                          Continua!

---

If the child appears to be disengaged, either because he/she is fixated on the robot or moved away from the puzzle for some reason, but there is more than one piece missing from the puzzle, the robot should randomly select sentences from table 19 until a new piece is placed on the puzzle (if the child is staring at the robot, no face animations should be added except for the talking part; if the child is not fixated on the robot, then the robot should move and change the face animations).

**Table 19**

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**Randomly select from this group of sentences until a new piece is in puzzle**

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**Sentences:**      Ainda faltam peças.  
                          Continua!  
                          Ainda há mais peças.  
                          Ainda não acabaste o puzzle.  
                          Faltam mais peças.  
                          Olha! O jogo ainda não acabou.  
                          Olha! Ainda faltam mais peças.

---

When there is only one piece missing, the robot needs to do three things: it needs to motivate the child to ask for help, offer help, and indicate that the missing piece of the puzzle can be found on the robot's tablet. So the robot must start with sentences from table 20, selected at random, until the child signals the need for help. Before each sentence the robot must say the child's name.

**Table 20**

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**Game:** Puzzle

**Breakdown:** ManagePuzzleInteraction

**Sentence selection:** randomly select one sentence from group 1 followed by one sentence from group 2

**Number of prompts:** until the Keyword is spotted

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<b>Group 1:</b>	Oh, oh! Acho que falta uma peça. Falta alguma coisa? Ups! Acho que falta alguma coisa... O que é que falta? Oh, oh, faltam peças, e agora?
<b>Group 2:</b>	Precisas de ajuda? Pede ajuda. Queres ajuda? Precisas da minha ajuda? Se precisas de ajuda, pede. Podes pedir ajuda.

---

Once the child indicates the need for help, the robot will help by providing the missing piece of the puzzle that will appear on the robot's tablet. The robot must indicate that the missing piece is on the tablet and instruct the child to touch the tablet to get the piece. In order to do this, the robot will select a sentence from group 1 followed by sentence 2 (see table 21).

**Table 21**

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**Game:** Puzzle

**Breakdown:** ManagePuzzleInteraction

**Sentence selection:** randomly select one sentence from group 1 and then add sentence 2

**Number of prompts:** 1 prompt. If the child does not touch the tablet then the robot will give the prompts on table 22

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<b>Group 1:</b>	Eu tenho a peça que falta! Sou eu que tenho a peça que falta! Olha! Eu tenho a peça que falta! Vou ajudar-te! Olha! Eu sei onde está a peça...
<b>Sentence 2:</b>	Toca na peça que está no meu peito!

---

**Table 22**

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**Randomly select 1 sentence from group 1 and add sentence 2 if the child does not touch the puzzle piece on the robot's tablet.**

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<b>Group 1:</b>	Toca na peça para completar o puzzle. Podes tocar na peça. Toca na peça para terminar o jogo.
<b>Sentence 2:</b>	A peça está no meu peito!

---

Once the puzzle is complete the robot will provide positive feedback by selecting two sentences from the table below; between each sentence, the robot must say the child's name.

**Table 23**

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<b>Game:</b>	Puzzle
<b>Breakdown:</b>	EndActivity(puzzle)
<b>Sentence selection:</b>	randomly select 2 sentences
<b>Number of prompts:</b>	N/A
<b>Sentences:</b>	Boa! Conseguiste! Já está! Muito bem! Uau! Terminaste!

---

After that, a new transition starts (Transition(1\_2)) so that the robot can go to the designated place for the tangram game. The robot must choose sentences from table 24 and add the child's name after at least one of those sentences. The robot should monitor if the child is following him when moving between activities. If not, the robot should stop and motivate the child using the sentences from table 24 (transition 1\_2).

**Table 24**

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<b>Game:</b>	Transition
<b>Breakdown:</b>	Transition(1_2)
<b>Sentence selection:</b>	random – 1 sentence from group 1 followed by 1 sentence from group 2
<b>Number of prompts:</b>	until the robot is at the correct position
<b>Group 1:</b>	Anda brincar mais! Vamos brincar mais! Anda comigo! Vem comigo!
<b>Group 2:</b>	Tenho aqui outro jogo! Vamos fazer mais um jogo!

---

Anda fazer outro jogo!

---

Once the robot is in position, it will invite the child to play tangram on the tablet. Once the robot says the first sentence, the tablet activates (the screen has to be completely black until this point). To motivate the child to play, the robot will randomly select one sentence from group 1 followed by sentence 2 (see table 25).

**Table 25**

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<b>Game:</b> Turn taking	
<b>Breakdown:</b> MotivateActivity(tangram)	
<b>Sentence selection:</b> one sentence from group 1 followed by sentence 2	
<b>Number of prompts:</b> until the child touches the tablet	
<b>Group 1:</b>	Já viste que tenho um tablet? Olha, já viste o meu tablet? Tenho aqui um tablet. Queres jogar? Joga comigo no meu tablet! Agora vamos jogar no meu tablet! Agora vamos jogar com o meu tablet! Olha o meu tablet!
<b>Sentence 2:</b>	Toca no ecrã que tenho no peito!

---

Once the child touches the screen the robot gives the instructions by saying 1 sentence from group 1, 1 sentence from group 2, and 1 sentence from group 3 (see table 26).

**Table 26**

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<b>Game:</b> Turn taking	
<b>Breakdown:</b> ExplainActivity(tangram)	
<b>Sentence selection:</b> random – 1 sentence from group 1 followed by 1 sentence from group 2 and 1 sentence from group 3	
<b>Number of prompts:</b> 1	
<b>Group 1:</b>	Vamos jogar, um de cada vez. Vamos jogar à vez.
<b>Group 2:</b>	Cada um põe uma peça. Uma vez jogas tu, outra vez jogo eu.
<b>Group 3:</b>	Põe as peças nos sítios certos. Leva as peças até os sítios certos. Toca na peça e arrasta-a para o sítio certo. Tens de arrastar as peças para os sítios certos.

---

Tangram feedback should be provided as specified in table 27.

**Table 27**

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**Game:** Turn taking

**Breakdown:** tangram feedback

**Sentence selection:** depends on the behavior

**Number of prompts:** N/A

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**Correct movement:** Boa!  
Uau!  
Muito bem!  
Fantástico!  
Tu sabes jogar bem!  
Tu aprendes depressa!  
Estás a conseguir!  
Boa, estás a conseguir!

---

**Piece on the wrong place:** Hhmm, acho que não é aí...  
Não, não, a peça não é daí.  
Hmm, tenta noutra sitio.  
Ups, não é aí!  
Tenta outra vez!

---

**If the child keeps trying to place the piece but the piece does not get to the right place:**  
Toca na peça e arrasta-a para o sítio certo.  
Primeiro toca na peça e depois arrasta-a.

---

During the robot's turn, the robot will randomly select sentences from table 28 before moving a piece.

**Table 28**

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**The robot's turn**

**Randomly select one sentence**

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**Sentences:** Agora sou eu, estou a pensar.  
Agora é a minha vez.  
Sou eu a jogar, estou a pensar.  
É a minha vez de jogar, estou a pensar.  
Agora sou eu a jogar.

---

One time per game, during the robot's turn, the robot will ask for the child's help to complete its turn randomly selecting one sentence from table 29.

**Table 29**

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**During its turn the robot asks the child for help (random, once per game)**

**Randomly selects one sentence from group 1. Then, the piece flickers and the robot must say 1 sentence from group 2 (max. 4 times, if after 4 times the child does not touch the screen, the robot needs to ask for help again, repeating the whole sequence on this table)**

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<b>G1:</b>	Oh! Não consigo, ajuda-me! Podes ajudar-me? Hhmm, estou com dúvidas, consegues ajudar? Não sei... Podes pôr tu? Ups, acho que preciso de ajuda.
<b>G2:</b>	Aponta o sítio desta peça! Toca no sítio desta peça!

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The robot indicates the child's turn with sentences from table 30, until the child moves the piece.

**Table 30**

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**The child's turn**

**Randomly select one sentence until the child places the piece**

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<b>Sentences:</b>	Agora é a tua vez. Força, és tu! Agora és tu a jogar. É a tua vez! És tu a jogar! Joga tu agora.
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If the child disengages (moves away from the robot or stares at it without playing) the robot must say the child's name and add a sentence from table 31 randomly selected. If the child moves away the robot must also add some lights and face animations to draw the child's attention.

**Table 31**

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**(nome da criança) + randomly select from the following sentences**

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<b>Sentences:</b>	Continua! O jogo ainda não acabou. Ainda faltam peças. O puzzle não está completo. Ainda não acabámos. Continua! Atenção, ainda faltam peças! Escuta, ainda não acabou!
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Once the game is complete the robot ends the activity by complimenting the child, using two sentences from table 32. Between the two sentences, the robot must say the child's name.

**Table 32**

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<b>Game:</b> Turn taking
<b>Breakdown:</b> EndActivity(tangram)
<b>Sentence selection:</b> randomly select 2 sentences saying the child's name between the 2 sentences
<b>Number of prompts:</b> N/A

---

<b>Sentences:</b>	Boa!
	Conseguiste!
	Já está!
	Muito bem!
	Terminou!
	Terminaste!

---

Once the fireworks from the game stop, the "help others" task will begin. The therapist knocks down a tower of blocks and waits for the child's reaction:

1) The ideal scenario is one where the robot can understand whether the child is going to help the therapist or not. If the child helps the therapist, then the robot should simply follow the child while he/she approaches the therapist. If the child does not help the therapist, then the robot should provide an incentive to help (see table 33). Once the tower has been rebuilt, the robot will start the say goodbye task using the utterances from table 34.

2) We will use keywords to let the robot know if the child is helping or not. Keyword *a* signals the robot so that it will induce the child to help (see table 33). Keyword *b* will be used if the child helps the therapist, to signal to the robot that the prompt must be skipped and that the next task is the say goodbye task (see table 34).

Alternative (If it is still possible to do this)

The robot knocks down the tower of blocks and says "Ups!", then waits to see if the child helps, and if the child does not help the therapist starts rebuilding the tower. If the child still does not help, the robot will say sentences from table 33.

If this is not possible, there will be no changes to the task, but the therapist will try to rebuild the tower and knock it down again at least twice and if the child does not help, then the robot must say sentences from table 33.

**Table 33**

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**Game:** Help Others

**Breakdown:** Ask4Help(therapist) (keyword a)

**Sentence selection:** random

**Number of prompts:** max. 3

---

**Sentences:** Oh! A Cátia deixou cair os blocos.  
Acho que a Cátia precisa de ajuda.  
Vai ajudar a Cátia a arrumar os blocos.  
Ajuda a Cátia.  
Anda, ajuda a Cátia.  
A Cátia precisa de ajuda!  
Vai ver se a Cátia quer ajuda.  
Ajuda a Cátia, por favor.  
Oohh! Caiu tudo, vai ajudar!  
Oh! Caiu! Vai ajudar!

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**Table 34**

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**Game:** Goodbye

**Breakdown:** MotivateActivity(goodbye)

**Sentence selection:** randomly

**Number of prompts:** until the robot is close to the door

---

**Sentences:** Hoje já acabou, vamos embora.  
Está na hora de ir embora.  
Agora temos de ir embora.  
Agora já não posso brincar mais, temos de ir embora.  
Não tenho mais jogos... vamos embora?  
Oohh, acabou! Vamos sair.  
Chegámos ao fim. Vamos embora.  
Terminou! Vamos sair.

---

When the robot arrives to the door he's going to ask for the child's help by randomly selecting sentences from table 35.

**Table 35**

---

**Game:** Goodbye

**Breakdown:** Ask4help(door)

**Sentence selection:** random

**Number of prompts:** Until the door is open

---

**Sentences:** Podes abrir a porta?  
Abre a porta para sairmos.  
Oh! Não consigo abrir a porta, ajuda-me!  
Quero sair, mas não posso abrir a porta.  
Por favor, abre a porta para nós sairmos.  
Ajuda-me a sair!  
Quero sair! Ajudas-me?  
Temos que sair, abre a porta.  
Abre a porta, por favor.

---

Once the door opens the robot thanks the child saying his/her name and randomly selecting sentences from table 36.

**Table 36**

---

**Game:** Goodbye

**Breakdown:** ActivityFeedback(door)

**Sentence selection:** randomly

**Number of prompts:** Until the robot exits the room

---

**Sentences:** Obrigado!  
Boa! Assim já consigo sair!  
Obrigado pela ajuda!  
Obrigado por teres aberto a porta!

---

**-Corridor-**

The robot congratulates the child on the overall session by saying: "Tu és um campeão/Tu és uma campeã" and then randomly selecting sentences from table 37.

**Table 37**

---

**Game:** Goodbye

**Breakdown:** EndActivity(goodbye)

**Sentence selection:** random

**Number of prompts:**

---

**Sentences:** Adeus, até à próxima!  
Gostei muito de brincar contigo!

Podemos brincar mais vezes?  
Diverti-me muito e tu?  
Gostavas de voltar noutra dia para brincar mais?  
Gostaste de brincar comigo?

---

Tú és um campeão!

Tú és uma campeã!

FROM THE SECOND SESSION ON

The greetings will be done using tables 38 and 39, which will replace tables 1 and 2.

**Table 38**

---

**Game:** Say hello

**Breakdown:** greetings a)

**Sentence selection:** Sentence 1 + name + randomly select from group 2

**Number of prompts:** 1

---

**Sentence 1:** Olá!

**Name** [Child's name]

**Group 2:** Estás de volta campeão! / Estás de volta campeã!

Já tinha saudades tuas!

Vieste brincar comigo!

Voltaste para brincar comigo!

---

Immediately after the sentence from table 38, the robot will randomly select sentences from table 39.

**Table 39**

---

**Game:** Say hello

**Breakdown:** greetings b)

**Sentence selection:** randomly selects sentences

**Number of prompts:** max. 3 sentences

---

**Sentences:** Ainda te lembras do meu nome? Sou o...

Tu és o [nome] e o meu nome é...? / Tu és a [nome] e o meu nome é...?

Sabes quem eu sou?

Ainda sabes o meu nome?

[nome], como é que me chamo?

---

If the child says he/she does not remember the robot's name or says the wrong name, the robot must say "Sou o Astro" and skip the feedback. If the child says the robot's name, the robot provides feedback with 2 randomly selected sentences from table 40.

**Table 40**

---

**Game:** Say hello

**Breakdown:** ActivityFeedback

**Sentence selection:** randomly choose 2 sentences

**Number of prompts:** 1

---

**Sentences:**      Boa!  
                          Uau!  
                          Muito bem!  
                          É isso mesmo!  
                          Fantástico!

---

                          Sou o Astro.

---

After the feedback the robot starts the invitation to play.