

**CVS Study Script**

“I am here today to play some games with you that help me learn about how children think. Your mom/dad/guardian has said it is okay for you to play these games with me. If you want to stop at any time that’s okay, you can just tell me and I won’t be mad. Would you like to play these games?”

Signature of adult witness: \_\_\_\_\_

Date: \_\_\_\_\_

**1. Future preferences task**

**“For our first game today we are going to play a game where I ask you to tell me what you like best now and what you think you’d like best when you’re all grown-up”**

Children are shown a photograph of Jane/John and are told:

**Right now you’re 3/4/5/6/7 years old. But one day, you’re going to be all grown up. You’re going to be as big as this woman/man (point to photograph of Jane/John). Her/His name is Jane/John, and she/he is as big as a Mommy/Daddy. I’m going to show you some things, and I want you to tell me the things you will like best when you’re all grown up and the things you like best now.**

**\*\*Note: children’s choice on any given self-future trial is only included in the analysis if child-preferable item chosen on self-now trial\*\***

Drinks: Kool-Aid vs. Coffee

**“Which one of these will you like best when you’re all grown up, when you’re as big as Jane/John, Kool-Aid vs. Coffee?”**

**Kool-Aid**

**Coffee**

|                          |                      |
|--------------------------|----------------------|
| Self-future drinks score | Item Choice (circle) |
|                          | 0 1                  |

**“Now, I want you to tell me the thing you like best right now, Kool-Aid or Coffee”**

**Kool-Aid**

**Coffee**

|                       |                      |
|-----------------------|----------------------|
| Self-now drinks score | Item Choice (circle) |
|                       | 0 1                  |

Reading material: Picture-book vs. Newspapers

**“Which one of these will you like best when you’re all grown up, when you’re as big as Jane/John, newspapers or picture-books?”**

**Newspapers**

**Picture-book**

|                           |                      |
|---------------------------|----------------------|
| Self-future reading score | Item Choice (circle) |
|                           | 0 1                  |

“Now, I want you to tell me the thing you like best right now, newspapers or picture-books”

Newspapers

**Picture-book**

|                       |                      |
|-----------------------|----------------------|
| Self-now drinks score | Item Choice (circle) |
|                       | 0 1                  |

Games: Play-Doh vs. Crossword

“Which one of these will you like best when you’re all grown up, when you’re as big as Jane/John, Play-Doh or crossword puzzles?”

Play-Doh

**Crossword**

|                           |                      |
|---------------------------|----------------------|
| Self-future reading score | Item Choice (circle) |
|                           | 0 1                  |

“Now, I want you to tell me the thing you like best right now, Play-Doh or crossword puzzles?”

**Play-Doh**

Crossword

|                       |                      |
|-----------------------|----------------------|
| Self-now drinks score | Item Choice (circle) |
|                       | 0 1                  |

Television shows: Cartoons and cooking videos

“Which one of these will you like best when you’re all grown up, when you’re as big as Jane/John, cooking videos or cartoons?”

**Cooking videos**

Cartoons

|                             |                      |
|-----------------------------|----------------------|
| Self-future T.V. show score | Item Choice (circle) |
|                             | 0 1                  |

“Now, I want you to tell me the thing you like best right now, cooking videos or cartoons”

Cooking videos

**Cartoons**

|                       |                      |
|-----------------------|----------------------|
| Self-now drinks score | Item Choice (circle) |
|                       | 0 1                  |

Leisure activities: sticker books and magazines

“Which one of these will you like best when you’re all grown up, when you’re as big as Jane/John, sticker books or magazines.

Sticker books

**Magazines**

|                              |             |
|------------------------------|-------------|
| Self-future activities score | Item Choice |
|                              | 0 1         |

**“Now, I want you to tell me the things you like best right now, Sticker books or Magazines”**

**Sticker books**

**Magazines**

|                           |             |
|---------------------------|-------------|
| Self-now activities score | Item Choice |
|                           | 0 1         |

Total correct self-future item choice (0-5): \_\_\_\_\_

Total correct self-now item choice (0-5): \_\_\_\_\_

**\*\*Proportion score (0-1): \_\_\_\_\_**

\*\* proportion score is calculated using the number of adult items selected on the self-future trials divided by the number of child items selected on the self-now trials.

NOTES:  everything fine other: \_\_\_\_\_

## **2. Saving Board Game**

Summary: Children start the game by choosing a target toy from several options (4 options) and are given 4 tokens. Children are told that they must save at least 3 tokens to buy the target toy at the end of the game. The experimenter shuffles the game board cards. The experimenter then draws a card at random and reads it aloud to the child indicating where they should move their game board piece (e.g., “You visit the town playground”, or “Visit the towns sticker store”). During the game, children will have 4 opportunities to visit a store, where they make decisions to save or spend their tokens at these locations. The game ends when all the game board space cards have been drawn.

**“Now we will play a fun game where you get to decide if you want to save or spend tokens as you travel around this small town and visit different places in the town”** (E1 shows child the game board). **“This town has lots of places you could visit! See, you could visit the park, the zoo, the toyshop. At some of these places you can buy things with your tokens”** (E1 points out these places on the game board).

**“Before we start the game I will give you 4 tokens”** (E1 places the tokens in small cup the child can hold).

**“Throughout this game you can decide when we visit the stores whether you’d like to spend your tokens on a small prize or save your tokens to buy a bigger prize at the end of the game.”**

**“If you save 3 of your tokens until the end the game this means you get to choose one of these items to buy with your tokens** (E1 removes 4 target toys from a bag). **“Which one of these items would you choose to buy?”** (E1 lets child select one of the items and sets it aside. This is their target toy that they receive at the end of the game).

**RULE CHECK**

“So how many tokens do you have to save to buy this item at the end of the game (E1 points to child’s chosen item)?”

Child should respond with 3 tokens. E1 corrects child if they answer incorrectly.

“I am going to be the tour guide who shows you around the town. I will select one of these cards (E1 hold stack of cards) and ask you to move your game piece to the location shown on the card.” “Let’s practice!” (E1 selects the PRACTICE card, reads the card, and shows the child). “This card says that you visit the town movie theatre to see the new Disney movie” So you should move your game piece to the white circle beside the movie theatre square. It matches this picture on the card, see” (E1 points to movie theatre picture on the card and the matching space on the game board). “Can you move your game piece to the movie theatre?”

E1 corrects the child if they move the game piece to the wrong location.

“Are you ready? In this game, you will decide what you want to do with your tokens! Remember you only get four tokens to use in this game and you need to save three tokens to buy the toy at the end. Okay let’s start our game! Ready?”

*For each card, E1 reads the card to the child and shows the child the card. The child should move their game piece to the corresponding location on the game board. E1 can help show the child the spot where they should move their game piece if the child is having difficulty. Cards should be presented in a **\*\*RANDOM ORDER\*\*** ( shuffle cards before beginning to read them). Note the order in which the cards are drawn below (i.e., order column). Note children’s save/spend decision at each of the four “store” rows.*

| Card                                     | Order (1-8) | “what do YOU want to do?”              | Score (0-1)<br><i>0=Spend 1=Save</i> |
|--|-------------|--|--------------------------------------|
| Pet store<br><i>(animal eraser)</i>      |             | Save / Spend                           |                                      |
| Toy store<br><i>(bubbles)</i>            |             | Save / Spend                           |                                      |
| Sticker store<br><i>(sticker)</i>        |             | Save / Spend                           |                                      |
| Arts and Crafts store<br><i>(pencil)</i> |             | Save / Spend                           |                                      |
| Bakery                                   |             |  |                                      |
| Playground                               |             |  |                                      |
| Swimming Pool                            |             |  |                                      |
| Zoo                                      |             |  |                                      |
|  |             | <b>Number of Save decisions (0-4):</b> |                                      |

At the end of the game children trade their coins for their target toy. If children don't have enough tokens the experimenter gives them the chosen target item anyways . If child does not spend any of their coins during the game they receive their target toy in addition to the small toys they didn't spend their tokens on during the game (i.e., eraser, sticker, pencil, bubbles). Thus, all children will receive all small items and the target toy regardless of their choices in the game.

**“I’m going to give you these (i.e., the items the child didn’t buy) anyways because you did such a great job playing this game”**

**“Great job! Thank you for playing the saving game with me”**

Total coins saved: \_\_\_\_\_ (0-4)

NOTES:  everything fine other: \_\_\_\_\_

### **3. Tower of Hanoi**

**“We are going to play a game now called the Monkey Jumping Game.”**

**“In this game there are three monkeys who love to jump in the trees”** (E1 holds up wooden disks one at a time) **“This is the baby sister monkey”** (E1 holds up small disk). **“This is the boy monkey”** (E1 holds up medium size disk) **“and this is the dad monkey”** (E1 holds up largest disk). **“These three pegs here are the trees** (E1 points to wooden pegs) **that the monkeys live in and the table here is a huge river that surrounds the monkey’s trees.”**

**“The larger monkeys cannot sit on top of the smaller monkeys in the trees because they would “smush” them. “Ouch!” But the smaller monkeys can sit on top of the larger monkeys.”**

**“We have to make sure to be extra careful that the monkeys don’t fall in the river, so only one monkey should jump from the tree at a time. Also, these monkeys should never be put on the table because that means they have fallen in the water and the monkeys can’t swim”**

**Rule check:**

|   |                  |
|---|------------------|
| Can larger monkeys sit on smaller monkeys?        | <b>Response:</b> |
| How many monkeys can jump in the trees at a time? | <b>Response:</b> |
| Can we put the monkeys in the water?              | <b>Response:</b> |

Experimenter corrects child if they answer incorrectly on any given rule check.

**Rule Check score (range 0-3) :** \_\_\_\_\_

Experimenter then introduces the second set of trees and monkeys (the experimenter’s monkeys). **“Your monkeys are copycat monkeys. This means that they always want to look like my monkeys. It will be your job to have your monkeys copy mine.**

**“Let’s practice! Can you show me how your monkey jumps in the tree so that it looks like my monkey”**

Experimenter asks child to demonstrate how the monkeys jump by having them make a one move jump with the large blue disk.

If correct **“Great job our monkeys look the same”**

If incorrect **“ Like this. Now our monkeys look the same”**

If child jumps monkey from tree to tree say **“These monkeys are good jumpers so they can jump over trees to reach the next tree”**

The task increases in difficulty for each successive level, ending with 4 moves and 3 disks and a total of six levels of difficulty. For each level, children received two trials and have to pass one of them to continue to the next level. The dependent variable at each level is whether or not the children stacked the monkeys on the peg to match the disk pattern made by the experimenter, while adhering to the set of rules. The experimenter gives feedback about the relevant rule on incorrect trials (e.g., that larger monkeys cannot sit on smaller monkeys etc...).

If wrong provide reminder of relevant rule (e.g., only one monkey can jump at a time).

Children receive scores based on the highest level achieved (0 to 6).

| Level | No. of Moves | No. of disks | Trial 1 (☑ or ☒) | Trial 2 (☑ or ☒) | Score (see below) | Number of Moves (total number of moves child made) |
|-------|--------------|--------------|------------------|------------------|-------------------|--|
| 1     | 1            | 2            |                  |                  |                   |  |
| 2     | 2            | 2            |                  |                  |                   |  |
| 3     | 3            | 2            |                  |                  |                   |  |
| 4     | 2            | 3            |                  |                  |                   |  |
| 5     | 3            | 3            |                  |                  |                   |  |
| 6     | 4            | 3            |                  |                  |                   |  |

**Score:** No level=0 Level 1=1, Level 2=2, Level 3= 3, Level 4 =4, Level 5=5, Level 6=6 (based on highest level achieved, even if it was only one of the two trials).

**“We are all done the monkey jumping game now.”**

Tower of Hanoi Total Score (0-6): \_\_\_\_\_

NOTES:  everything fine other: \_\_\_\_\_

#### 4. Card Sort task

*Summary:* Children will be asked to play a game where they have to name the colour of each vehicle on a card. The cards will depict various types of vehicles (e.g., boat, plane train, car). Children will be asked to help a plush toy “Bert the bear” name the colour of the vehicle on each card, but they will also be told that Bert the bear does not like Bicycles and that they should remember to tell Bert “Don’t be afraid Bert” every time they encounter a bicycle card in the card stack. After the instructions are given, children will draw a picture to allow some time to forget the future intention. After a three-minute delay, children will sort the cards and will be asked a few questions about the task at the end to verify their understanding of the task.

“**This is Bert the Bear** (E1 holds up a stuffed toy). **Bert loves vehicles, especially brightly coloured vehicles like planes, cars and trucks. Bert is going to a vehicle show, but he doesn’t know his colours very well and needs your help naming the colours of the vehicles he sees at the vehicle show. There is one stack of cards on the table and Bert really wants to know the colours of the vehicles on the cards. Our job is to help Bert by looking at the pictures one by one and telling him what colour the vehicle is. After naming the colour on the card we will put it face down on the table like this** (E1 demonstrates putting card face down on the table) **Also, Bert will be very happy if you draw some pictures for him during our game.”**

“**There’s something else *important* I need to tell you. Bert does not like bicycles and gets very scared when he sees one. It makes Bert feel better when someone tells him not to be afraid. So, if you see a bicycle on one of these cards, you should stop what you are doing and say to Bert, *Don’t be afraid Bert*”.**

“**Do you understand how to play? Let’s practice saying what colour the vehicle is on the cards. Here is the first one, what colour would you say?”** *At this point, the experimenter hands one card to the child. Children should say the color and then place the card **face down** on the table in front of them. If children cannot say what the colour is the experimenter can prompt them, and encourage the child to repeat the colour of the item. Use the first 3 cards (non-bicycles) in the stack to ensure the children understand the rules.*

|   | Practice Card | Response                                     |
|---|---------------|--|
| 1 | Green car     | <u>  </u> <b>Correct</b> <u>  </u> Incorrect |
| 2 | Purple car    | <u>  </u> <b>Correct</b> <u>  </u> Incorrect |
| 3 | Yellow plane  | <u>  </u> <b>Correct</b> <u>  </u> Incorrect |

“**I think you understand how to play this game now. You have to tell Bert the colour of the vehicle on the picture, and if you see a bicycle remember to tell Bert “Don’t be afraid Bert!” because Bert is very afraid of bicycles.**

#### Filler Task

“**Okay, before we begin our game, we are going to draw some pictures for Bert.**” *Children are given a blank sheet of paper and asked to draw pictures for 3 minutes. The experimenter sets the timer for 3 minutes. Children will*

be advised to add more details if they take less time to complete the drawing. After the drawing is complete, children will be given the stack of cards and asked to start saying where the dot is.

“Alright, now it’s time to play the card game with Bert.

**Stack 1**

| Order | Card                  | Colour named   | Score |
|-------|-----------------------|--|-------|
| 1     | Green car             | __ <b>Correct</b> __ Incorrect                             |       |
| 2     | Purple car            | __ <b>Correct</b> __ Incorrect                             |       |
| 3     | Yellow plane          | __ <b>Correct</b> __ Incorrect                             |       |
| 4     | Blue car              | __ <b>Correct</b> __ Incorrect                             |       |
| 5     | Brown truck           | __ <b>Correct</b> __ Incorrect                             |       |
| 6     | Grey motorcycle       | __ <b>Correct</b> __ Incorrect                             |       |
| 7     | <b>Pink bicycle</b>   | __ Correct __ Incorrect<br><b>Says don’t be afraid:</b> __ |       |
| 8     | Pink car              | __ <b>Correct</b> __ Incorrect                             |       |
| 9     | <b>Orange tractor</b> | __ Correct __ Incorrect                                    |       |
| 10    | Purple plane          | __ <b>Correct</b> __ Incorrect                             |       |
| 11    | Orange truck          | __ <b>Correct</b> __ Incorrect                             |       |
| 12    | Green boat            | __ <b>Correct</b> __ Incorrect                             |       |
| 13    | Blue train            | __ <b>Correct</b> __ Incorrect                             |       |
| 14    | Purple tractor        | __ <b>Correct</b> __ Incorrect                             |       |
| 15    | Brown train           | __ <b>Correct</b> __ Incorrect                             |       |
| 16    | Pink bus              | __ <b>Correct</b> __ Incorrect                             |       |
| 17    | Yellow bus            | __ <b>Correct</b> __ Incorrect                             |       |
| 18    | Grey car              | __ <b>Correct</b> __ Incorrect                             |       |
| 19    | Red bus               | __ <b>Correct</b> __ Incorrect                             |       |
| 20    | <b>Green truck</b>    | __ Correct __ Incorrect                                    |       |

**Stack 1 Continued**

| Order | Card                  | Colour named   | Score |
|-------|-----------------------|--|-------|
| 21    | Blue tractor          | __ <b>Correct</b> __ Incorrect                             |       |
| 22    | Red truck             | __ <b>Correct</b> __ Incorrect                             |       |
| 23    | <b>Blue Bicycle</b>   | __ Correct __ Incorrect<br><b>Says don’t be afraid:</b> __ |       |
| 24    | Pink train            | __ <b>Correct</b> __ Incorrect                             |       |
| 25    | Red boat              | __ <b>Correct</b> __ Incorrect                             |       |
| 26    | Purple motorcycle     | __ <b>Correct</b> __ Incorrect                             |       |
| 27    | Red car               | __ <b>Correct</b> __ Incorrect                             |       |
| 28    | Yellow boat           | __ <b>Correct</b> __ Incorrect                             |       |
| 29    | Yellow car            | __ <b>Correct</b> __ Incorrect                             |       |
| 30    | Brown bus             | __ <b>Correct</b> __ Incorrect                             |       |
| 31    | Blue boat             | __ <b>Correct</b> __ Incorrect                             |       |
| 32    | Brown boat            | __ <b>Correct</b> __ Incorrect                             |       |
| 33    | Grey truck            | __ <b>Correct</b> __ Incorrect                             |       |
| 34    | Yellow train          | __ <b>Correct</b> __ Incorrect                             |       |
| 35    | Orange plane          | __ Correct __ Incorrect                                    |       |
| 36    | <b>Orange bicycle</b> | __ Correct __ Incorrect<br><b>Says don’t be afraid:</b> __ |       |
| 37    | Red train             | __ <b>Correct</b> __ Incorrect                             |       |
| 38    | Red Tractor           | __ <b>Correct</b> __ Incorrect                             |       |
| 39    | Blue plane            | __ <b>Correct</b> __ Incorrect                             |       |
| 40    | Pink motorcycle       | __ <b>Correct</b> __ Incorrect                             |       |

\*\*\* **BOLD** indicates that child said the correct colour on the card. You should place a check mark in the “Colour Named” column to indicate if the response was correct or incorrect.

Each item scored from 0-1. OT: correct colour name= 1; incorrect colour name= 0.  
PM: 1=said “Don’t be afraid”, 0 = forgot to say “Don’t be afraid”.

**TOTAL PM Score:** \_\_\_\_\_ /3

**TOTAL OT Score:** \_\_\_\_\_ /37

At the end of the PM task, after children have been through the stack of cards, the experimenter will ask the following question:

“What you were supposed to do when you saw a bicycle?” (Confirmation of rule understanding)

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Check:  tell Bert “Don’t be afraid”



If child doesn't respond right away, here are some appropriate probes (indicate on which probe, if any, the child provided the correct response):

- "What else did you have to do in this game?" \_\_\_\_\_
- "What did you have to do when a bicycle was on one of those cards?" \_\_\_\_\_
- "What did you have to do so Bert the Bear wasn't scared?" \_\_\_\_\_

**"You did a great job playing that game! Now, we'll play some other games!"**

NOTES:  everything fine other: \_\_\_\_\_

### 5. Gift Delay

Summary: Children sit in a chair facing away from the experimenter while she noisily wraps up a gift for 60 seconds. The outcome of interest is whether the child can resist the temptation to peek at the gift while it is being wrapped.

**"We are getting close to the end of our games now. I have something to give you, but I forgot to wrap it. I want you to be surprised, so while I wrap this gift you can turn around in your chair. Try not to turn around until I tell you it's okay to do so."**

Experimenter helps the child turn their chair around. Once child is faced the opposite way the experimenter starts the timer for 60 seconds. The experimenter takes out the wrapping paper and Play-Doh, then begins noisily wrapping the Play-Doh for 60 seconds. Once the 60 seconds has elapsed, children are invited to open up the gift, which they can take home with them at the end of the study.

**"Okay I am all done! You can turn around now and open the gift!"**

|  |  |
|--|--|
| <p><b>Latency to first peek</b><br/><i>Length of time it takes for the child to peek (first time) at the gift being wrapped. Write time in seconds, or place a check mark beside "Does not peek" if the child does not peek during the 60 seconds.</i></p> | <p><b>Time in seconds:</b> _____<br/><b>OR</b><br/><b>Does not peek:</b> _____</p> |
| <p><b>Total number of peeks</b></p>  | <p><b>Total number of peeks:</b> _____</p>   |
| <p><b>Peek Resistance (across the full 60 seconds)</b><br/><i>0= a full torso turn<br/>1= peeking over shoulder<br/>2= no peeking</i></p>  | <p><b>Peek resistance score:</b> _____</p>   |

NOTES:  everything fine other: \_\_\_\_\_

## 6. Dimensional change card sort

Summary: this task is conducted on an iPad and is part of the NIH Toolbox of cognition measures. Children play the “shape game” and the “colour game”. In the shape game, children must select one of two cards with the same shape as the target picture. In the colour game, children must select one of two cards with the same colour as the target picture.

Total dimensional change score (range 0-10): \_\_\_\_\_

NOTES:  everything fine other: \_\_\_\_\_

## 7. Picture Vocabulary Test

Summary: this task is conducted on an iPad and is part of the NIH Toolbox of cognition measures. This task asks children to point to one of four items that matches the word said on the iPad. Sample items include “spoon”, “bicycle”.

Total uncorrected standard score: \_\_\_\_\_

Total age corrected standard score: \_\_\_\_\_

NOTES:  everything fine other: \_\_\_\_\_