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The suitability of published neuropsychological test norms for urban black South African secondary school students

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Special achievements (extra-curricula activities, sport, art, ballet, music, prefect, etc.)_____

Your ambitions (what would you like to do when you finish school and where do you see yourself in 5 or 10 years time):_____

Do you belong to a library?_____Which libraries do you visit?_____

Career

Have you ever had a full-time, part-time, weekend or holiday job?_____

If so, what? when? where? why? etc._____

What career do you believe your family would like you to follow? _____

What job would you like to do one day?_____

Is there anything which might prevent you from following the career of your choice?_____

Emotional and social details

How would you describe yourself? (Are you shy? Do you think you have leadership qualities? Do you prefer one special friend or a large group of friends? Are you dedicated to your aims or do you give up easily? (etc.) _____

Hobbies: _____

Sports: _____

Do you belong to any clubs, societies or commitees?_____

Describe your social activities and how you spend your free time: _____

What else would you dream of doing if you had the time/facilities?_____

Apart from compulsory reading matter, how much do you read, including books, magazines and newspapers? (Hours/per week):_____

Give the names of a few books that you have read recently and newspapers and periodicals that you read regularly:_____

Dominance

Which hand do you usually use;

to write a letter legibly	to hold a match whilst striking it	to throw a ball
to hold a tennis, squash or badminton racket	to cut with scissors	to guide thread through the eye of a needle
to deal playing cards	at the top of a broom whilst sweeping	to hammer a nail into wood
to hold a toothbrush when cleaning your teeth	to turn a door handle	a the top of a shovel when moving sand
to unscrew a jar	to hold the knife when cutting bread	

Which eye do you...

close when aiming a rifle	do use when looking through a telescope

Which foot do you use;

to kick a ball	to step on a bug

SSAIS-R SOCIO-ECONOMIC DEPRIVATION SCALE

Does the pupil usually live in a home where at least one of each of the following types of rooms are available under the same roof for the use of the family - bedroom, livingroom, kitchen and bathroom?

Does at least one of the pupil's parents hold a position with pension benefits or is at least one of the parents self-employed and making his/her own provision for a pension?

Is the pupil normally free from abnormal fear and/or hostility towards his/her parents, peer group and/or teachers?

Has at least one of the parents passed at least standard 6?	Is there at least one hot water tap in the pupils home?
Does the pupil usually sleep in a room with not more than two other people?	Does at least one parent read at least one magazine or newspaper a week?
Is the pupil free from severe physical and/or mental abuse?	Is there a radio or TV set in the pupils home?
Does the pupil receive adequate medical, dental and health care?	Do the pupil's parents own a car or other four-wheeled motorised vehicle?
Does the pupil usually eat at least two meals a day?	Does the pupil own toys worth more than R50?
Is there a flush toilet in the pupils home?	Does the pupil have his/her own bed to sleep on?
Is there a fridge in the pupils home?	Does the pupil usually sleep in a bedroom at his/her house?
Is the pupil usually adequately clothed?	Are there more than 20 hard cover books in the pupils home

APPENDIX C – THE PROCEDURES FOLLOWED FOR THE INDIVIDUALLY SELECTED NEUROPSYCHOLOGICAL MEASURES

REY AUDITORY - VERBAL LEARNING TEST

Time started:
Time finished:
Time recall:

NAME : _____ DATE : _____

INSRUCTIONS : I am going to read a list of words. Listen carefully, for when I stop you are to say back as many as you can remember. It does not matter in what order you repeat them. Just try to remember as many as you can. Now I am going to read the same list again, and once again when I stop I want you to tell me as many words as you can remember, including words you said the first time. It does not matter in what order you say them. Just say as many words as you can remember whether or not you said them before.

Do you recall the list of words that we learnt earlier? I want you to tell me as many words from the first list as you can remember. It does not matter in what order you say them. Just say as many words as you can remember.

	1st rep	2nd rep	3rd rep	4th rep	5th rep	int rec	30 min rec		1st rec	rec		rec
Drum								Desk			Book	
Curtain								Ranger			Flower	
Bell								Bird			Train	
Coffee								Shoe			Rug	
School								Stove			Meadow	
Parent								Mountain			Harp	
Moon								Glasses			Salt	
Garden								Towel			Finger	
Hat								Cloud			Apple	
Farmer								Boat			Chimney	
Nose								Lamb			Button	
Turkey								Gun			Key	
Colour								Pencil			Dog	
House								Church			Glass	
River								Fish			Rattle	
Total												

How does the subject take to the task?
In what order do they present the words and how do they group them?
Do they repeat, substitute or add words? Do they check these errors?
General test behaviour.

Trial	Client's response
A 1st repetition	:
2nd repetition	:
3rd repetition	:
4th repetition	:
5th repetition	:
B 1st recall	:

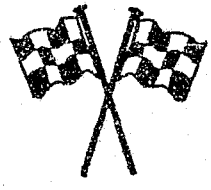
A interference recall:

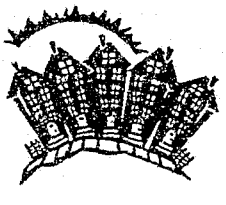
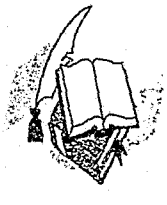
A 30 minute recall :

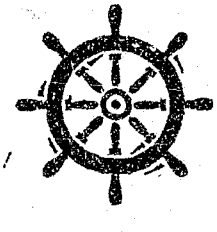
NOTE : Allow 1 minute for the first recall and 1 ½ minutes for all subsequent recalls.

SPATIAL MEMORY TASK

Instruct the subject that you want to see if they can learn the position of pictures in a frame. Each picure has its own location in one of the nine squares. The test administrator is going to show them one at a time and they must try to remember where each one goes. Then proceed to place each card individually on its spot for 5 seconds saying "This one goes here... The next one goes here..." Continue until all nine cards have been shown in random order and say "Now you have seen them all, try to remember where this one goes" and start presenting the cards one at a time above the centre of the empty frame in a new random order. After each correct placement the test administrator will say "Yes that goes there" and after each incorrect placement "No, that goes here" and demonstrate the correct placement before removing the card. The procedure is repeated until the ssubject demonstrates 3 consecutive perfect placements.

Aeroplane

Flags

Cat

Cup

Houses

Books

Bear

Film

WISCONSIN CARD SORTING TEST

The subject is given a pack of cards and is instructed to plac e each response card in a pile below one of the four stimulus cards wherever he or she thinks it should go, the examiner will then inform him or her whether the choice is right or wrong. The subject is directed to make use of this information and try and get as many cards 'right' as possible. No other clues are given. A non-correction technique is used throughout. The subject is first required to sort according to colour and all other responses are called 'wrong'. Once 10 cconsecutive correct responses to colour have been achieved, the required sorting principle shift, without warning , to form. Colour responses are now 'wrong'. After 10 consecutive colour responses have been recorded the sorting principle changes to number and so on for six categories.

-CFN-	-CFN-	-CFN-	-CFN-	-CFN-

STROOP COLOUR WORD TEST

The subject is presented with a 5 by 20 matrix of items. Page one consists of the words RED GREEN BLUE printed in black ink, page two consists of XXXX printed in either red, green or blue ink and page three consists of words printed in coloured ink. The suubject is given all three pages with page one on top. The sheets are placed directly in front of the subject on a flat surface. The subject may be allowed to rotate the sheets up to 45 degrees to the right or left but not lift the paper from the flat surface. None of the pages may be covered in any way. After the subject has been presented with the papers the following instruction is given.

This is a test of how fast you can read the words on this page. After I say begin, you are to read down the columns starting with the first one (point) until you complete it (run hand down the leftmost column) and then continue without stopping down the remaining columns in order (run hand down the remaining columns). If you finish all of the columns before I say "STOP" then return to the first column and begin again. Remember do not stop reading until I say "STOP" and read as loudly and as quickly as you can. If you make a mistake, I will say "NO" to you. Correct your error and continue without stopping. Are there any questions?

Ready? ... Begin. After 45 seconds say "STOP" and mark the item.

The instructions for the second page are identical except for the first sentence which reads; This is a test to see how fast you can name the colours on this page. You will complete this page just as you did the previous page, starting with the first column. Remember to name the colours out loud as quickly as you can. As with the first page the subject is allowed 45 seconds.

At the begining of the third page the following instruction should be used; This page is like the page you just finished. I want you to name the colour of the ink the words are printed in ignoring the word that is printed in each item. For example (point to the first item of the first column) this is the first item, what would you say? If incorrect explain that the subject must respond with the colour of the ink that the word is printed in and attempt the following item. When you are sure that the subject understands say; Good. You will do this page just like the others starting with the first column (point) and then going on to as many columns as you can. Remember if you make a mistake just correct it and go on. Are there any questions?

RED	BLUE	GREEN	RED	BLUE
GREEN	GREEN	RED	BLUE	GREEN
BLUE	RED	BLUE	GREEN	RED
GREEN	BLUE	RED	RED	BLUE
RED	RED	GREEN	BLUE	GREEN
BLUE	GREEN	BLUE	GREEN	RED
RED	BLUE	GREEN	BLUE	GREEN
BLUE	GREEN	RED	GREEN	RED
GREEN	RED	BLUE	RED	BLUE
BLUE	GREEN	GREEN	BLUE	GREEN
GREEN	RED	BLUE	RED	RED
RED	BLUE	RED	GREEN	BLUE
GREEN	RED	BLUE	RED	GREEN
BLUE	BLUE	RED	GREEN	RED
RED	GREEN	GREEN	BLUE	BLUE
BLUE	BLUE	RED	GREEN	RED
RED	GREEN	BLUE	RED	GREEN
GREEN	RED	GREEN	BLUE	BLUE
RED	BLUE	RED	GREEN	RED
GREEN	RED	GREEN	BLUE	GREEN

BLUE	RED	BLUE	GREEN	RED
RED	BLUE	GREEN	RED	BLUE
GREEN	GREEN	RED	BLUE	GREEN
BLUE	RED	BLUE	GREEN	RED
GREEN	GREEN	RED	RED	BLUE
RED	BLUE	GREEN	BLUE	GREEN
GREEN	GREEN	RED	GREEN	RED
RED	RED	BLUE	RED	BLUE
BLUE	BLUE	GREEN	BLUE	GREEN
RED	RED	RED	GREEN	BLUE
BLUE	BLUE	GREEN	BLUE	GREEN
GREEN	GREEN	BLUE	RED	RED
RED	BLUE	RED	BLUE	BLUE
GREEN	GREEN	GREEN	RED	GREEN
BLUE	RED	BLUE	GREEN	RED
GREEN	GREEN	GREEN	BLUE	BLUE
BLUE	RED	RED	GREEN	RED
RED	BLUE	BLUE	RED	GREEN
GREEN	RED	GREEN	BLUE	BLUE
BLUE	GREEN	BLUE	RED	RED

Words read =

Colours named =

ColourWord Score =

Predicted CW = C x W / C + W

Inteference score = CW - Predicted CW

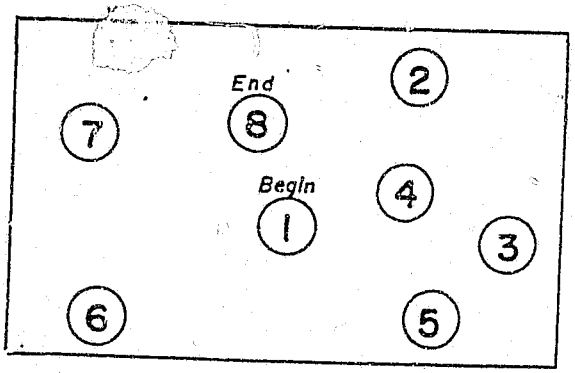
- **TRAIL MAKING TEST**

- Place the **Part A** test sheet, sample side up, on the table directly in front of the subject with the bottom of the test sheet approximately six inches from the subject's edge of the table. Give the subject a pencil and say **"On this page (point) are some numbers. Begin with number one (point to 1) and draw a line from one to two (point to 2), two to three (point to 3) , three to four and so on, in order until you reach the end (point to the circle marked end) . Draw the lines as fast as you can. Ready! Begin!**

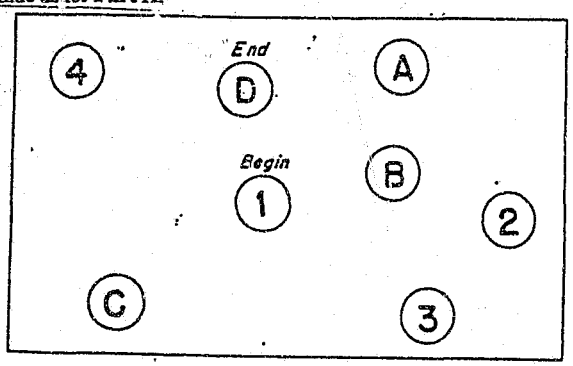
- If correctly completed say **"Good! let's try the next one".** Turn the page over and give Part A of the test.

- If the subject makes an error point out the error and explain it **"You started with the wrong circle. This is where you start (point to 1)." "You skipped a circle (point to circle omitted). You should go from number 1 (point) to 2 (point) to 3 (point) and so on, until you reach the circle marked END"** If it is clear that the subject intended to touch a circle but missed it, do not count it as an omission. Caution the subject however to touch the circle. If the subject can still not complete Sample A, take his/her hand and guide his pencil (eraser end down) through the trial. Then say **"Now you try".**

- The instruction for the **Part A** is the same as for the example. Start timing as soon as the instruction to begin is given. The test administrator must watch closely in order to catch any errors as soon as they are made. If the subject makes an error, call it to his/her attention immediately and have him/her proceed from the point where the error occurred. Do NOT stop the timing. Errors count only in the increased time of performance.



- On completion of **Part A** say **"That's fine. Now we will try another one"** and proceed to **Part B.** Place the test sheet for **Part B** sample side up as was done in **Part A** Point to the sample and say" **On this page are some numbers and letters. Begin at number 1(point) and draw a line from 1 to A (point), A to 2 (point), 2 to B (point), B to 3 (point), 3 to C (point) and so, in order, until you reach the end (point to the circle marked END). Remeber first you have a number (point to 1) then a letter (point to A) then a number (point to 2) then a letter (point to B) and so on. Draw the lines as fast as you can. Ready! Begin!"** Continue as for Part A.



BENDER GESTALT TEST

The general tone of the setting is such as to imply a serious test of the subjects capacity so as to avoid a careless 'it doesn't mean anything' attitude on this innocent looking easily administered test. The subject is seated at a smooth surfaced table and given a blank piece of A4 paper a sharp pencil and an eraser. The subject is told that he is to copy nine designs or figures (it is important to tell the subjectr the number of designs inorder that he might plan the size and arrangement thereof).. The subject is also told not to scetch the designs but that they should be single line drawings. "I have here nine simple designs which you are to copy, freehand, without scetching - on this paper. Each design is on one of these cards which I will show you one at a time. There is no time limit to this test". If the subjects asks what scetching means - explain. If the subject asks if he must count the dots the administer should reply "It is up to you. Just as you please". Quuestions about erasing or using additional sheets of paper are handled in a similar manner with additional paper being supplied if requested. During administration of the test if is important that the administrator does not deviate from the stipulated order of presentation and that the direction inwhich the paper is held and/or the design rotated, is noted.

DESIGN 1

1. Wavy line (2) .....
2. Dot, dash, cir. (3) .....
3. Dashes (3) .....
4. Circles (8) .....
5. No. dots (2) each .....
6. Dbl. row (4) .....
7. Workover (2) .....
8. Sec. attempt (2 ea.) .....
9. Rotation (8) .....
10. Dev. miss. (8) .....

Design Total .....

DESIGN 2

1. Wavy line (2) .....
2. Dash or dots (3) .....
3. Shape cir. (3) .....
4. Cir. miss., ext. (3) .....
5. Cir. touch. (5) .....
6. Dev. slant (3) .....
7. No. col. (2 ea.) .....
8. Fig. on 2 lines (8) .....
9. Guide lines (2) .....
10. Workover (2) .....
11. Sec. attempt (3 ea.) .....
12. Rotation (8) .....
13. Dev. miss. (8) .....

Design Total .....

DESIGN 3

1. Asymmetry (3) .....
2. Dot, dash, cir. (3) .....
3. Dashes (3) .....
4. Circles (8) .....
5. No. dots (2) .....
6. Extra row (8) .....
7. Blunting (8) .....
8. Distortion (8) .....
9. Guide lines (2) .....
10. Workover (2) .....
11. Sec. attempt (3 ea.) .....
12. Rotation (8) .....
13. Dev. miss. (8) .....

Design Total .....

DESIGN 4

1. Asym. Crv. (3) .....
2. Break crv. (4) .....
3. Crv. not center. (1) .....
4. Curls (4) .....
5. Not joined (8) .....
6. Crv. rotation (3) .....
7. Touch-up (8) .....
8. Tremor (4) .....
9. Distortion (8) .....
10. Guide lines (2) .....
11. Sec. attempt (3 ea.) .....
12. Rotation (8) .....
13. Dev. miss. (8) .....

Design Total .....

DESIGN 5

1. Asymmetry (3) .....
2. Dot, dash, cir. (3) .....
3. Dashes (3) .....
4. Circles (8) .....
5. Ext. join. dot (2) .....
6. Ext. rotation (3) .....
7. No. dots (2) .....
8. Distortion (8) .....
9. Guide lines (2) .....
10. Workover (2) .....
11. Sec. attempt (3 ea.) .....
12. Rotation (8) .....
13. Dev. miss. (8) .....

Design Total .....

DESIGN 6

1. Asymmetry (3) .....
2. Angles (2) .....
3. Pt. crossing (2 ea.) .....
4. Crv. extra (8) .....
5. Dbl. line (1 ea.) .....
6. Touch-up (8) .....
7. Tremor (4) .....
8. Distortion (8) .....
9. Guide lines (2) .....
10. Workover (2) .....
11. Sec. attempt (3 ea.) .....
12. Rotation (8) .....
13. Dev. miss. (8) .....

Design Total .....

DESIGN 7

1. Ends no. join. (8) .....
2. Angles ext. (3) .....
3. Angles miss. (3) .....
4. Ext. cent. (3) .....
5. Dbl. line (1 ea.) .....
6. Tremor (4) .....
7. Distortion (8 ea.) .....
8. Guide lines (2) .....
9. Sec. attempt (3 ea.) .....
10. Rotation (8) .....
11. Dev. miss. (8) .....

Design Total .....

DESIGN 8

1. Ends no. join. (8) .....
2. Angles ext. (3) .....
3. Angles miss. (3) .....
4. Ext. cent. (3) .....
5. Dbl. line (1 ea.) .....
6. Tremor (4) .....
7. Distortion (8 ea.) .....
8. Guide lines (2) .....
9. [illegible] (2) .....
10. Sec. [illegible] (3 ea.) .....
11. Rotation (8) .....
12. Dev. miss. (8) .....

Design Total .....

CONFIG. DESIGN

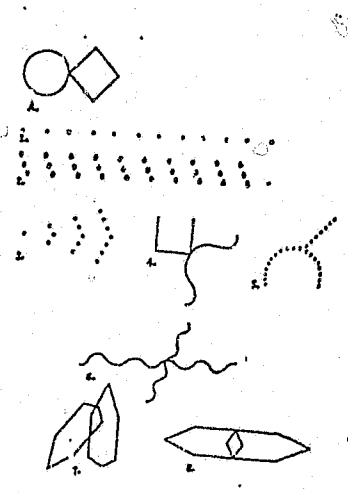
1. Place. Des. A. (2) .....
2. Overlap (2 ea.) .....
3. Compression (3) .....
4. Lines drawn (8) .....
5. Order (2) .....
6. No order (8) .....
7. Rel. size (8) .....

Total .....

DESIGN TOTALS

1. ..... 5. .....
2. ..... 6. .....
3. ..... 7. .....
4. ..... 8. .....

Config. .....



Total Raw Score .....

Standard Score .....

- **CONTROLLED WORD ASSOCIATION**

- Say **"I want to see how many words you can say beginning with a certain letter in one minute. Don't say names, numbers or the same word with a different ending. The first letter is F. Begin".**

- Write down the words as they are said and draw a line after each 15 second time quadrant. after 60 seconds say **"Stop".**

- Repeat the proceedure with the letters 'A' and 'S'.

-

- **REY-OSTEREITH COMPLEX FIGURE TEST**

- Place a blank sheet of paper infornt of the subject and say "I am going to show you a card on which there is a design that I would like you to copy on this sheet of paper. Please copy the figure as carefully as you can. If you think you have made a mistake, don't erase it, just correct whatever you think is wrong.". Have the subject ready, with pencil in hand before presenting the drawing. Each time the subject completes a section of the drawing, the examiner hands the subject a different coloured pencil and notes the order of the colours.

- The figure is typically broken down into 18 scorable elements, 0.5 - 2.0 points being awarded for each element depending on accuracy/distortion and also location of its reproduction. 2 points are awarded if the unit is correct and placed properly, 1 point is awarded if the unit is correct but poorly placed, 1 point is awarded if the unit is distorted but correctly placed, 1/2 point is awarded if the unit is distorted and poorly placed and 0 points if the unit is absent or unrecognisable.

Detail 1: The cross at the upper left corner, outside of the rectangle. The cross must come down to the horizontal midline of the rectangle and must extend above the rectangle. The line that joins the cross to the rectangle must be approximately in the middle of the cross and must cross between Detail 7 and the top of the rectangle.

Detail 2: The large rectangle. The horizontal dimensions of the rectangle must not be greater than twice the vertical dimensions of the rectangle, nor must the rectangle resemble a square. As there are so many possibilities of distorting the rectangle and as it is not possible to score for position, a score of 1 point is given if the rectangle is incomplete or distorted in any way.

Detail 3: The diagonal cross must touch each of the four corners of the rectangle and intersect in the middle of the rectangle.

Detail 4: The horizontal midline of the rectangle must go clearly across from the midpoint of the left side of the rectangle to the midpoint of the right side of the rectangle in one unbroken line.

Detail 5: The vertical midline must start at the midpoint of the bottom of the rectangle and go through in one unbroken line to the midpoint at the top of the rectangle. In scoring for position of 4, 5, and 6, these details should intersect at the midpoint of the rectangle. Usually, if they do not, only one detail is scored as incorrect for position. Very seldom all three are scored as incorrect for not being in position.

Detail 6: The small rectangle must be within the large rectangle and to the left side of 2. The boundaries of Detail 6 are defined by the top of the rectangle falling between lines 2 and 3 of the parallel lines that make up Detail 8, and the width of the small rectangle must be approximately one-quarter the width of the large rectangle; that is, it should come to the midpoint between the left side of the large rectangle and the vertical midpoint of the rectangle. The cross within Detail 6 must come from the four corners of the rectangle and should intersect at the midpoint of the rectangle (i.e., intersecting as Detail 4).

Detail 7: The straight line above Detail 8 must be shorter than the horizontal aspect of Detail 8 and must fall between the top of Detail 8 and the second line of Detail 8.

Detail 8: The four parallel lines within the rectangle in the upper left corner should be parallel, with the spaces between them approximately equal. If the lines are unduly slanted or, of course, if there are more or less than four of them, then the scoring is penalized.

Detail 9: The triangle above the rectangle on the upper right, with the height less than the base.

Detail 10: The small vertical line within the rectangle just below Detail 9. The line should be clearly shifted to the left within the upper right quadrangle in the rectangle.

Detail 11: The circle with three dots must be in the lower right half of the upper right quadrangle. It must not touch any of the three sides of the triangular area in which it is placed, and the positioning of the dots should be such that there are two dots above and one below, that is, so that it resembles a face.

Detail 12: The five parallel lines that are crossing the lower right aspect of Detail 8 must all be within the lower right quadrangle. They must not touch any sides of the quadrangle and they should be approximately equidistant from one another.

Detail 13: The triangle on the right end of the large rectangle. The height of the triangle must not be greater than half of the horizontal midline of the rectangle, and, as already mentioned, the slope of the sides of the triangle must not be a continuous arc of the slope of Detail 9.

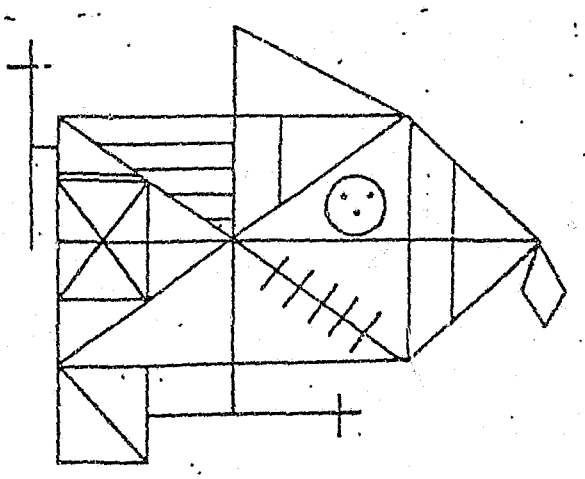
Detail 14: The diamond attached to the end of Detail 13 should be diamond-shaped and must be attached to the end of Detail 13; it must not extend down below the bottom of the large rectangle, Detail 2.

Detail 15: The vertical line within triangle of Detail 13 must be parallel to the right vertical of Detail 2, the large rectangle, and it must be shifted to the left within Detail 13.

Detail 16: The horizontal line within triangle 13, which is a continuation of Detail 4 to the right, must come from the midpoint of the right side of the large rectangle and extend to the top of triangle 13. If triangle 13 is slightly minor, or if Detail 4 does not meet the midpoint of the right side of the rectangle, Detail 16 should still be scored as a full 2 points if it went to the top of the triangle from the midpoint of the right side of the rectangle.

Detail 17: The cross attached to the lower center area of the rectangle. The right side of the cross must be clearly larger than the left side of the cross but must not extend beyond the right end of the large rectangle. At its left end, it should also extend [illegible] the right side of the square, which is Detail 18.

Detail 18: The lower left corner of Detail 2 must clearly be a square, as opposed to the [illegible] shape of Detail 4, and its sides should be the same size as the vertical aspect of Detail 8, extending halfway between the left side of the rectangle and the vertical midline of the rectangle.



APPENDIX D – DATA ANALYSIS ACCORDING TO AGE EDUCATIONAL STANDARD AND LANGUAGE

Table 32(a) WISC-R raw scores Analysed by Educational Standard

	Std 10		Std 9		Std 8		Std7		Std 6	
WISC-R subtest (Raw Scores)	X Raw	sd	X Raw	sd	X Raw	sd	X Raw	sd	X Std	sd
Similarities	16.6	3.7	14.1	4.3	12.2	3.6	11.6	4.5	8.3	4.8
Arithmetic	13.4	1.5	7.6	2.3	11.2	2.0	10.5	2.2	10.4	2.1
Digit Span	10.6	2.5	11.2	2.8	11.8	2.6	12.8	4.2	9.7	3.0
Picture Arrangement	27.2	6.0	23.8	6.9	21.1	8.6	19.5	7.8	19.0	10.6
Mazes	23.3	3.6	21.2	3.8	22.2	5.2	22.3	13.0	20.6	4.8
Coding	58.1	10.7	48.3	13.7	45.4	6.9	38.5	10.2	41.7	11.4
Coding (short-term incidental recall)	8.0	1.2	8.3	1.5	7.1	2.1	7.6	1.5	8.0	1.6

Table 32(b) WISC-R scaled scores Analysed by Educational Standard

	Std 10		Std 9		Std 8		Std 7		Std 6	
WISC-R subtest (Scale scores)	X Std	sd	X Std	sd	XStd	sd	X Std	sd	X Std	sd
Similarities	7.4	2.4	5.9	2.2	4.9	1.7	5.3	2.6	4.3	3.1
Arithmetic	7.7	2.0	6.1	2.6	5.4	2.2	5.3	2.3	5.8	2.1
Digit Span	6.3	2.1	6.7	2.4	7.2	2.2	8.7	3.1	6.3	3.1
Picture Arrangement	7.9	2.1	6.6	2.4	5.7	3.1	5.7	2.6	5.9	3.5
Mazes	8.7	3.1	7.1	2.8	8.2	4.0	7.1	3.3	8.0	3.4
Coding	8.2	2.4	5.9	3.3	5.3	1.8	4.9	3.4	6.2	2.9

Table 32©- Wisc-R Analysed by age

	Similarities				Arithmetic				Digit Span			
	Raw	sd	Std	sd	Raw	sd	Std	sd	Raw	sd	Std	sd
21 years +	12.7	4.8	5.2	2.4	7.6	3.4	5.7	3.0	10.1	1.9	5.9	1.7
20 years	14.7	4.0	6.3	2.3	11.1	2.8	6.9	1.9	12.7	3.9	7.9	2.8
19 years	14.8	4.6	6.3	2.9	12.0	2.6	6.5	2.7	11.1	3.0	6.6	2.6
18 years	13.0	6.3	5.6	3.0	10.8	2.3	5.2	2.3	11.1	2.7	6.6	2.3
16 years	12.1	2.7	4.8	1.5	10.2	2.3	4.7	2.2	12.2	2.3	7.7	1.9
15 years	11.2	5.7	4.8	2.9	10.7	2.1	5.7	2.1	10.8	2.7	6.7	2.8
14 years	9.2	3.7	4.3	2.0	10.1	2.0	5.1	2.	12.5	2.6	8.7	2.1
13 years -	11.6	5.0	6.5	3.0	11.2	1.4	7.1	1.4	10.3	3.6	7.2	3.4

	Pic. Arrange.				Mazes				Coding			
	Raw	sd	Std	sd	Raw	sd	Std	sd	Raw	sd	Std	sd
21 years +	23.8	5.3	6.6	1.8	22.4	5.3	8.5	4.2	47.8	12	5.8	2.8
20 years	20.4	8.6	5.4	3.0	21.8	3.2	7.3	2.3	47.3	11	5.7	3.0
19 years	23.4	8.0	6.4	2.7	22.9	3.3	8.1	2.5	52.2	11	6.8	2.7
18 years	17.7	11	4.9	3.6	19.5	7.1	6.6	4.3	46.1	14	5.5	3.5
17 years	23.0	10	6.4	3.4	25.1	14	7.0	2.3	50.1	11	6.3	2.6
16 years	21.6	6.4	5.8	2.4	20.8	6.2	7.2	3.7	45.8	12	5.3	3.0
15 years	27.5	7.8	8.3	2.7	23.7	3.1	9.3	2.6	46.1	15	6.7	3.7
14 years	21.5	8.8	6.5	3.1	23.2	5.0	10	4.5	42.7	10	5.8	3.1
13 years -	19.8	7.0	6.4	2.4	19.0	4.8	7.4	2.9	39.5	12	6.3	3.3

Table 32(d) - Wisc-R Analysed by language group

	Zulu				Tswana			
WISC-R subtest	RAW	sd	Std	sd	Raw	sd	Std	sd
Similarities	11.6	5.1	5.0	2.6	12.8	4.9	5.8	2.7
Arithmetic	9.8	2.5	5.1	2.0	11.0	2.9	6.6	2.3
Digit Span	11.7	3.6	7.2	2.8	11.0	3.0	7.0	2.7
Picture Arrangement	19.7	9.4	5.4	3.1	23.4	7.9	6.9	2.7
Mazes	21.8	4.3	7.8	3.2	22.2	8.5	7.9	3.3
Coding	48.4	11	6.3	2.9	45.2	12	6.1	3.0

Table 33(a) - IS_A Analysed by educational standard

	Standard 10		Standard 9		Standard 8		Standard 7		Standard 6	
IS-A subtest	X Std	sd	X Std	sd	X std	sd	X Std	sd	X Std	sd
Blocks	12.57	1.9	9.70	3.2	9.70	1.8	10.65	3.3	9.85	2.5
Absurdities	13.90	2.5	12.00	2.7	11.65	2.5	11.85	3.6	9.50	2.8
Comprehension	15.00	2.0	9.00	2.6	12.40	2.7	12.35	3.3	11.90	4.1
Problems	10.94	3.6	11.35	4.2	9.45	3.3	8.90	3.2	8.85	4.6
Memory	11.85	2.9	12.15	2.0	10.05	2.3	11.45	2.2	10.25	2.6

Table 33(b) - IS-A Analysed by age

	Comprehension				Problems				Story			
	Raw	sd	Std	sd	Raw	sd	Std	sd	Raw	sd	Std	sd
21 years +	23.3	5.2	8.4	2.5	14.9	5.6	9.4	4.6	23.5	4.6	11.3	2.1
20 years	26.8	7.8	11.1	4.4	15.1	4.1	10.3	3.9	22.1	6.3	11.1	3.3
19 years	30.1	5.8	13.8	3.1	15.0	3.0	10.9	3.9	20.1	3.8	10.2	1.6
18 years	25.8	6.8	9.3	4.1	13.3	6.0	9.2	5.8	22.2	6.9	1.4	2.5
17 years	27.8	6.4	12.0	3.4	12.4	3.3	9.0	3.8	20.3	8.4	10.8	3.5
16 years	31.1	5.8	13.8	1.3	15.1	3.3	11.0	2.0	19.6	6.9	11.0	2.6
15 years	28.6	8.6	12.8	3.2	10.3	1.8	7.3	2.1	19.3	5.8	10.5	2.5
14 years	27.3	6.9	12.7	2.2	9.9	3.2	8.1	2.7	20.3	6.1	11.7	2.3
13 years -	23.8	4.7	13.7	2.1	11.8	2.7	11.8	3.4	20.3	4.6	11.7	1.8

	Blocks				Absurdities				GIQ-4	sd
	Raw	sd	Std	sd	Raw	sd	Std	sd		
21 years +	9.1	4.3	8.2	3.2	13.0	2.8	11.8	2.6	93.9	16.7
20 years	12.0	2.5	10.8	2.0	12.8	2.5	11.7	1.9	104.0	13.9
19 years	12.2	3.6	10.9	2.7	14.4	2.3	13.3	2.3	111.8	12.0
18 years	10.6	4.5	10.1	3.4	11.7	4.8	11.3	4.4	102.6	16.6
17 years	11.6	3.0	11.0	1.8	11.5	3.5	11.1	2.3	101.8	10.8
16 years	9.6	5.5	10.1	3.6	11.2	4.2	11.7	3.1	109.0	13.3
15 years	12.1	2.7	11.6	2.1	10.3	3.2	12.5	2.8	103.6	14.4
14 years	9.8	4.4	10.6	3.3	11.0	3.8	11.5	3.9	102.7	16.3
13 years -	8.9	3.7	10.26	2.6	9.86	3.5	10.13	3.3	104.0	10.8

Table 33© - IS-A Analysed by language group

	Zulu				Tswana				Raw	Std
IS-A subtest	RAW	sd	Std	sd	Raw	sd	Std	sd	p	p
Comprehension	33.1	5.6	10.1	3.9	23.5	3.8	13.2	2.7	.00	.00
Problems	13.9	4.2	9.0	3.0	12.1	3.9	10.2	4.5	.38	.19
Story	20.2	7.2	11.0	2.8	21.2	5.5	11.3	2.3	.47	.52
Blocks	10.1	3.8	10.6	2.6	11.0	3.9	10.4	2.9	.32	.69
Absurdities	11.6	3.5	12.7	3.0	12.2	3.6	10.9	2.9	.56	.00
IQ			104.6	12.4			103.0	15.0		

Table 34(a) - TMT analysed by educational standard

Standard	X seconds Trails A	sd	X seconds Trails B	sd
Std 10	31.05	9.6	78.94	35.4
Std 9	36.35	15.7	72.95	35.5
Std 8	36.47	7.1	98.89	45.8
Std 7	39.70	15.0	83.45	32.8
Std 6	41.36	13.4	87.57	36.9

Table 34(b) - ROCFT analysed by educational standard

Standard	Mean copy score	sd	Mean recall score	sd
Std 10	33.7	1.89	22.2	4.02
Std 9	31.4	2.29	18.4	6.25
Std 8	31.2	2.89	18.2	6.05
Std 7	31.1	3.08	19.6	5.47
Std 6	29.3	3.41	19.3	6.89

Table 30© - STROOP analysed by educational standard

Standard	X-W	sd	X-C	sd	X-CW	sd
Std 10	89.75	13.6	59.40	10.9	36.65	7.8
Std 9	89.55	13.5	59.55	9.0	34.6	7.3
Std 8	86.20	15.9	54.75	6.9	32.0	7.5
Std 7	86.45	12.8	56.10	9.1	33.50	7.4
Std 6	76.84	13.2	53.47	6.7	30.21	6.1

Table 34(d) - SMT analysed by educational standard

Standard	X no. of trials	sd
Std 10	2.05	1.51
Std 9	3.45	5.74
Std 8	2.60	1.39
Std 7	2.42	1.53
Std 6	4.05	3.48

Table 34(e) - RAVLT analysed by educational standard

Standard	I	II	III	IV	V	B	INT	REC	A
Std 10 X	6.9	8.4	10.4	11.0	11.2	5.8	10.3	2.4	10.5
sd	2.9	1.7	1.7	2.0	1.7	1.8	2.2	3.0	2.0
Std 9 X	6.0	7.9	9.6	10.3	11.0	5.1	10.8	2.4	10.7
sd	1.7	1.9	1.9	2.3	2.1	2.9	2.0	3.0	2.7
Std 8 X	5.8	7.3	9.1	9.2	10.6	5.2	9.1	3.4	9.1
sd	1.7	1.4	2.0	2.5	1.2	1.0	2.0	2.6	1.7
Std 7 X	6.6	8.4	9.2	10.5	10.9	5.8	8.9	2.7	10.3
sd	1.9	1.5	2.4	1.7	1.9	1.4	2.0	3.5	2.2
Std 6 X	5.0	7.2	9.6	10.6	11.4	4.5	10.2	5.2	10.5
sd	2.0	2.0	2.3	1.9	1.9	1.5	2.7	7.2	1.8

Table 34(f) - BGT Analysed by educational standard

	ADULT		CHILDREN	
Standard	X no. errors	sd	X no. errors	sd
Std 10	29.55	15.61	0.6	0.88
Std 9	33.50	21.86	1.3	1.52
Std 8	25.30	16.31	0.7	0.92
Std 7	34.00	40.25	1.31	2.58
Std 6	34.05	14.09	1.40	1.57

Table 34(g) - DAP Analysed by educational standard

Standard	X RAW	sd	X STD	sd
Std 10	33.8	12.65	84.89	17.98
Std 9	30.45	11.67	74.75	16.80
Std 8	36.05	10.04	84.63	16.46
Std 7	36.6	15.04	85.20	22.96
Std 6	36.75	5.17	86.55	9.88

Table 34(h) - WCST Analysed by educational standard

	Std 10		Std 9		Std 8		Std 7		Std 6	
	Mean	sd	Mean	sd	Mean	sd	Mean	sd	Mean	sd
Correct	68.9	12.0	64.7	14.7	71.9	13.8	70.7	15.2	66.3	9.8
Errors	52.2	18.8	61.3	17.8	49.0	19.6	56.1	16.2	59.1	14.2
Categories	3.9	1.8	3.1	1.8	4.2	1.6	3.8	1.8	3.4	1.3
Perseverative responses	28.0	12.1	44.4	25.6	29.7	16.9	33.3	20.6	43.2	20.3
Perseverative errors	25.5	10.0	37.3	18.5	25.1	14.0	28.7	14.8	36.2	14.3
Conceptual level responses	52.6	17.0	48.0	20.0	58.7	18.2	49.2	24.0	51.8	13.1
Failure to maintain set	0.8	0.8	0.7	1.0	0.9	1.3	0.7	1.1	0.9	1.0

Table 35(a) - TMT - Analysis by age

Age in years	N	X-A	sd-A	X-B	sd-B
21 years and older	10	43.7	19.2	91.3	38.9
20 years	11	34.2	8.7	75.0	27.5
19 years	15	31.4	8.5	86.6	34.9
18 years	10	46.4		86.8	66.4
17 years	12	34.2	11.2	99.0	45.6
16 years	8	42.2	15.1	99.6	58.2
15 years	8	36.3	16.4	71.2	25.5
14 years	10	42.6	14.1	87.6	41.0
13 years and younger	15	39.4	12.0	76.2	20.6

Table 35 (b) - ROCFT - Analysis by age

Age in years	N	Mean copy score	sd	Mean recall score	sd
20 years	10	31.80	1.88	18.30	7.99
20 years	11	31.95	2.45	21.04	3.85
19 years	15	32.90	2.65	19.60	6.56
18 years	10	30.55	3.96	18.75	8.00
17 years	13	31.96	1.99	18.85	4.74
16 years	8	30.01	4.53	17.19	6.31
15 years	8	30.88	2.90	19.93	6.25
14 years	10	30.60	3.63	18.28	5.3
14 years	15	30.00	3.49	21.33	5.43

Table 35© - SCWT - Analysis by age

Age in years	N	W	C	CW
20 years	10	88.6	55.9	32.5
20 years	11	83.0	57.0	34.7
19 years	15	91.2	57.0	33.7
18 years	10	80.6	61.3	35.9
17 years	13	90.1	59.5	34.6
16 years	8	88.8	51.8	37.3
15 years	7	85.1	59.1	32.1
14 years	10	86.0	54.9	31.2
< 14 years	15	78.9	53.9	30.5

Table 35 (d) - SMT - Analysis by age

Age in years	N	X no. of trials	sd
>20 years	10	5.1	7.9
20 years	8	2.1	1.1
19 years	15	2.5	1.7
18 years	10	3.3	2.8
17 years	13	2.7	2.6
16 years	8	2.2	1.0
15 years	8	2.0	1.1
14 years	10	3.4	3.3
<14 years	14	2.8	2.2

Table 35 (e) - RAVLT - Analysis by age

Age in years	N	I	II	III	IV	V	B	INT	REC	A
< 20 years	10	5.8	8.0	10.0	10.7	11.1	4.7	9.3	2.7	9.5
20 years	11	6.0	7.9	9.6	10.3	11.0	5.1	10.8	2.4	10.7
19 years	15	5.8	7.3	9.1	9.2	10.6	5.2	9.1	3.4	9.1
18 years	10	6.6	8.4	9.2	10.5	10.9	5.8	8.9	2.7	10.3
17 years	13	5.0	7.2	9.6	10.6	11.4	4.5	10.2	5.2	10.5
16 years	8	6.2	7.5	9.3	10.1	10.5	4.8	9.0	3.1	8.7
15 years	8	5.5	8.1	8.8	10.3	11.8	6.1	9.7	1.7	10.3
14 years	10	7.5	8.6	10.1	10.8	12.3	6.1	10.2	2.6	10.2
>14 years	15	5.8	7.2	9.3	10.6	10.6	5.0	9.6	0.9	11.0

Table 35(f) - BGT - Analysis by age

Age in years	Pascal X no. errors	sd	Koppitz X no. errors	sd
>20 years	36.40	23.94	1.6	1.64
20 years	43.72	43.19	1.27	2.0
19 years	29.73	16.56	0.6	0.91
18 years	35.9	24.0	2.2	2.29
17 years	28.92	17.26	0.69	1.03
16 years	32.57	29.04	1.28	2.62
15 years	21.62	16.40	0.37	0.51
14 years	24.10	18.88	0.8	1.87
<14 years	28.4	14.79	1.0	1.06

Table 35(g) - DAP - Analysis by age

Age in years	X RAW	SD	X STD	SD
>20 years	26.7	11.57	70.7	18.02
20 years	28.09	9.17	73.54	13.62
19 years	33.66	11.56	83.53	17.03
18 years	35.80	11.98	81.60	21.30
17 years	36.41	9.75	86.81	15.14
16 years	42.75	16.86	94.12	26.58
15 years	37.75	6.6	87.75	10.81
14 years	37.60	12.34	86.50	19.34
<14 years	35.86	8.53	86.06	13.81

Table 35(f) - WCST - Analysis by age

Age in years	correct	errors	categ	pers-resp	pers-err	concept set	
20 years	57.7	70.3	2.0	56.1	45.3	37.1	0.7
20 years	70.1	52.3	3.8	30.5	27.8	49.5	1.0
19 years	72.6	51.2	4.3	27.7	24.0	58.8	0.7
18 years	61.0	60.5	3.7	48.4	40.4	46.6	0.3
17 years	70.6	51.0	4.4	32.6	29.0	56.6	0.6
16 years	70.5	56.3	3.0	33.7	28.1	53.3	1.6
15 years	73.8	48.0	3.5	37.2	30.1	60.5	1.6
14 years	66.5	61.5	3.0	32.1	28.4	48.5	1.0
< 14 years	70.8	53.6	4.2	32.0	28.0	54.0	0.5

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