10 The children of the Red Spots 1979–80

Children of the Red Spots at school: cognitive development of the first-born

At the time of the 1979–80 interview, the Red Spot (Generation II) families included 473 children, 252 (53.3 per cent) of which were boys and 221 (46.7 per cent) girls. Although data were gathered on all children, detailed information about level of general ability and school progress could only be obtained on children over five years of age. Of the 352 at school, 179 (51 per cent) were first-born, and we used their data to avoid statistical difficulties of differences due to birth order (Altus, 1966).

Pre-school stimulatory experience

One index of parental readiness to provide an early educational experience for their children is the use made of attendance at pre-school playgroups; three-quarters of those from the non-deprived and half of the deprived had attended playgroups, the difference being significant. This suggests that significantly more non-deprived children began formal infant schooling with an appreciable advantage.

Schooling

The mean age of the first-born of the non-deprived was 105.7 months (n=45), of the deprived 133.1 months (n=129), and of the multiply deprived 140.7 months (n=47). The non-deprived group were significantly younger than the deprived and, at the time of our interview, only 18 per cent of the non-deprived had entered secondary school in contrast to 34 per cent of the deprived and 37 per cent of the multiply deprived groups. This reflects the earlier marriages of the deprived groups.

We were thus faced with an appreciable age spread among

the children whereas, in the previous generation, the Red Spots had been comparable in terms of educational experience.

Neither in 1962 nor 1980 did any of the children of non-deprived families attend special schools, whereas in each period a few from deprived families did so.

Parent–school contacts

We attempted to measure parents' interest in school by enquiring whether they had consulted the child's teacher during the year preceding the home visit and learned that 87 per cent of non-deprived, 75 per cent of deprived and 68 per cent of multiply deprived parents had done so.

Testing

The tests used were:

1 Raven's Progressive Matrices (Raven, Court and Raven, 1976)
   (a) Coloured Progressive Matrices for children under 11 years
   (b) Standard Progressive Matrices for children 11 years and older
2 Vocabulary (Definition Form) Scale (Raven, Court and Raven, 1976)
   (a) Crichton Vocabulary Scale for children under 11 years
   (b) Mill Hill Vocabulary Scale – Junior 1 form for children of 11 years and over
3 The Holborn Reading Scale (Word-Recognition) (Watts, 1948) for all children.

Test results: first-born children

Raven's Coloured/Standard Progressive Matrices Table 10.1 shows scores expressed as quotients for all the groups of boys and girls according to deprivation in the families of origin. The mean score for the children in non-deprived families (IQ=109) was not significantly different from that of their parents at the same age (IQ=106), but was significantly greater than the mean for children in both deprived groups. Greater differences between non-deprived and deprived are

Table 10.1

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Table 10.2

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Table 10.1 *First-born schoolchildren – families of formation: Raven's Coloured/Standard Progressive Matrices (classified according to 1952 criteria of deprivation)*

	Boys and Girls			Boys			Girls		
	$\bar{x}$	SD	n	$\bar{x}$	SD	n	$\bar{x}$	SD	n
Non-Deprived	109.5	13.0	40	109.7	12.6	19	109.2	13.6	21
Deprived	103.1**	14.9	106	104.6	15.8	58	101.3*	13.6	48
Multiply Deprived	101.9**	14.8	48	101.4*	14.7	26	102.6	15.2	22

*Difference from non-deprived group at $p < .05$
**$p < .01$ (one-tailed)

Table 10.2 *Raven's Coloured/Standard Progressive Matrices (classified according to 1980 criteria of deprivation)*

	Boys and Girls			Boys			Girls		
	$\bar{x}$	SD	n	$\bar{x}$	SD	n	$\bar{x}$	SD	n
Non-Deprived	112.2	13.3	45	113.9	13.5	26	109.8	13.0	19
Deprived	102.1**	13.9	129	101.8*	13.9	64	102.5	13.9	65
Multiply Deprived	98.8**	14.7	47	97.7	13.3	23	99.9	16.2	24

*Difference from non-deprived group at $p < .05$
**$p < .01$ (one-tailed)

shown if the grouping of deprivation in 1980 is used (see Table 10.2). This suggests, as might have been expected, that contemporary deprivation has a greater effect on children than that which affected their parents.

Five of the six groups defined by deprivation in the family of origin yielded significantly lower mean scores than the non-deprived group. The exception was parental illness which was merely two points below the non-deprived suggesting that parental illness is different in nature and effect from the other criteria. The other five factors all appear to be incriminated in giving rise to lower non-verbal cognitive performance across the generations, but the mechanism is

not clear. Further, poor care and poor mothering, with means of 99 and 101 respectively, were particularly low in the deprived group.

Crichton/Mill Hill Vocabulary Scales When the children were grouped according to deprivation in the families of origin non-deprived boys showed an 8-point vocabulary difference over multiply deprived ($p < .05$), and the non-deprived girls a 12-point difference both over the deprived and multiply deprived ($p < .01$).

When classified according to contemporary deprivation non-deprived boys scored 17 points higher than multiply deprived and 14 higher than the deprived; non-deprived girls scored 20 and 19 points higher than the deprived groups respectively. No significant sex difference was seen in vocabulary scores.

The Holborn Reading Scale All the children attempted the Holborn Reading Scale – a test of reading sentences aloud. The scale assigns a reading age ranging from 5 years 9 months at the simplest level to 13 years 9 months at the most difficult. For the purpose of converting scores into reading quotients, any child unable to make sense of the first sentence on the scale was arbitrarily assigned a reading age level of 5 years 6 months; and children older than 13 years 9 months were assumed to have a chronological age at the test ceiling age. Table 10.3 gives average reading quotients for first-born boys and girls separately and shows consistently better performance of non-deprived over deprived children for classification, both according to family of origin and family of formation, again with greater differences in the latter case. Throughout the groups girls scored higher than boys.

Table 10.4 confirms that appreciably more good readers were found within the non-deprived groups, and this difference was especially noticeable for the very good readers (reading quotient 130+), few of whom were from the multiply deprived group. The reverse gradient held good for those children rated very poor readers (quotient 69 or less), all of whom were deprived or multiply deprived.

Table 10.3 Reading performance for Generation III first-born children: Holborn Reading Scale

	Boys			Girls		
	Non-Deprived	Deprived	Multiply Deprived	Non-Deprived	Deprived	Multiply Deprived

Table 10.3 Reading performance for Generation III first-born children: Holborn Reading Scale

	Boys			Girls		
	Non-Deprived	Deprived	Multiply Deprived	Non-Deprived	Deprived	Multiply Deprived
Fifth Year Classification:						
Mean Reading Quotient	98.9 (n=19)	94.9 (n=58)	90.7 (n=26)	109.8 (n=21)	99.0** (n=48)	96.4** (n=22)
Thirty-third Year Classification:						
Mean Reading Quotient	106.2 (n=26)	91.5** (n=64)	90.8** (n=23)	112.9 (n=19	97.2** (n=65)	95.5** (n=24)

**Difference from non-deprived group at $p < .01$ (one-tailed)

Table 10.4 Generation III schoolchildren: percentage of good, average and poor readers (thirty-third year classification)

		Boys			Girls		
Reading Quotient		Non-Deprived (n=26) %	Deprived (n=64) %	Multiply Deprived (n=23) %	Non-Deprived (n=19) %	Deprived (n=65) %	Multiply Deprived (n=24) %
115 and above	GOOD	23	–	–	42	17	21
85–114	AVERAGE	77	64	65	58	63	54
84 and less	POOR	–	36	35	–	20	25

Physical growth

In the follow-up study, the heights and weights of children over five years of age up to 17 were recorded at the time of the interview but, with the wide age range, these children could not be treated as a homogeneous cohort. When the schoolchildren were divided into age groups and the growth of non-deprived compared with the multiply deprived, the number of children in each cell was small. The schoolchildren also came from families of different sizes and were of different birth order. These factors made comparisons difficult and we therefore simply plotted whether or not weights and heights of first-born children were above or below the 50th percentile for height and weight (using Tanner percentile charts). When that was done, and the non-deprived and multiply deprived compared, significantly more of the non-deprived were above that percentile for height (63 per cent as to 38 per cent) but not for weight (58 per cent as to 50 per cent).

Behaviour: Generation III

Behaviour in the first-born children of Generation III was studied using the Rutter Teacher and Parent Questionnaires covering behaviour and temperament.

Method

The Rutter Teacher Scale (B2) (Rutter, 1967) This is completed by teachers regarding children's behaviour in school. It yields a total score plus neurotic and antisocial subscores. Rutter (1967) and Rutter, Tizard and Whitemore (1970) found that a cut-off of nine or more on the total score had discriminative value. In the Isle of Wight study it selected 10 per cent of boys and 4 per cent of girls. Test–retest reliability for total scores over a three-month interval was 0.89; and inter-rater reliability 0.72 (Rutter, 1976). With regard to validity, it was reported that total scores on a sample of normal nine to 13 year-old children were significantly lower than those on a group of children attending a psychiatric clinic.

Child behaviour and temperament, based on parental reports
Behaviour An inventory, administered as a semi-structured,

open-ended interview with mothers, was used to quantify behaviour (Kolvin *et al.*, 1975). It consists of 29 questions with appropriate probes which relate to the three or four scales originally developed: neurotic behaviour (Scale A); antisocial behaviour (Scale B); and psychosomatic behaviour (Scale C). The interrelated reliability of the original scales was all above 0.9.

Temperament An inventory, also administered as a semi-structured, open-ended interview with mothers, was used to measure temperament (Garside *et al.*, 1975). This was also slightly modified for the current study. There were 29 questions with appropriate probes which relate to four dimensions: withdrawal, activity, mood and irregularity. (Inter-rater reliabilities of these dimensions were all above 0.9.)

Findings

When we examined the data according to whether a parent had been reared in deprivation in the family of origin there were few significant differences except in relation to anti-social behaviour but, when analysed according to current family deprivation, a number were apparent (see Table 10.5). The rates of antisocial behaviour, based on information from teachers, were almost three times as great in the multiply deprived as in the non-deprived, but there was virtually no difference for neurotic behaviour. We also had measures of behaviour based on information provided by the parents and here the multiply deprived showed an excess of disturbance on the total score. Again, there was no difference in relation to neurotic behaviour, while higher rates of antisocial behaviour and psychosomatic symptoms were recorded.

The multiply deprived group showed higher rates of activity and moodiness than the non-deprived but there was no difference on the other temperamental dimensions. The Teacher Scale showed more than twice as many multiply deprived boys than girls had high antisocial scores, but there were no sex differences on the ratings of behaviour and temperament gathered from mothers.

Table 10.5 Children of Red Spots: behaviour and temperament grouped according to deprivation in the family of formation

	Non-Deprived		Deprived		Multiply Deprived	
	n	%	n	%	n	%
School Behaviour (Rutter Scale):						
i. Antisocial score of 3+ (Newcastle Variation)	4/46	(8.7)	23/129	(17.8)	12/47	(25.5)*
ii. Neurotic score 4+	8/46	(17.4)	20/129	(15.5)	10/47	(21.3)
iii. Total score of 9+	6/46	(13.0)	20/129	(15.5)	9/47	(19.1)
Home Behaviour:						
i. Antisocial score of 16+	6/46	(13.0)	24/131	(18.3)	15/48	(31.2)*
ii. Somatic score (20+)	10/46	(21.7)	35/131	(26.7)	20/48	(41.7)*
iii. Motor score (3+)	1/46	(2.2)	14/131	(10.7)	7/48	(14.6)
iv. Total score (48+)	3/46	(6.5)	20/131	(15.3)	11/48	(22.9)*
Temperament:						
Activity (13+)	9/46	(19.6)	35/131	(26.7)	16/48	(33.3)*
Mood (12+)	3/46	(6.5)	16/131	(12.2)	8/48	(16.7)

*Significance of difference (one-tailed) $p < .05$

Childhood accidents: the children of the Red Spots

We have already described an early excess of childhood accidents in the Red Spots who came from multiply deprived families. A similar excess occurred in the children of the Red Spots who had been exposed to multiple deprivation. In families with children under the age of five who had had accidents which merited medical attention, the rates were 26 per cent, 35 per cent and 58 per cent respectively for the non-deprived, deprived and multiply deprived.

Summary and comment on findings presented in Chapters 8, 9 and 10

In the preceding chapters, development has been addressed from a chronological perspective. Here we draw together and comment on similar areas of performance throughout the period 1947–80.

Cognitive and scholastic performance

When a selective examination system was operative, more than one in three of the Red Spots from non-deprived families entered grammar or private schools after the 11-plus examination. This was true for only one in eight of the deprived and one in 25 of the multiply deprived. Striking differences in measured intelligence were also found at 11-plus examinations between the non-deprived and deprived groups, with the multiply deprived at an even greater disadvantage. However, by fifteen years, the gap on the Progressive Matrices score between the deprived and non-deprived had much reduced and the difference was no longer significant. The reasons for this are speculative but call to mind explanations in terms of the capacity of moderately disadvantaged children given the passage of time to show an improvement in those general abilities not greatly influenced by cultural factors. Other possibilities are that the effects of early life deprivation may 'wash out' by 15 years or that there are compensatory effects of more positive later environmental influences.

At the age of 10 and 11 there was a wide pattern of poorer performance, classroom behaviour and attitudes of the deprived as viewed by the teachers. These data raise a number of unanswered questions. For instance, does performance reflect the life experiences or the innate ability of the multiply deprived? Why had more of the multiply deprived failed to catch up in basic attainments, skills and attitudes after some five years at secondary school? How much did these ratings reflect predetermined expectation by teachers? Why did we see the same pattern of inferior performance in physical and athletic pursuits? It is well known that intelligence and physique are positively correlated. Is this the basis of the poorer athletic ability of the multiply deprived or is it because they lack the opportunity?

Our data did not reveal patterns distinctive for the different types of deprivation, but children coming from families of origin where there was poor care and cleanliness tended to perform and behave more poorly in adolescence.

At school-leaving age a higher proportion of the non-deprived continued school, although roughly the same proportion of children in all three groups (between 36 per

cent and 39 per cent) had been neutral over remaining at school.

While still at school, 20 per cent of the non-deprived, as against 51 per cent of the multiply deprived, expressed an option for unskilled work. However, nearly half of the multiply deprived were hoping for more than unskilled employment. While this may have been unrealistic, it does suggest that educational authorities should seek alternative ways of stimulating children from deprived home backgrounds towards realizing their ambitions.

We found that a relatively high success rate at 'O' and 'A' level examinations was obtained by non-deprived Red Spots in comparison with the multiply deprived. This was also true for post-school training. When the Red Spots were adult, we saw that deprived males married women with a comparable or greater lack of examination success and job training whereas some deprived women married men who were relatively successful in their school examinations and occupational training.

There were other sex differences. Red Spot females from the multiply deprived group, while not differing significantly from their Red Spot male counterparts in verbal ability, showed a decided tendency to associate themselves with males who proved to be significantly superior to their Red Spot male counterparts. The same trend was apparent for the deprived Red Spot females, but not at a statistically significant level. We were naturally interested to know whether a similar trend held true for the deprived males. However, inspection of the data revealed that multiply deprived Red Spot men associated with spouses not significantly different from the female Red Spot counterparts. In other words, there was evidence of assortive mating on the measure of verbal ability in the case of multiply deprived males and a general trend in this direction for the deprived males. This did not occur in the multiply deprived Red Spot females who tended to marry men brighter than their deprived male Red Spot counterparts.

In the third-generation children there was a surprisingly similar gradient for verbal and reading quotients in the groups according to degree of deprivation. In general, the impact of deprivation on Generation III children was stronger when we studied influences from the current family

(Generation II) rather than from the previous generation (Generation I).

Behavioural performance

For the Red Spots in the pre-school period, a broad pattern emerged of a steady increase of poorer function or problematic behaviour as the degree of deprivation increased. In the primary school, at the age of 10, multiply deprived children were rated by their teachers as doing worse than non-deprived. Nevertheless, on every item studied, a sizeable proportion of the multiply deprived were rated as showing average functioning; for 'response in class' over 60 per cent, for classroom concentration and classroom persistence 40 per cent, and for sociability almost 90 per cent. Thus, towards the end of their primary school careers, many of the children from multiply deprived homes were showing adequate standards of performance and classroom behaviour. However, we need to ask how far ratings of a child's personal qualities were influenced by perceptions of that child's scholastic abilities and vice versa; that this might have happened is supported by the similarity in the patterns of scholastic ability and behavioural functioning.

While in the 1950s the concept of an attention deficit disorder had not yet been developed, our fifteenth-year data provided evidence of some of the features which nowadays are held to be characteristic of attention-deficit disorder: poor concentration, poor persistence and initiative in the classroom and learning problems. These features were present only in a small proportion of the deprived groups – particularly in the multiply deprived. These findings are consistent with those of Bosco and Robins (1980) suggesting an incidence of hyperactivity in about 1 per cent of schoolchildren under 11 years of age. They lead to the suggestion that some attention-deficit disorders may have origins in deprivation and are supported by the work of Tizard and his colleagues on the psychological problems of children reared in institutions (Tizard and Rees, 1974; Tizard and Hodges, 1978).

The Red Spots' interests provided a picture of 10 and 11 year-olds in the late 1950s. It suggested that children coming from non-deprived families would tend to have more stimulation and enjoy listening to the radio. The most deprived

children wished to leave school early and would not seek their enjoyment through membership of a school musical group or by playing a musical instrument, or even listening to the radio. However, they went more frequently to the cinema and read more comics.

In senior school, the same broad pattern was identified in relation to indicators of delinquency or behaviour disturbance; in their fifteenth year, eagerness to leave school and poor school attendance markedly increased, especially in the multiply deprived. However, this was the school-leaving year when absenteeism traditionally tends to be higher.

All data were examined to ascertain if there were differences of disturbed behaviour between boys and girls, but these were significant only in the antisocial behaviour of boys.

Health

When we considered the Red Spots as adults and their spouses in terms of health, the individual symptoms tell us about the response of females to adverse life experiences: for instance, about one-sixth of the non-deprived, but one-half of the deprived, complained of lack of energy over the previous year, and the same picture was found in the case of a sadness of mood sufficient to interfere with work or housework. Few of the non-deprived group had contemplated suicide, whereas one in every three of the multiply deprived said they had. They also showed higher rates of non-situational panics, specific fears and other psychological problems. All these findings indicate that women living in deprived circumstances are at considerable risk of psychological morbidity and particularly of depression. This risk is increased if the deprivation is current rather than in their childhood. In the former, few non-deprived but almost one-third of the multiply deprived had been on tranquillizers for more than a year. Another factor which reflects both the burden of deprivation and life stresses is smoking. In families of formation only a quarter of non-deprived women smoked, whereas three-quarters of the multiply deprived did so. Deprived males did not seem to manifest the same affective-depressive pattern of disturbance but were at greater risk from problems of alcoholism and the development of antisocial behaviour.

Previous workers have reported high rates of psychiatric disorder in problem families (Tonge *et al.*, 1975). Our findings show that women appear to carry most of the burden of family deprivation. The presence of psychiatric problems in 40 per cent of women in the multiply deprived group must make even more difficult their attempts to cope with the everyday activities of their families and care of their children. Our data lead us to suggest that the children in families in which there is a combination of multiple deprivation and parental psychiatric disturbance are at greater risk than those children whose parents have psychiatric problems alone. We do not find it surprising that other authors consider that children of depressed mothers are more at risk from accidents (Brown and Harris, 1978), and we would speculate that such mothers are not only depressed but likely to have been beset by other social difficulties. In a similar way, we can begin to understand the links between family deprivation, maternal psychological problems and antisocial behaviour in childhood.

We saw that from multiply deprived families have come two subsequent generations manifesting a significant degree of antisocial behaviour. This form of transmission is not replicated in the case of other types of disturbed behaviour, such as neurotic and psychosomatic conditions. However, in Generation III there was an excess of psychosomatic symptoms in the multiply deprived. Finally, deprivation in the family of formation was associated with temperamental abnormalities in children consisting of high levels of high activity and moodiness. These latter qualities are likely to be related to antisocial behaviour.

Physical growth and development

It is well known that the mean height and weight of children as they enter school and thereafter during their school years has increased steadily during the present century. On the other hand, many studies, including the '1,000 Families' have shown that the downward gradient through occupational groups I–V (Registrar General's classification) has persisted. These studies have been documented by Blaxter (1981). We too provide evidence of a significant failure of growth in height and weight in the multiply deprived group of Red Spots at the age of three years, with relative growth failure

continuing for all ages up to 15 years. Since there did not appear to be any significant difference in the mean birth-weight of children in that group, we considered that the poorer physical growth was related to post-natal factors, and that such differences between children of deprived and multiply deprived families should be regarded as environmentally, rather than as genetically, determined. It is therefore theoretically avoidable.

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