

At the outset, longitudinal studies have both rewards and drawbacks and it is the latter aspect that is explored. The methodological drawbacks in the current research could stem from the recruitment of a cohort from a large data base. However, it must be said that any kind of longitudinal research in a shifting and highly populated area would be extremely difficult to pursue. For example, Yach et al. (1993b) point out that many mothers living in rural areas come to Soweto to give birth but return home to these areas almost immediately after the delivery. Thus, the degree of mobility is high among mothers registering births in Soweto alone. Nonetheless, from a practical perspective several questions must be raised. For example, were these children more test-wise than the general Soweto child, indeed, were they any different to normal non-Birth To Ten children? A solution might have been to have retained a control group for the preschool assessment. However, in this respect it could be observed that the variety of background and preschool experience within the current group in itself produced a variety of profiles and groupings, hence the retention of all subjects and information. Nonetheless the presence of a control group would have eliminated any comparison doubts regarding differences in samples.

It is also regrettable that the number of additional tasks especially language tasks, were limited in this study. This was both a function of time, the lack of research regarding age appropriate measures for Black children, and in the latter case, the scarcity of expert language specialists with the variety of multilingual skills required. Future research in the area of neuropsychology would be enhanced by exploring appropriate preschool measures. The use of standardised instruments with strong neuropsychological underpinnings would greatly increase understanding and assist in unravelling brain and behaviour processes in developing children.

Reflections

The purpose of the current study was to explore development in a group of black preschoolers from a neuropsychological framework. It was argued that a neuropsychology of pathology was not the aim in evaluating the performance of the children in this study. The problems of attributing and predicting behavioural symptoms following brain damage in an immature brain are hazardous, given the largely unknown trends of organisational plasticity in children. Instead, the emphasis was placed on normal development from a neuropsychological dimension and theoretical perspective. The rationale for this approach stems from the problem in determining whether it is possible to understand the behaviours that flow from brain damage without exploring neurodevelopmental patterns in populations of children with no known histories of brain damage.

Children in the process of development are subject to poorly understood spurts and lags; as such neuromaturational deficits may only be expressed at particular developmental stages (Horton & Puente, 1990). Current thinking points to the need for research which takes into account theories of brain and behaviour relationships as a point of departure. The utility of theory in brain and behaviour relationships may be useful in helping to (1) summarise existing knowledge and (2) mediate applications of knowledge to new systems (3) make predictions (Moehle, Rasmussen & Fitzhugh-Bell, 1988).

At a conceptual level the study focused on the cerebral lateralization model and the development of specific behaviours, lateral preferences and information processing, within this model. Some abilities are perhaps more stable in their locale and handedness in particular is regarded as a fairly pervasive characteristic which is assumed to be related to some developmental brain asymmetry. At a descriptive level the study of patterns of this behaviour in the current sample showed a predominance of mixed-handedness and implications of less lateralization in the majority of the children. Although no overt relationship could be found between processing and handedness, the

findings suggest that these patterns may only be present in children who show strongly lateralized left hemisphere dominance. In the current study the number of children who showed this particular pattern was small and the patterns were gender specific. This again sustains the notion of less lateralization in the majority of this sample.

In keeping with more recent approaches in child neuropsychology it is argued that environmental influences must be considered in brain growth and brain development. The environmental factors that mitigate against cerebral lateralization were considered. The level of appropriate stimulation in the environment, the level of language development and the role of bilingualism, the level of basic skills and knowledge acquisition. It is also argued that epigenetic factors such as the child's gender and the extent to which exposure to birth risk factors has occurred must be placed within this context. The combination of these factors feed into a cycle of disadvantage and potentially, educational adversity.

A theme which has pervaded this work has been the strong need for greater integration between the fields of developmental psychology and child neuropsychology. However, it is important to point out that developmental psychology cannot be reduced to physiological processes no more than neuropsychological theory can be reduced to weak attempts to explain developmental theory in biological terms (Segalowitz & Hiscock, 1992). Nevertheless an alliance could lead to greater understanding and striving in terms of greater knowledge with appropriate and timely interventions. The ultimate aim of any piece of research involving child populations is to clarify the conditions in which children may struggle or are limited in their abilities to move ahead.

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APPENDICES

APPENDIX A

BIRTH TO TEN: DEVELOPMENTAL LATERALITY
THREE YEAR ASSESSMENT 1993

Card 1

BTT ID

--	--	--	--	--	--	--

1. Coded by _____
2. Checked by _____
3. Name of fieldworker _____
4. Date of visit ____/____/1993

We would like to ask you a number of questions about yourself and your child born in 1990.

MOTHER/CARETAKER (Please circle)

5. Full name and surname of mother/caretaker :

6. Maiden name or any other previous surname :

7. Current address: _____

8. Contact telephone numbers : _____(H/N/R/W/F)
_____(H/N/R/W/F)

9. Mother/caretaker's date of birth ____ / ____ / ____

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10. a) Who does the BTT child live with?

(please be specific and ascertain who the principle caretaker is eg. mother/paternal grandmother)

b) If not the mother, how much time (in hours) _____ per day does the child spend with the caretaker?

11. What language does the child mainly speak?

English	01	Xhosa	05	Portuguese	09
Afrikaans	02	Tswana	06	Venda	10
Zulu	03	Swazi	07	Pedi	11
Sotho	04	Tsonga/Shangaan	08	Ndebele	12
Other (mention)					

12. What other language/s does the child speak and to whom?

English	01	Xhosa	05	Portuguese	09
Afrikaans	02	Tswana	06	Venda	10
Zulu	03	Swazi	07	Pedi	11
Sotho	04	Tsonga/Shangaan	08	Ndebele	12
Other (mention)					

CHILD BORN IN 1990:

13. Full names and surname of the child born between 23 April and 8 June 1990

14. Sex of child

Male	1	Female	2
------	---	--------	---

15. Hospital where the child was born _____

16. Gestational age _____

17. Birthweight _____ (kg/grams)

BTT ID.

--	--	--	--	--	--	--

18. How many times have you been pregnant _____

a) number of live births (including 1990 child) _____

b) number of stillbirths _____

c) number of miscarriages or abortions _____

d) number of children who died _____

e) any adopted children _____

f) if the child has siblings, what number is
the BTT child (eg. 1st, 3rd, 7th) _____

19. What is your highest educational qualification?

No formal education	01	St 7/Form II	07
Sub A/Grade 1	11	St 8/Form III	08
Sub B/Grade 2	12	St 9/Form IV	09
Std 1	01	Std 10/Form V	10
Std 2	02	1 year diploma	13
Std 3	03	2/3 year diploma	14
Std 4	04	3/4 year diploma	15
Std 5	05	Master's degree	16
Std 6/Form I	06	Phd etc.	17
Other			

20. What is your partner's educational qualification at child's birth?

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No formal education	00	Std 7/Form II	07
Sub A/Grade 1	11	Std 8/Form III	08
Sub B/Grade 2	12	Std 9/Form IV	09
Std 1	01	Std 10/Form V	10
Std 2	02	1 year diploma	13
Std 3	03	2/3 year diploma	14
Std 4	04	3/4 year diploma	15
Std 5	05	Master's degree	16
Std 6/Form I	06	Phd etc	17
Don't know	99	Other _____	

21. Would you describe yourself as:

A housewife	1	A student	3
Earning money	2	Unemployed	4

22. If you describe yourself as EARNING MONEY. What is your occupation (type of work)?

23. What is your current partner's occupation? _____

24. Are you living with the child's father now?

Yes	1	No	2
-----	---	----	---

HOUSING

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25. How would you describe your home?

Shack in squatter area	1	House	5
Shack in backyard	2	Hostel	6
Room in backyard	3	Shared house with another family	7
Flat	4	Other _____	

26. How many rooms were used for sleeping _____

27. How many: adults (16 years and older) _____
-
- children (younger than 16 years) _____

28. Which of the following do you have in your home at the present time?

Electricity	Yes	1	No	2
Television	Yes	1	No	2
Radio	Yes	1	No	2
Motor Vehicle	Yes	1	No	2
Fridge	Yes	1	No	2
Washing Machine	Yes	1	No	2
Telephone	Yes	1	No	2
Children's toys	Yes	1	No	2

LATERALITY

29. Which hand does the mother prefer to use for writing?

D.K.	left	1	right	2
------	------	---	-------	---

30. Which hand does the mother prefer to use for brushing her teeth?

D.K.	left	1	right	2
------	------	---	-------	---

31. Which hand does the father prefer to use for writing?

D.K.	left	1	right	
------	------	---	-------	--

32. Which hand does the father prefer to use for brushing his teeth?

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D.K.	left	1	right	2
------	------	---	-------	---

Although the caregiver may be able to respond to the laterality questions, it would be preferable to observe the child's responses to a set of tasks.

33. Which hand does the child use to:

a) eat with a spoon

left	1	right	2	both	3
------	---	-------	---	------	---

b) hold up a cup

left	1	right	2	both	3
------	---	-------	---	------	---

c) pick up a toy (small car)

left	1	right	2	both	3
------	---	-------	---	------	---

d) pick up a button

left	1	right	2	both	3
------	---	-------	---	------	---

34. Which foot does the child use to:

a) kick a ball

left	1	right	2	both	3
------	---	-------	---	------	---

b) balance on one foot

left	1	right	2	both	3
------	---	-------	---	------	---

35. Which eye does the child prefer to look through a tube

left	1	right	2
------	---	-------	---

36. Which hand does the child use to:

pick up a sweet

left	1	right	2	both	3
------	---	-------	---	------	---

The examiner should hold a cardboard tube.

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Demonstrate this by holding this up to his/her own eye.

Hand it to the child (note whether it is grasped with the right, left or both hands).

Encourage the child to look at the examiner.

Note preferred eye.

Check if child can see with other eye.

BIRTH TO TEN: DEVELOPMENT LATERALITY
AND INFORMATION PROCESSING
FIVE YEAR ASSESSMENT 1995

Card

BTT ID

--	--	--	--	--	--	--

1. Coded by _____
2. Checked by _____
3. Name of fieldworker _____
4. Date of assessment ____/____/1995

we would like to ask you a number of questions about yourself and your child born in 1990.

MOTHER/CARETAKER (Please circle)

5. Full name and surname of mother/caretaker:

6. Who brought the child to Baragwanath?

7. Mother's current address : _____

8. Contact telephone numbers: _____ (H/N/R/W/F)

_____ (H/N/R/W/F)

9. How many people live with the child? _____ / _____ / 19____

10. a) Who does the BTT child live with?

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(please be specific and ascertain who the principal caregiver is eg.
mother/parental grandmother)

b) If not the mother, how much time (in hours) does the child spend with the
caretaker each day? _____

11. Does the child attend any of the following :

01/Child minder | 02/Day care centre | 03/Nursery school | 04/Preschool (Grade 0)
05/Formal school. / / 49

12. What language does the child mainly speak?

01/English | 02/Afrikaans | 03/Zulu | 04/Sotho | 05/Xhosa | 06/Tswana |
07/Swazi | 08/Tsonga/Shangaan | 09/Portuguese | 10/Venda | 11/Pedi |
12/Ndebele. / /
50-61

13. The child's second language :

01/English | 02/Afrikaans | 03/Zulu | 04/Sotho | 05/Xhosa | 06/Tswana |
07/Swazi | 08/Tsonga/Shangaan | 09/Portuguese | 10/Venda | 11/Pedi |
12/Ndebele | 13/None. / /
62-74

14. Will the child be starting school next year?

Yes/01 | No/02 | (Does mother think child is ready?)

Card 2
/ / 2-8

15. Sex of child. Male/01 | Female/02.

/ / 9

16. Mother currently employed? Yes/01 | No/02 |
At school? Yes/03

/ / 10

17. Description of home:

01/Informal dwelling in squatter area
02/Shack in backyard | 03/Room in backyard |
04/Flat | 05/House | 06/Hostel |
07/Sharing house | 08/Other. (No. of rooms =)

/ / 11-18

18. Which of the following do you have in your home?

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01/Electricity | 02/Television | 03/Radio | 04/Fridge | 05/Washing machine |
06/Telephone | 07/Children's toys | 08/Children's books. / /
19-26

19. Has the child had a head injury?

01/Yes | 02/No / / 27

20. If yes how long ago?

3 years/01 | 2 years/02 | Within the last year/03 / / 29

21. Naming

- a) Point to your nose. Say what you call this?
Child can name. Yes No
- b) Point to your ear. Say what do you call this?
Child can name. Yes No
- c) Point to your knee. Say what do you call this.
Child can name. Yes No
- d) Say to the child: Point to (or show me) your eye.
Child can point correctly. Yes No
- e) Point to your ankle.
Child can point correctly. Yes No
- f) Point to your hair.
Child can point correctly. Yes No

22. Verbal fluency

Say: Can you tell me the different kinds of animals. Tell me as many as you can.

Give the child 40 seconds, encourage the child to say as many as possible as quickly as s/he can.

Write down the names of the animals given by the child.

ANIMALS: _____

After 40 seconds say: Very good. Now can you say the names of different kinds of food.

Write down the names of the food given by the child.

FOOD: _____

After 40 seconds say: Very good. Now can you say the different kinds of clothing that we can wear.

Write down the names of the clothing items given by the child.

CLOTHING : _____

After 40 seconds say: Very good.

Total Verbal Fluency score. / / / /

23. Can you say the whole alphabet?

Says it correctly. Correct with a few errors. Says about half. Unable to say any part.

24. LATERALITY

Place objects before the child at the midline. Two observations for each procedure :

Handedness

Which hand does the child use to :

- a) Eat with a spoon
- b) Hold up a cup
- c) Pick up a small toy (small car)
- d) Pick up a button
- e) Draw or scribble
- f) Pick up a sweet

25. Total right hand responses

All unimanual responses

X 14

Handedness Index =

26. Footedness

Which foot does the child use to :

- a) Kick a ball
- b) Balance on one foot

27. Which eye does the child use to :

Look through a telescope

28. Peg moving task

37

Demonstrate the moving of the pegs for the child.

Begin timing when you have made sure and demonstrated what is required. Then say "go". Begin timing first for the right hand. Once completed say "go" and begin timing for the left.

Time for the right hand in seconds _____

Time for the left hand in seconds _____

29. (a) Administer Trails A

Time in seconds _____

- (b) Ask the child to identify (name) the circle and square. Then say: Point to the biggest circle, point to the smallest square.



30. Ask the child to draw a person.
Use this page.

Congruence Patterns of Laterality Across Tasks- Right

n=335		Three Years		Five Years		
Item	Total	Male	Female	Total	Male	Female
Right hand/ eye						
Spoon	169	78	91	175	88	87
Cup	153	72	81	154	78	76
Toy	159	70	89	170	81	89
Button	173	79	94	162	78	84
Sweet	155	70	85	172	83	89
Right hand/ foot						
Spoon	249	123	126	268	131	137
Cup	203	101	102	229	110	119
Toy	215	105	110	251	120	131
Button	239	118	121	244	116	128
Sweet	222	108	114	262	124	138

APPENDIX C1

Congruence Patterns of Laterality Across Tasks -Left

Item	Total	Three Years		Total	Five Years	
		Male	Female		Male	Female
Left hand/						
eye						
Spoon	27	16	11	28	12	16
Cup	40	18	22	40	23	17
Toy	38	16	22	38	18	20
Button	33	18	19	32	18	14
Sweet	28	14	14	26	12	14
Left hand/						
foot						
Spoon	19	10	9	18	7	11
Cup	21	7	14	20	7	13
Toy	20	8	12	19	8	11
Button	18	8	10	18	8	10
Sweet	17	7	10	17	6	11

APPENDIX D

Frequency Distribution for naming and correctly identifying
body parts

Item	N		N	
	Correct	%	Incorrect	
Nose	328	97.9	7	2.1
Ear	318	94.9	17	5.1
Knee	269	80	66	20
Eye	335	100	0	
Ankle	47	14	288	86
Hair	329	98	6	2

APPENDIX D1

Frequency distribution for Verbal Fluency

Item	Number of Words Named	Number of children	%
Animals	0-3	170	50.8
	4-7	153	45.6
	8 and more	12	3.6
Food	1-3	55	16
	4-7	250	75
	8 and more	30	9
Clothing	1-3	51	15
	4-7	259	77
	8 and more	25	7
Total	4-7	17	5
	8-12	107	32
	13-20	200	60
	21 and more	11	3

APPENDIX D2

Ability to identify shape and size

Item	N		N	
	Correct	%	Incorrect	%
Circle	289	86	46	14
Square	284	85	51	15
Size larger	291	44	44	13
Size smaller	277	83	58	17

APPENDIX D3

Mental Age Distribution on Draw a Person

Age in Months	N	%
0-45	15	4.5
48	64	19
54-57	84	25
60	111	33
63-69	54	16
72-84	5	2
2 missing		.5

APPENDIX D4

Table IQ based on DAP Scoring

IQ	N	%
55-68	12	3.6
72-77	65	19.4
82	78	23.3
85	1	.3
86	2	.6
91	81	24.2
92	31	9.3
95	1	.3
98	1	.3
100	52	15.5
105	3	.9
109	6	1.8
Missing data: 2 cases		.5

APPENDIX D5

Knowledge of the Alphabet

Item	N	%
Able to say the alphabet	26	7.8
Able to say the alphabet with errors	39	11.6
Can say about half the Alphabet	93	27.8
Unable to say the alphabet	177	52.8

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