EDINBURGH COGNITIVE AND BEHAVIOURAL ALS SCREEN – ECAS
English Version (2013)

Date of testing: .....
Age at leaving full-time education: .....
Occupation: .....
.....
Handedness: .....

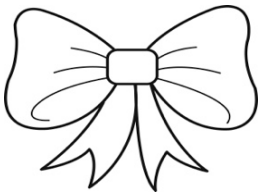
Name: .....
Date of Birth: .....
Hospital No. or Address: .....
.....
.....

LANGUAGE - Naming

➲ Ask: Say or write down the names of these pictures:

Score 0-8 ☐

..... ☐



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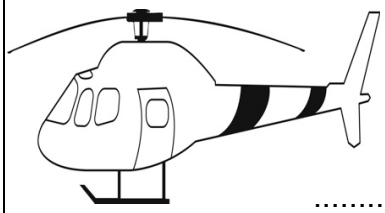

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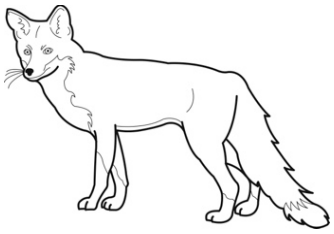

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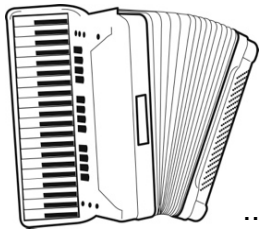

..... ☐

LANGUAGE - Comprehension

➲ Ask: point to the one which is:

Score 0-8 ☐

1. Something you can fly in .....
2. Something with webbed feet .....
3. An animal that climbs trees .....
4. Something used for chopping .....
5. A means of transport .....
6. Something with a sharp edge .....
7. Something with a sting .....
8. Something with a diet of nuts and seeds .....

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MEMORY – Immediate recall

Score 0-10 ☐

➲ Say: 'I am going to read you a short story. Please listen carefully. When I am finished, say or write as much as you can remember'. Score 1 point for each (either entire or part of) underlined section recalled.

Last Sunday, the annual litter collection took place in Primrose Woods. Forty two people joined in to remove old bicycles and shopping trolleys. Mr Douglas Watt from the woodland project told local reporters that he was very impressed and especially proud of the 17 children who came along.

Also use this score to calculate % retention later

LANGUAGE - Spelling

Score 0-12 ☐

➲ Say: 'Spell, either by writing or speaking, the following words.' If the person is using assistive technology, ask them to turn off any predictive text facility.

1. Envelope .....
2. Skateboard .....
3. Constructing .....
4. Partner .....
5. Biscuit .....
6. Lawnmower .....
7. Deliver .....
8. Recorded .....
9. Coathanger .....
10. Orchestra .....
11. Screwdriver .....
12. Brought .....

FLUENCY - Letter S

No. of correct words =

Time to copy/ read aloud =

➲ Say: 'I am going to give you a letter of the alphabet and I would like you to say or write as many different words as you can beginning with that letter, but not names of people or places, or numbers.'
- If writing, say: 'You will have **two** minutes. The letter is S.'
- If speaking, say 'You will have **one** minute. The letter is S.'

➲ Next the person copies/reads these words aloud.

- If writing, say: 'copy these words as fast as possible. I will time you. Ready? Begin.'

If speaking, say: 'read aloud these words as fast as possible. Before you do this, check that you can read them. I will time you. Ready? Begin.'

Verbal Fluency Index (Vfi) calculation:

If spoken:

$$Vfi = \frac{60\text{seconds} - \text{no. of seconds to read aloud words}}{\text{No. of correct words generated}}$$

If written:

$$Vfi = \frac{120\text{seconds} - \text{no. of seconds to copy words}}{\text{No. of correct words generated}}$$

VFI conversion to score table

SPOKEN VFI	WRITTEN VFI	**Score**
≥ 12.00	≥ 20.00	**0**
10.00 to <12.00	16.50 to < 20.00	**2**
8.00 to < 10.00	13.00 to < 16.50	**4**
6.00 to < 8.00	9.50 to < 13.00	**6**
4.00 to < 6.00	6.00 to < 9.50	**8**
2.00 to < 4.00	2.50 to < 6.00	**10**
< 2.00	< 2.50	**12**

Score 0-12 ☐

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EXECUTIVE – Reverse Digit Span

➲ Say: 'I am going to say some numbers and I would like you to say them back to me in reverse order. For example, if I say '2 3 4', you should say '4 3 2'. Let's have a practice. If I say '7 1 9', what would you say?' Stop when person gets both trials of a line wrong. Score total number of trials correct.

Score 0-12 ☐

Trial		Check	Trial		Check
1	2 6		**2**	5 8	
3	9 3 5		**4**	4 1 6	
5	7 2 8 4		**6**	9 5 7 3	
7	6 9 4 2 1		**8**	8 3 2 5 6	
9	8 1 3 5 7 9		**10**	3 6 2 7 3 4	
11	1 6 9 3 5 8 6		**12**	2 3 6 8 4 9 2	

EXECUTIVE – Alternation

➲ Say: 'I want you to alternate between numbers and letters, starting with 1-A, then 2-B, 3-C, and so on. Please alternate between numbers and letters, in order, without skipping any until I tell you to stop. Let's begin together: 1A, 2B, 3C…'

➲

Score 0-12 ☐

Trial		Check	Trial		Check	Trial		Check	Trial		Check
1	4-D		**2**	5-E		**3**	6-F		**4**	7-G	
5	8-H		**6**	9-I		**7**	10-J		**8**	11-K	
9	12-L		**10**	13-M		**11**	14-N		**12**	15-O	

FLUENCY - Letter T

➲ Say: 'I am going to give you a letter of the alphabet and I would like you to say or write as many different words as you can beginning with that letter, but not names of people or places, or numbers. This time the word must only be four letters long. No more or less than four letters'

- If writing, say: 'You will have **two** minutes. The letter is T.'
- If speaking, say 'You will have **one** minute. The letter is T.'

No. of correct words =

Time to copy/ read aloud =

➲ Next the person copies/reads these words aloud.

- If writing, say: 'copy these words as fast as possible. I will time you. Ready? Begin.'

If speaking, say: 'read aloud these words as fast as possible. Before you do this, check that you can read them. I will time you. Ready? Begin.'

Verbal Fluency Index (Vfi) calculation:

If spoken:

$$Vfi = \frac{60\text{seconds} - \text{no. of seconds to read aloud words}}{\text{No. of correct words generated}}$$

If written:

$$Vfi = \frac{120\text{seconds} - \text{no. of seconds to copy words}}{\text{No. of correct words generated}}$$

VFI conversion to score table

SPOKEN VFI	WRITTEN VFI	Score
≥ 20.00	≥ 27.25	**0**
16.75 to < 20.00	23.00 to < 27.25	**2**
13.50 to < 16.75	18.75 to < 23.00	**4**
10.25 to < 13.50	14.50 to < 18.75	**6**
7.00 to < 10.25	10.25 to < 14.50	**8**
3.75 to < 7.00	6.00 to < 10.25	**10**
< 3.75	< 6.00	**12**

Score 0-12 ☐

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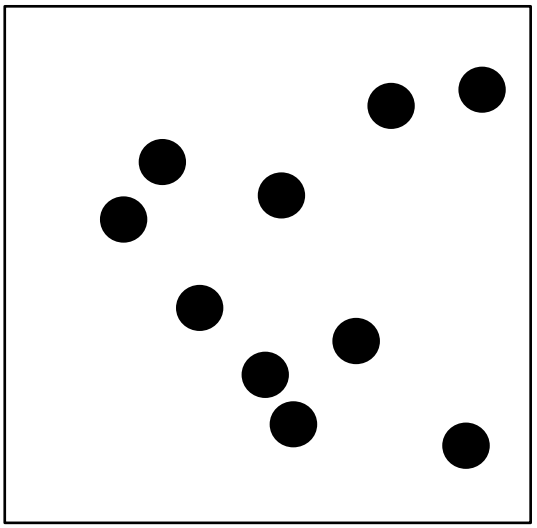
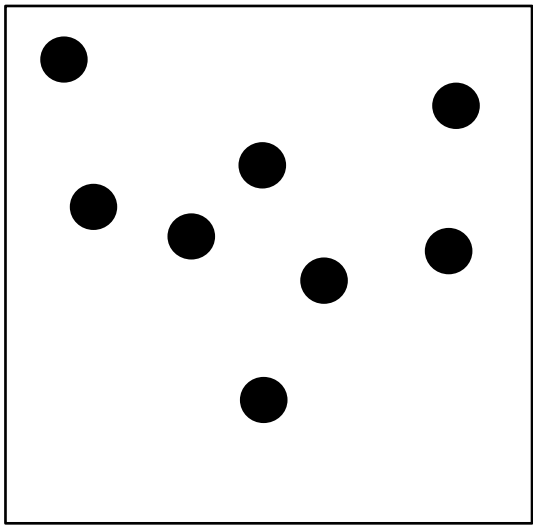
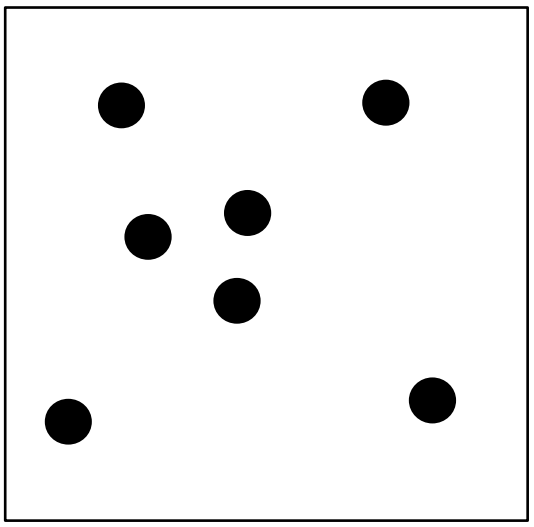
VISUOSPATIAL – Dot Counting

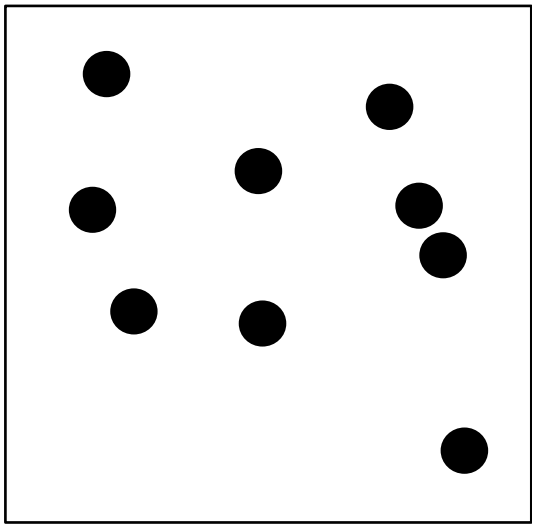
➲ Say: 'I would like you to count how many dots are in each box, but without pointing to them.'

Score
0-4





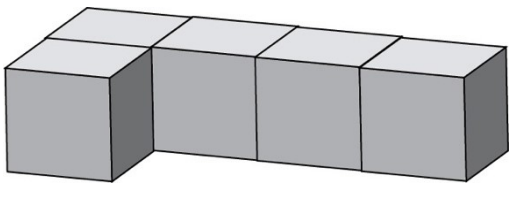


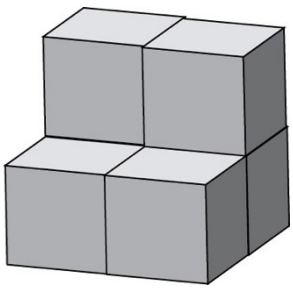


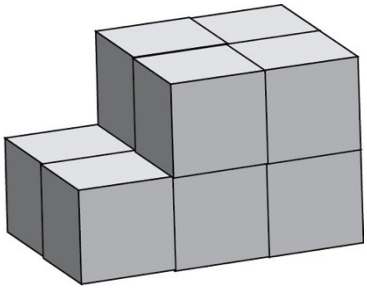
VISUOSPATIAL – Cube Counting

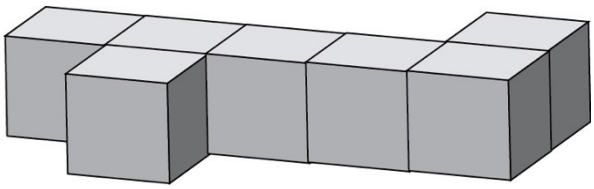
➲ Say: 'How many cubes are in each structure, including the ones you may not be able to see?'

Score
0-4









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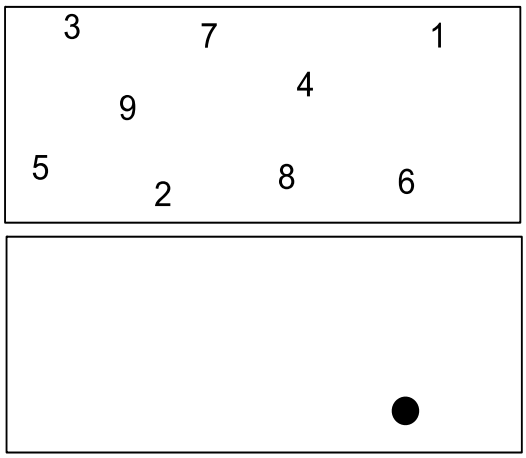
VISUOSPATIAL – Number Location

➲ Say: 'Which number corresponds to the position of the dot?'

Score 0-4 ☐



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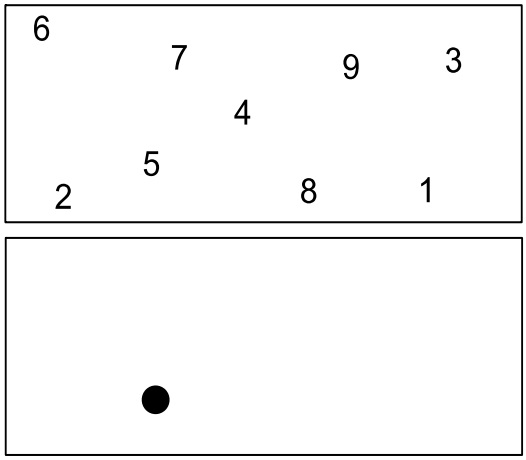

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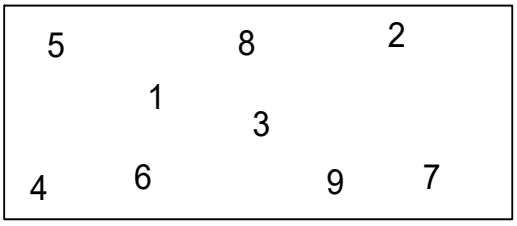

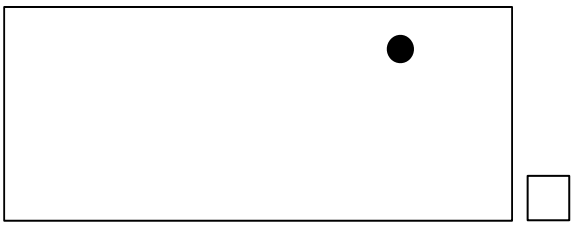

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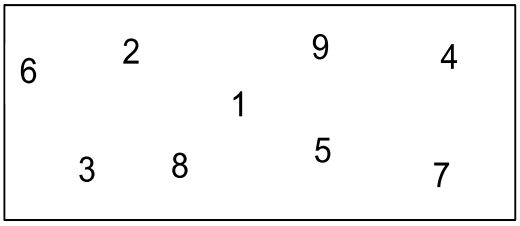

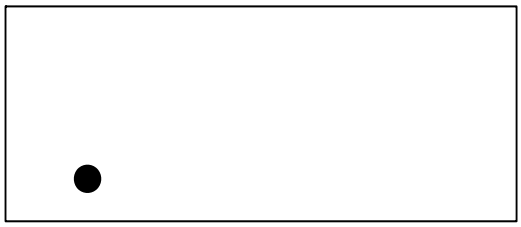

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EXECUTIVE – Sentence Completion

➲ Say: 'Listen carefully to these sentences and as soon as I have finished reading them, please tell me, or write, a word that finishes the sentence as quickly as possible. For example, '*She was so tired that she went straight to…bed*'. Do not score.

1. He phoned up the restaurant to reserve a .....
2. When she got up in the morning, the sun was.....

➲ Say: 'Now I'd like you to do that again, but this time the word you give should not make sense whatsoever in the context of the sentence. It must not be related to the word that actually completes the sentence. For example, '*John cut his hand with the sharp…orange*'. If the person does not respond within 20 seconds, move onto the next question.

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1. The postman knocked on the .....

2. He brought his umbrella with him in case of .....

3. Sally spread her toast with butter and .....

4. John went to the barbers to get his hair .....

5. She dived into the swimming .....

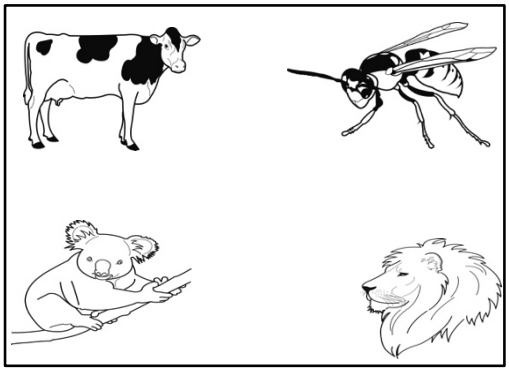
6. They all went to the local café for something to .....

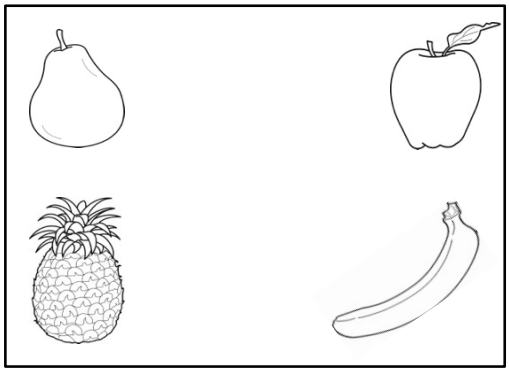
Give 2 points for different word, 1 point for related word (e.g. associated or opposite meaning) or 0 points for exact word.

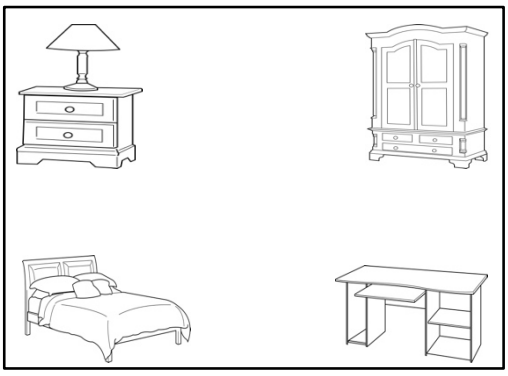
Score 0-12

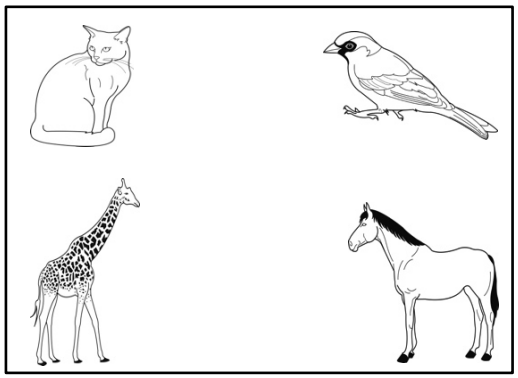
SOCIAL COGNITION – Part A

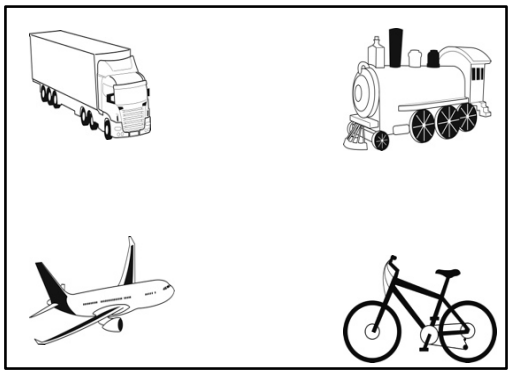
➲ Say: 'You are going to see some pictures, one in each corner of a box. You have to choose **which picture you like best.** Either point to or say which picture you like best. Please respond as quickly as possible.' Circle participant's choice.











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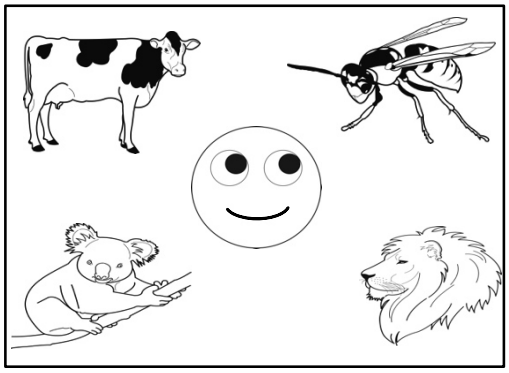
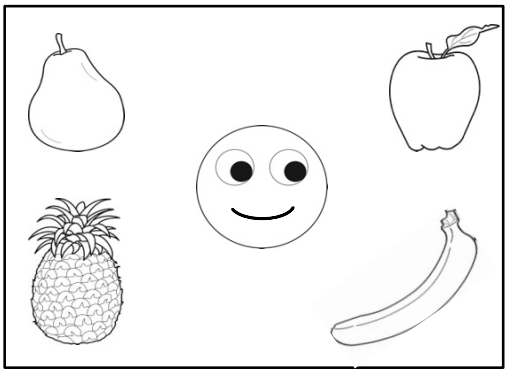
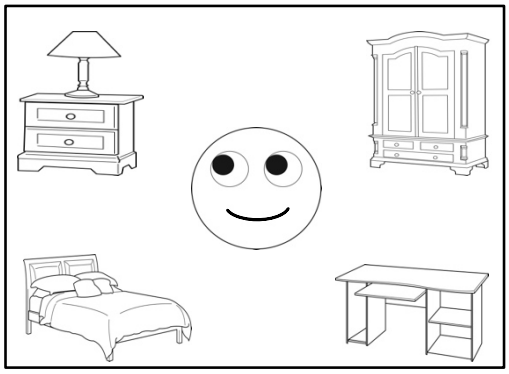
SOCIAL COGNITION – Part B

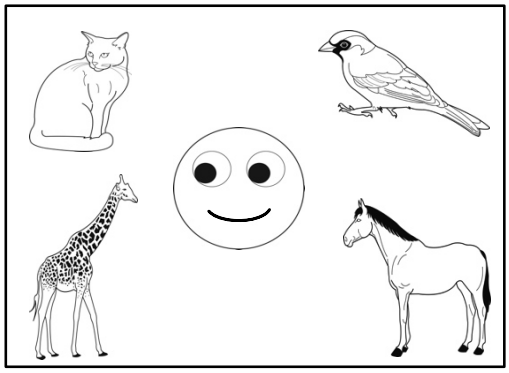
➲ Say: 'You are going to see some pictures, one in each corner of a box. You have to choose **which picture does the face like best.** Either point to or say which picture **the face likes best**. Please respond as quickly as possible.' Circle participant's choice. Correct items = 2 points, error = 1 point, egocentric error = 0 points.

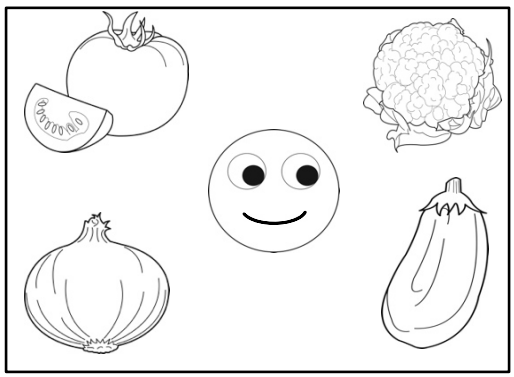
Score 0-12

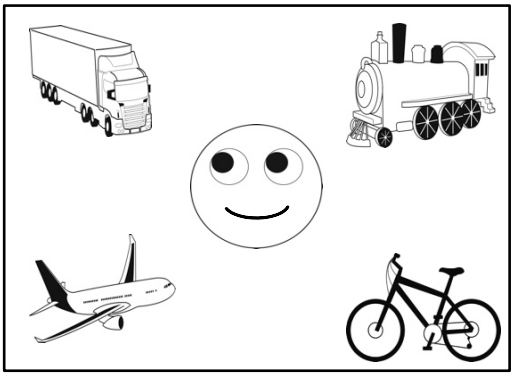












MEMORY – Delayed Recall

Scoring procedure for retention: obtain delayed recall performance (over page) and, together with immediate recall score, determine percentage retained. Convert percentage retained to Score using table below. If delayed recall = 0, score = 0.

Delayed recall to percentage retained calculation	Percentage retained to score conversion table

$$\frac{\text{(Delayed recall)}}{\text{(Immediate recall score)}} \quad x\ 100 = \%\ \textit{retained}$$

$$\frac{(\ldots\ldots\ldots\ldots\ldots\ldots)}{(\ldots\ldots\ldots\ldots\ldots\ldots)} \quad x\ 100 = \ldots\ldots\ldots\ldots\%\ \textit{retained}$$

Percentage retained	**Score**	Percentage retained	**Score**
1-10%	**1**	51-60%	**6**
11-20%	**2**	61-70%	**7**
21-30%	**3**	71-80%	**8**
31-40%	**4**	81-90%	**9**
41-50%	**5**	91-100+ %	**10**

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➲ Say: 'At the beginning of this interview, I read you a short story. Tell me as much as you can remember from that story'. Mark 1 point for each (either entire or part of) underlined section recalled.

Last Sunday, the annual litter collection took place in Primrose Woods. Forty two people joined in to remove old bicycles and shopping trolleys. Mr Douglas Watt from the woodland project told local reporters that he was very impressed and especially proud of the 17 children who came along.

Delayed recall =

Score (0-10) ☐

MEMORY – Delayed Recognition

If all items recalled, skip and score 4. Otherwise ask questions below.

Say: 'Lets see if you can remember anything more about that story. I will ask you some questions, please tell me if they are true or false'.

Circle responses (true or false) and mark 1 point for each item recognised in this section. Use table below to calculate score.

Score 0-4 ☐

Was the story about an event that occurred last Saturday?	T	**F**	1
Was the event the annual litter collection?	**T**	F	1
Did this take place in Primrose Woods?	**T**	F	1
Did they remove old drink cans and sweet wrappers?	T	**F**	1
Was the man in the story called Mr Watt?	**T**	F	1
Was his first name 'Thomas'?	T	**F**	1
Was he from the local council?	T	**F**	1
Was he especially proud of the children for coming along?	**T**	F	1

Recognition to recognition score table	
Number of correct answers	**Score**
0-4	**0**
5	**1**
6	**2**
7	**3**
8	**4**

SCORES

Language	Naming, Comprehension, Spelling	/28
Verbal Fluency	Fluency Letter S, Fluency Letter T	/24
Executive	Reverse Digit Span, Alternation, Sentence Completion, Social Cognition	/48
	ALS-SPECIFIC:	**/100**
Memory	*Immediate recall, Delayed recall score, Delayed recognition*	*/24*
Visuospatial	*Dot Counting, Cube Counting, Number Location*	*/12*
	ALS NON-SPECIFIC:	***/36***
	ECAS TOTAL SCORE:	**/136**

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EDINBURGH COGNITIVE and BEHAVIOURAL ALS SCREEN – ECAS
English Version (2013)

BEHAVIOUR SCREEN – Carer Interview

➲ Please ask the carer about the following possible behaviours. Symptoms should have occurred repeatedly and not just on one instance, and may have occurred prior to the development of any motor signs. Tick 'Yes', 'No' or 'Don't Know'. If 'Yes', please provide a brief written description. Give one mark for every 'Yes' response (maximum = 10).

A	**Behavioural disinhibition**				BEHAVIOUR
1	Socially inappropriate behaviour, e.g. *inappropriate behaviour with strangers* *criminal behaviour*	Y	N	DK	
2	Loss of manners or decorum, e.g. *crude or sexually explicit remarks, jokes or opinions that may be offensive to others* *lack of response to social cues*	Y	N	DK	
3	Impulsive, rash or careless actions, e.g. *new onset gambling, or buying or selling property without regard for consequences* *giving out personal information inappropriately, e.g. credit card numbers*	Y	N	DK	
B	**Apathy or inertia**				
4	Loss of interest, drive or motivation, e.g. *passivity and lack of spontaneity* *needs prompting to initiate or continue routine activities*	Y	N	DK	
C	**Loss of sympathy or empathy**				
5	Diminished response to other people's needs and feelings *Positive rating on this feature should be based on specific examples that reflect a lack of understanding or indifference to other people's feelings, e.g* *hurtful comments* *disregard for others' pain or distress*	Y	N	DK	
6	Diminished social interest, interrelatedness, personal warmth or general closeness in social engagement, e.g. *coldness* *lack of eye contact*	Y	N	DK	
D	**Perseverative, stereotyped, compulsive or ritualistic behaviour**				
7	Simple repetitive movements, e.g. *tapping, clapping* *scratching, picking skin or clothing* *repeating words*	Y	N	DK	
8	Complex, compulsive or ritualistic behaviours, e.g. *counting, cleaning rituals, checking* *collecting, hoarding*	Y	N	DK	

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E	**Hyperorality and altered food preferences**				
9	Altered food preferences, e.g. *food fads* *carbohydrate craving (particularly sweets)*	Y	N	DK	
10	Binge eating or hyperorality, e.g., *cramming or continuing to eat despite satiety* *oral exploration or consumption of inedible objects*	Y	N	DK	

SCORE	
TOTAL	***/10***

SYMPTOMS	
➲ Please tick box if at least one of the symptoms was present in each of the following categories.	
A. Behavioural disinhibition	
B. Apathy or inertia	
C. Loss of sympathy or empathy	
D. Perseverative, stereotyped, compulsive or ritualistic behaviour	
E. Hyperorality and altered food preferences	

ALS Psychosis Screen

➲ Please ask the carer about the following possible symptoms. Tick 'Yes', 'No' or 'Don't Know'. If 'Yes', please provide a brief written description. Give one mark for every 'Yes' response (maximum = 3).

1	Has strange and/or bizarre beliefs and behaviours	Y	N	DK
2	Hears or sees things that are not there, and/or feels the presence of someone who is not there	Y	N	DK
3	Is overly suspicious, and/or feels persecuted	Y	N	DK

SCORE	
TOTAL	***/3***

ONSET AND DURATION OF SYMPTOMS		
➲ Please tick or complete box to indicate response.		
1. Do these symptoms represent a CHANGE from the patient's previous behaviour?	Y	N
If yes, did the changes occur:		
a. BEFORE the onset of the disease?	Y	N
b. at the same time as other symptoms?	Y	N
c. AFTER the onset of the disease?	Y	N
2. Do they still persist?	Y	N
3. If not, how long did they last?		

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