18 Summary findings based on comparison of groups

Social and family deprivation is not necessarily an enduring phenomenon. Nevertheless we have demonstrated that deprivation identified at one point in the family life cycle is commonly preceded by evidence of other forms of adverse family circumstances and social malfunction.

The notion of deprivation, as we have defined it, is supported by evidence derived from a wide range of features of family disorganization beyond the definitions we employed. In comparing deprived and non-deprived families of origin, the salient features included higher rates of unemployment, poorer occupational status and fewer opportunities for the full-time employment of mothers. The index children tended to be born into larger families showing increased evidence of marital problems. The sleeping arrangements were generally poor and the availability and quality of parenting often suspect. Mothers were rarely absent from their families but often showed poor competence and undesirable aspects of character. By contrast, more fathers were absent and, when present, were seldom judged to be competent and caring. All in all these parents showed poor interest in their children. Such features were often present throughout the pre-school and school years.

Families of formation with deprivation tended to remain within or near to Tyneside. Relatives could easily keep in touch, although poor relationships often existed. The women in deprived families married earlier than in the non-deprived, usually with less than two years' acquaintance with their partners and, by the time of our survey, a higher proportion of these marriages had been dissolved. Men had higher rates of unemployment while more women undertook part-time employment. Many adults lacked any educational or vocational achievements. Membership of clubs or social organizations was infrequent. Women were at risk of both

physical and mental health problems, particularly depression and suicidal thoughts. They also worried excessively about the health of husbands and children, about husbands' work, family finance and housing, their marriage, their own coping ability and their children's schooling. In addition to this catalogue of adversities, we recorded higher mortality rates for the grandparents.

Classification of families according to deprivation in family of origin or formation

Despite a degree of movement in and out of deprivation across the generations, about half of the Red Spots identified as living in multiply deprived families almost thirty years previously were in similar circumstances in the families of formation.

Rates of poor competence and social dysfunction in the second generation proved surprisingly similar for families whether classified according to deprivation in the family of origin or formation. The following picture emerged.

The children reared in deprived families tended, as adults, to contract earlier marriages. Current family deprivation was associated with higher levels of psychological and family problems; women had a higher incidence of physical and psychological ill-health while men were more prone to drink problems. Declared concern about everyday practical matters was, understandably, more closely related to the experience of current deprivation than to early life deprivation. Although worried about their finances and housing circumstances, the adults in the family of formation considered that society in general had treated them fairly.

The intellectual and scholastic associations of deprivation

At the 11-plus examination highly significant differences were found between children from non-deprived and deprived families in intelligence, arithmetic and English and, at 12 years, on the Raven's Matrices and Mill Hill Vocabulary Tests. Retesting at 15 years showed an apparent reduction of the differences on the Matrices but not the Mill Hill Vocabulary Test. It is reasonable to hypothesize that, during the secondary school years, the balance of home and school influences may have allowed deprived children to

make better use of their genetically determined potential.

Our evidence suggested that deprived home circumstances can have a long-term depressing influence on children's intelligence and academic achievements. These are important findings as they relate to a substantial proportion of the city population; the moderately deprived represented 29 per cent and the multiply deprived a further 14 per cent of the total.

Similar initial findings were reported by Cox and Jones (1980) from their study of disadvantaged 11 year-olds; they showed that, over the primary school years, deprived children scored lower on measures of linguistic and scholastic achievements when intelligence was controlled. The rate of progress of children deprived during their junior school years was relatively slow and led to greater differences in attainments at age 11 than would have been predicted from their performance at seven. The question arises how much of the difference in intelligence between the Newcastle groups was due to deprivation and how much to intrinsic deficiencies of intellect. The data relating to the family of origin cannot provide the answer as the intellectual ability of the parents was not measured.

Our relatively culture-free measure of intelligence showed lesser differences between controls and deprived as opposed to multiply deprived; over time, the deprived almost caught up, but the multiply deprived failed to do so. Thus, we are left with two diverging trends: an increasing gap in performance as children proceed through their junior school years (Cox and Jones, 1980) and, on the other hand, a decreasing gap in performance as children proceed throughout their secondary school years. These apparently discrepant findings may have a simple explanation. Douglas (1968), for instance, asserted that the influence of family background on children's test performance is largely established by the age of eight, and family circumstances after this age would tend to have a less profound influence.

There is much evidence that extremes of environmental deprivation depress performance and achievement (Heber, 1968; Jensen, 1977) but that a certain degree of reversibility may occur when children are in normally stimulating environments. Shields (1980) and Clarke (1981) advanced the view that genetic factors are of prime importance in relation to normal conditions where the proportion of individual

variations determined by genetic factors is about 80 per cent (Jensen, 1969, 1981). However, Cronbach (1969) argued that extremes of environmental circumstances may have the power to influence intelligence to the extent of about 1.5 standard deviations – about 25 IQ points. Our data showed differences in all types of functioning between children from non-deprived and multiply deprived backgrounds.

Our data on change had the potential of answering questions about environmental influences after the early formative years. We observed that, although the children of families who moved into deprivation over their junior school years did not perform significantly worse on formal measures of attainment in the 11-plus examination, they nevertheless showed an inferiority of performance and adjustment within the classroom. Their teachers reported they had weaker achievements in reading, showed poorer concentration, were less persistent and in general were less likely to make use of a children's library and, sadly, it was reported that a significant number of those children had never experienced visits to the country.

This suggested that early foundations were important and that subsequent breakdown of caring circumstances were not so damaging to general intellectual development. There were, however, signs of poorer achievements in reading, concentration and persistence in the classroom. Children who moved into deprivation eventually showed, during their school years, weaker job aspirations, an eagerness to leave school at the first opportunity and an increased risk of delinquency. We noted that all of these adverse features arose in children who, as a group, were of average intellectual potential.

It is not clear why there should be this distinction, or why deprivation in the primary school years had relatively little impact when it had such a dramatic impact in the pre-school years. We can only speculate about possible reasons. The foundation of intellectual performance may have already been laid down in the pre-school years and may become sufficiently robust so as to counter new adverse influences; or the effects on the intelligence of children who moved into deprivation in their junior school years may be transient, although this seems unlikely as the differences become significant at 15 years for the Mill Hill Vocabulary Test, Raven's Matrices, mathematics and manual dexterity. Another

possibility is that there may be some self-correcting mechanisms operative at this time (Hinde, 1982). One other possible hypothesis is that there are age-dependent sensitivities to life stresses (Rutter, 1985b) so that cognition is more sensitive in the pre-school years and achievements and behaviour in the school years; but some would see this merely as a restatement of facts rather than a theory to explain them. Furthermore, we have provided evidence of differences in ability and achievement which appear after some five years from the time when the deprivation was measured. One possibility is that we are dealing with an effect which takes a fairly long time to emerge.

Children from both deprived and multiply deprived families in which deprivation was reduced over the junior school years performed better on ability tests at age 10 than those groups without reduction. Many of the differences were significant and were always greater in the deprived than the multiply deprived. The groups which improved had an average intelligence quotient four to five points higher than those who did not. Thus, deprived children who improved had a slight advantage over children from multiply deprived families who improved. This was greatest in scholastic achievement tests, but by 15 years the evidence of significant improvement had disappeared in the multiply deprived but persisted in the deprived. We concluded that emergence from family deprivation was associated with evidence of improved functioning in the children, provided that the deprivation was not severe. However, it should be noted that, while we have concentrated on degree of deprivation, the differences recorded must also be due to the nature of deprivation.

It is important to try to understand the mechanisms that determine these differences. One plausible explanation would attribute the differences between the groups of children to the changes in family circumstances over their second five years of life. This suggests that the adverse effects of milder deprivation can be appreciably attenuated by reduction in deprivation. However, the malign influences of serious earlier deprivation clearly exert a more enduring effect. Another possibility is that the differences between the groups of children are mostly determined by parental intelligence influencing both the reduction in family deprivation and the performance of their children. For instance, the lessening of

deprivation may in part reflect the greater social competence of more able parents, which then re-emerges as identifiable differences in the next generation between the groups of children.

The continuing influence of environment

School-leaving attitudes partly reflect environmental influences. From non-deprived families, one child in five wanted to leave school as soon as possible but half of those in the multiply deprived did so. However, at 15 years, a smaller proportion of the deprived who wished to continue at school actually did so, probably influenced by the wider availability of work in the 1960s.

School-leaving examination

Non-deprived Red Spots had a significantly higher success rate than the deprived, but the husbands or partners of Red Spot girls showed little differences whatever the situation regarding deprivation in their families of origin. Nevertheless, there were some contrasts: the wives of men from deprived families had inadequate training for work, whereas husbands of women from deprived families did not. An appreciable number of women from multiply deprived homes married men brighter than themselves – that is, 'married up' – but multiply deprived men tended to marry their intellectual equals. This suggests that continuities in deprivation are more likely to occur in multiply deprived men than women.

Health effects

There is good evidence to show that we are becoming a healthier nation (McKeown *et al.*,1975; Brown and Madge, 1982) and both infant and child mortality are greatly reduced. On the other hand, wide geographical inequalities in physical health remain, with higher rates of ill-health likely to occur in high-density and poor inner city areas (Brown and Madge, 1982). Further evidence of a consistent correlation between social disadvantage and poor health comes from the survey conducted in the north-east of England by Townsend (1986), which is broadly in accord with the Newcastle '1,000 Family' data.

Physical

High mortality rates among brothers and sisters of Red Spots from multiply deprived families were revealed in the analysis of data in 1952, and our later analysis showed the same among their parents. The multiply deprived, when adult, had twice the rate of health problems of their spouses. The children of the deprived, especially the multiply deprived, suffered more ill-health and accidents. Unfortunately, we had no way of directly comparing rates of improvement in health for families of origin and formation since the definitions in our archival data inevitably differed from those used in the survey.

Psychological

Multiply deprived Red Spot males had an excess of drink problems, both in comparison with their spouses and with non-deprived males, and were also prone to antisocial behaviour. Their female counterparts, both Red Spots and spouses, were prone to depressed mood, suicidal thoughts and the use of tranquillizers.

A small group of multiply deprived in their secondary school years showed behaviour disturbances resembling 'attention-deficit disorder'. Disruptive behaviour in school, antisocial behaviour and scholastic failure were also common. Deficits of attention are known to be associated with antisocial behaviour in boys and educational problems, and debate continues on how these disorders are linked. Our data suggest that all three may have a common origin in deprivation, but does not clarify their interaction or direction of effect.

Growth

A significant failure of growth in height and weight of the multiply deprived Red Spot children was evident by the age of three and continued for all ages to 15. Since there was no significant difference in mean birthweight between multiply and non-deprived, we considered that the relative failure was related to postnatal factors and was more likely to be of environmental than genetic origin.

The childhood family background of adults of family of formation

We had data gathered prospectively about the childhood backgrounds of Red Spot men and women but only retrospectively about their spouses or partners. This retrospective information was more open to distortion but we checked on the validity of retrospective reports given by the Red Spot adults by reference to their original childhood data gathered at the appropriate time. Moderate validity was demonstrated in relation to individual criteria – marital disruption and poor care coming highest – and when they were summated to give a global measure the resulting correlation (0.64) reflected a reasonable level of validity.

We studied the extent to which individuals chose partners from similar family backgrounds, basing this on data gathered prospectively in the case of the Red Spots and retrospectively in the case of their partners. We found that the Red Spots did tend to choose partners from a similar background, especially at the extremes of our range – that is, Red Spots who, as children, had experienced either no deprivation or much deprivation. Yet one-third of the Red Spots, mostly females, who experienced multiple deprivation chose partners who reported no evidence of deprivation in their early childhood.

Networks

This section contains a gathering together of what has gone before. So far, associations have been studied both within, and across, generations and many significant influences have been highlighted. Initially, the focus was on direct influences of deprivation but, as it became evident that these were not the sole bases of subsequent dysfunction, it became necessary to attempt to make allowance for other influences. There were important sex differences in that some influences proved strong in males and others in females. There was also the question of whether we could identify processes or mechanisms by which effects were brought about. Although this could not be immediately answered by our data, we were able to examine:

1 the relative influence of two important explanatory variables, and;
2 the relative importance of a set of explanatory variables.

We now attempt to draw together these findings and provide a tapestry of the major explanatory variables and their cross-generation influences on performance as reflected in intellectual performance, achievement, behaviour and growth. In this we attempt to understand the nature of identified relationships in a social and psychological sense.

Indices of deprivation as predictors

All criteria chosen to represent deprivation in the families of origin and formation were potentially important on theoretical and clinical grounds. One difficulty in studying the effects of a particular index – for instance, marital disruption – was that we could not be sure that another variable with which it correlated highly was not the main source of any adverse effects (multicollinearity). Our solution was to study the indices both jointly and in association with other potential predictors in order to indicate which were the most important. We subsequently attempted to ascertain whether the same indices showed similar effects when studied in another population, and also examined the pathways to performance.

In the family of origin the most powerful predictor proved to be poor care of child and home during the child's pre-school years. This predicted both intelligence and behaviour in the secondary school years. Of the other five indices of deprivation only poor quality of mothering made a small contribution to performance.

In the family of formation the most important predictor proved to be occupational class of the family in 1979–80, followed by educational handicap and mother's age at first marriage or cohabitation. Poor care of child and home and poor quality of mothering made smaller contributions. Taking the two generations together it can be concluded that powerful predictors were poor care of child and home, occupational class and educational handicap. Other significant predictors were quality of mothering, large family size and home ownership.

We can only assume that the effects of marital disruption and parental illness, always considered important clinically, had been absorbed by the more influential measures of physical care and quality of mothering; that the effects of overcrowding as a predictor were absorbed by the variable

representing family size; and that those of social dependency were absorbed by other more sensitive measures of social dysfunction, such as the family not owning their home and lower occupational class.

Following Townsend (1979), unemployment was viewed both as a spectrum and as a dichotomy into employed and unemployed. However, unemployment as a separate explanatory index made little contribution, if any, to measures of performance studied, its effects presumably being absorbed by other more sensitive predictors with which it correlated. When explanatory variables reflecting care of children were examined, they were found to be of less importance in predicting the performance of daughters than of sons.

Path analyses suggested that mother's age at marriage had both direct and indirect effect on antisocial behaviour within the home and on verbal ability. The indirect effect passed from age at marriage to educational handicap which in turn influenced the following three performance variables: school-based antisocial behaviour, school achievements and non-verbal ability. Mother's age at marriage proved an important explanatory variable within a network of influences; but it probably reflects a host of other influences, namely lower intellectual ability, poorer judgement and poorer career motivation. But so too does educational handicap, which either directly or indirectly contributed to outcome in all causal paths leading to antisocial behaviour, poor ability and achievements. Occupational class was also an important explanatory variable in four of the five path analyses; and poor mothering in two of the five. (Earlier findings had led to expectation that poor mothering would make a greater contribution.) Unfavourable reaction to pregnancy was part of a significant pathway starting at mother's age of marriage and passing both to verbal and non-verbal ability. Perhaps these associations simply reflect a degree of dullness of intellect in young mothers, who may tend to view their pregnancies in a negative way.

The path analyses which dealt with networks across generations reinforced the importance of poor care of the child as a mediating influence in the development of antisocial behaviour both directly and indirectly. For instance, poor care in the family of origin influenced occupational status in the next generation and this in turn had an effect

on antisocial behaviour in the children of the family of formation. Verbal ability, vocabulary and reading achievements appeared to be causally influenced in a similar way. Dependence on social services in one generation had a direct effect upon educational achievements and vocabulary ability, and an indirect effect upon antisocial behaviour in the next generation. However, when other measures of social dysfunction were included, the influence of social dependence was substantially reduced, suggesting that it was not a sensitive explanatory variable. Marital disruption in the family of origin proved a significant causal influence of marital disruption in the family of formation and this in turn had an effect on antisocial behaviour of the children in the third generation.

Other explanatory variables in the network

A problem in prediction analysis is how to deal with an abundance of potentially important explanatory variables, many of which are significantly intercorrelated. One way is to combine similar measures allowing a simpler and clearer picture to emerge. When this was done, poor occupational status and undesirable child management techniques proved most significant, followed by the summed deprivation index and mother's age at marriage and, finally, the index of undesirable recent life events.

Another question was which explanatory variables predicted which measures of performance: occupational status predicted verbal ability and antisocial behaviour; undesirable child management techniques predicted antisocial behaviour; the summed deprivation index predicted verbal ability and antisocial behaviour; mother's age at marriage predicted verbal ability and school attendance; and recent life events predicted school attendance and antisocial behaviour.

We had anticipated that poor child management techniques employed by parents in the family of formation would be predicted by the major family variables identified in the family of origin, but this was not so. However, such management techniques were well predicted by prior reports that a parent had shown a poor attitude to school. Nevertheless, poor management techniques and also the index of recent life events proved powerful predictors of children's behaviour.

These findings are important. They suggest that parental management and recent life experiences have powerful influences on child behaviour and are relatively independent of other explanatory family variables, which of course have their own corporate effects. Child behaviour is not totally determined by family atmosphere and deprivation in early experiences.

From child to adult

So far attention has been confined to adult influences as predictors. An equally important question is whether we can predict adult functioning from prior childhood influences. It was not entirely surprising to discover that intelligence, measured at age 11, predicted not only educational handicap but a host of important family variables – occupational status, home ownership, age of marriage in females and size of family in males. Poor attitude to schoolwork in females predicted educational disadvantage, undesirable child management techniques, age at first marriage, number of children in the family and overcrowding. Poor school attendance predicted poor care of home and children in both males and females, social dependency in females and unemployment in males. Furthermore, poor sociability in childhood predicted marital instability, and self-confidence predicted later mothering abilities.

While the attempt to predict adult functioning from childhood variables proved only moderately successful, these variables are likely to be important mediators in the transmission of disturbance or deprivation across generations. Some of the mechanisms, such as poor attitude to school, may result from complex processes of conditioning while others, such as intelligence, are likely to have a significant genetic component.

The relative importance of major explanatory variables

Deprivation and occupational status In the family of origin, family deprivation in the pre-school years had a more powerful effect on intellectual performance of children at 11 years than did parental occupational class. By age 15 the effects of occupational status had virtually disappeared. While deprivation in the pre-school years had a powerful effect on school

attendance at 15, occupational class had little effect. Similarly deprivation had a powerful effect on behaviour at secondary school.

Pre-school and primary school deprivation While pre-school deprivation had a powerful effect on intellectual performance at 11 years, and on temperament and behaviour at secondary school, primary school deprivation had a greater effect on intellectual performance at age 15 and on school attendance in boys.

Deprivation in families of origin and formation in relation to performance in the family of formation Deprivation in the family of origin had continuing effects on intelligence – first, in the school years and subsequently on the adults in the family of formation. In the same way, deprivation in the family of formation influenced intellectual functioning of children in the third generation.

Pre-school deprivation: parental occupation and intelligence Again, the relative contribution of the explanatory variables varied according to the measure predicted. The best predictors of intelligence in childhood were deprivation and parental intelligence, which both proved powerful predictors of scholastic achievement. Deprivation proved a powerful predictor of antisocial behaviour at school; and parental occupational class a powerful predictor of antisocial behaviour within the home.

Cross-generation effects of deprivation in family of origin on antisocial behaviour in children in the family of formation When only first-born children were studied, deprivation in the family of origin had no effect. Once the other children of school age were included, a cross-generation effect became evident.

Prediction

In his review, Clarke (1978) concluded that 'except in crude terms, long term prediction of individual human development is not very impressive; in group terms it is rather better'. Almost a decade later, the position remains mostly unchanged despite the benefit of hindsight, advances in research

design, the wide range of explanatory variables explored, and the availability of modern statistical techniques and powerful computer technology. His discussion merits reconsideration, and we offer observations from our present research.

Clarke demonstrated that earlier theories conceived of a model of human development whereby human characteristics were fixed and almost immutable from an early age. Subsequent research has eroded this view both in relation to intelligence and behaviour.

First, in relation to data from longitudinal studies, Clarke and Clarke (1972) noted consistent evidence of correlations decreasing over time, which led them to conclude that individual variability was as strong as consistency. Our data reveal that predictability and consistency over time is strongest in relation to antisocial behaviour. Nevertheless, while six out of 10 boys experiencing multiple deprivation in the pre-school years offend, it is difficult to predict which of them will offend. This was well demonstrated in prediction (multiple regression) analysis where only a small proportion of the variance of criminal behaviour was accounted for by family and environmental predictors. Only when individual differences in intelligence and temperament were included as predictors was a larger proportion of the variance of criminal behaviour accounted for. Continuation of antisocial behaviour during secondary school and post-school years was reflected by the fact that three-quarters of those offending after the age of 15 had also done so earlier. In contrast few offended for the first time after age 15.

Second, personal changes always followed marked environmental changes (Clarke and Clarke, 1972). Our data confirm that personal, intellectual and behavioural changes follow movement into or out of deprivation both within and across generations.

Third, the Clarkes (1972) indicated that development included substantial discontinuities as well as continuities. This is illustrated in the following chapter.

Fourth, the averaging of relationships over time can conceal important changes in a minority of individuals or sub-groups. For instance, the correlation between occupational class in Generations I and II proved moderate, but there were major changes in a relatively small number of

families who, over a generation, moved from the lowest to the highest occupational stratum.

Fifth, multiple predictive measures are likely to be more powerful than a single measure (Clarke 1978) and even more so when distantly related or even unrelated to each other. This was demonstrated for criminality data where a reasonable proportion of the variance was explained only when totally unrelated explanatory variables were included in the prediction analysis. We conclude that using even the most sensitive of explanatory variables reflecting the same type of data is unlikely to be as successful as using additional variables from another source.

Sixth, evidence from longitudinal studies indicated that many competent adults had severely disturbing childhoods while many highly achieving children subsequently failed to achieve their predicted potential (MacFarlane, 1964). Yet there were small groups whose adult performance fulfilled the actual expectation. In his review of the New York longitudinal study Clarke (1986) concluded that the major picture was of inconsistency of characteristics in those who had childhood disorders and that correlations over short periods proved unimpressive. Study of these children into adulthood identified a number of significant links, but none proved substantial (Thomas and Chess, 1980; Chess and Thomas, 1984). Our account of change (Part V), particularly across generations, identified not only variability but also continuity at both extremes.

Seventh, behaviour has multiple determinants with a continuous interaction between person and situation; not only are we influenced by our situations but we influence them as well (Mischel, 1977). This is illustrated in our path analysis which showed how different pathways led to anti-social behaviour in the home as opposed to school.

Eighth, the previous rather narrow models which focused on the comparative effects of genetics and the environment have given way to examination of the wider interaction between person and environment.

Ninth, as far as mental ability is concerned:

(a) the earlier the measurement and the longer the period predicted, the less the reliability. In our data, explanatory variables relating to the pre-school period were

better predictors of data collected in the last year of primary school than the last year of secondary school;

(b) significant correlations which decrease over time cannot primarily be due to errors of measurement and must therefore mainly reflect genuine personal change (Clarke and Clarke, 1986).

Tenth, changes in psychological characteristics always move in the direction of environmental shifts; this suggests that, within limits, human development may be regarded as somewhat open-ended – at least potentially so (Clarke and Clarke, 1986).

In summary, from a number of themes relevant to our work, the evidence is strongly in favour of continuous process of change rather than predetermined development. Chance experiences in childhood can act as strong determinants of stability or change in the adult. There is also continuing individual variation in the face of environmental alteration – hence our awareness of the 'open-endedness of human development'. Despite this, it is now possible to forecast with broad accuracy the range of reactions that may occur within groups of individuals exposed to environmental change.

Finally, we have alluded to the danger of focusing on a single explanatory variable since its identified effects could be due to the other variables with which it is correlated. One way of dealing with this is to combine similar explanatory variables. Second, some explanatory variables have both direct and indirect influences on the way people perform while others have only direct effects. Third, criteria of deprivation have more powerful influences than others – for instance, poor child care and mothering and educational handicap have been identified as being of crucial importance. Fourth, prediction may be behaviour-specific – for example, neurotic behaviour in childhood is only poorly predicted, while antisocial behaviour and features representing attention-deficit disorder are well predicted. Prediction may also be specific. Fifth, opportunities should be sought to study the variation in the effects of deprivation during different periods of life. We found the effects of early life deprivation can disappear by late adolescence. Also the effects of deprivation in early and later childhood may differ;

deprivation in the school years appears to have greater effects on behaviour and intellectual ability in later adolescence than pre-school deprivation. Finally, adult performance may be influenced not only by family and environmental factors but also by those intrinsic to the child; in our study these included differences in intelligence and temperament, in behaviour and in attitudes to school.