Chapter 11
Factors in Prevention in Inner-City Deprivation

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Deprivation, particularly its troublesome extent and its transmission, has been the focus of epidemiological research in Newcastle over the last three decades (Miller et al., 1960, 1985; Kolvin et al., 1983a, 1983b, 1988). However, that was "head count" research; in this paper, we address ourselves to the topics of intervention and prevention.

The classic approach to prevention has been based upon the work of Caplan (1964). Phrases such as "Cure is costly—prevention is priceless" have been coined. The most influential ideas, developed in the 1960s and 1970s, stated that primary preventive activities are important because they attempt to prevent the development of subsequent disorder by attacking its presumed origins, and by simultaneously promoting psychological adjustment (Sandford, 1965). In Newcastle, there has been particular interest in early secondary preventive activities that try to identify those children who are considered to be at grave risk of developing abnormally, and to prevent dysfunction from becoming severe or overt (Kolvin et al., 1981).

It could be argued that early prevention is likely to be more cost-effective than attempting intervention when the effects of deprivation have become deeply ingrained. This would be true only if the methods of prevention proved to be inexpensive and brief. Similarly, any screening programme would need to be equally expeditious and inexpensive. One also needs to ensure that the preventive programme does not have adverse consequences. It is essential that such preventive endeavours be evaluated before attempting to obtain political commitment to such investment. Finally, there are questions concerning the targeting of the resources: should they be aimed at the children at risk, at their families, or at their social environment?

Prevention programmes have to transcend an examination of the effects of preventive intervention as such, by studying the ways in which the adverse effects of deprivation are mitigated or mediated. What are the mechanisms and the processes that influence changes in behaviour of children? Factors that need to be taken into consideration include, first, the prevention programme itself and, second, a range of "primary prevention" factors, including the characteristics of the social and family environment. Previous and current work has led us to focus on some home or family factors that represent either deprivation (Kolvin et al., 1989) or those processes that may underpin or mediate the effects of deprivation (Charles et al., 1989). The third type of factor to be considered concerns the schools: such factors comprise

- intake factors, representing those characteristics of the school catchment area;
- the impact of the quality of organisation and academic programme of the school environment (Rutter et al. 1979);
- the social characteristics and climate of the school (Moos, 1978; Kolvin et al., 1981).

Aims of the Study

The main intention of the current project was to identify and focus on infant schools in deprived inner-city areas and to evaluate the impact of play group therapy (PGT) upon children living in deprived homes. Inevitably, any seriously deprived group includes a high proportion of children who are maladjusted or at risk of becoming maladjusted. The purpose was to compare a treated group with a control

group of deprived children not receiving this form of help. If effective, the specifics of PGT could be taught to practicing professionals from a range of disciplines and this could be linked with supervised training.

Another aim of our study, with specific reference to deprivation, has been to study changes in behaviour over time of children in the inner city and to study those factors that are possibly related to the extent and direction of change. We particularly wished to ascertain whether, and to what extent, the child was influenced by the two principal environments—home and school—and whether intervention played a part in affecting the extent and/or the direction of change in behaviour.

In addition, we were concerned with identifying the mechanisms and processes which influence change in behaviour. In the family, we monitored deprivation and also examined the potential mitigating effects of mother's self-esteem, of mother's good coping skills, of evidence of mother being overwhelmed by her adverse life experiences, and the levels of maternal care and stimulation given to the child. In the school, we considered whether there may be "catchment area" differences between schools, and whether between-school differences of change in behaviour could be attributed to catchment area effects.

Method

Behavioural Change

Following our previous research (Kolvin et al., 1981), we used a formula to calculate change in behaviour from the baseline assessment to 12 months later (short term) and 24 months later (longer term). The change index ranges from major deterioration through no change to major improvement. This formula was applied to four aspects of behaviour, namely, neurotic behaviour, antisocial behaviour, hyperactive behaviour and overall disturbance.

Deprivation

Again, following previous Newcastle research (Kolvin et al., 1983 a, 1983b, 1988, 1989), six items of environmental deprivation were defined, with each family being given a score of 0 or 1 for the absence or presence of each. Finally, a composite deprivation index was obtained by summing the scores for the following six items (Kolvin et al., 1989):

1) family dependence on social welfare;

2) poor parental health;

3) marital disruption;

4) poor physical care of the child or home;

5) poor quality of mothering;

6) parental educational disadvantage.

Parental Resilience

The degree to which the family coped with, or were overwhelmed by, their life experiences was operationalised and piloted earlier in the research; this will be reported in detail elsewhere (Charles et al., 1989). In brief, the method consisted of assessing the extent to which families did not adequately identify any problems, understand them, or deal with them adaptively: the themes covered the five main areas of unemployment, finances, marital tensions, family health and child management. Those personal qualities that are associated with family resilience on the one hand, or a sense of being overwhelmed on the other, are the subject of a separate analysis (Charles et al., 1989).

Mother's Learned Helplessness

We were also impressed by Seligman's notion of learned helplessness (Seligman, 1975, 1976). We operationalised this by focusing on three themes: first, the sense that the individual feels that her life direction is beyond her power to control and is in the hands of someone else (*powerlessness*); second, that there is an inevitable determination of her destiny (*fatalism*); and finally, that the individual feels trapped by her life circumstances (*entrapment*). On the basis of the above, we developed an index of learned helplessness, which too was subject to preliminary piloting (Charles et al., 1989).

Mother's Self-Esteem

Self-esteem was measured according to the *Culture-Free Self-Esteem Inventory* devised

and standardised by Battle (Battle, 1981). It is a self-report measure of the individual's personal and social self-perception.

The Home Inventory

We used the *Home Observation for Measurement of the Environment* (HOME). This is an instrument with several subscales designed to assess the quantity and quality of psychosocial stimulation and learning opportunities provided for the child within the home (Bradley & Caldwell, 1989). This instrument allowed us to obtain a picture of the nature of the family environment, mother's involvement with the child and evidence of play stimulation.

Family Dysfunction

Measures of family dysfunction as represented by cohesion as well as measures of child-management and child-rearing techniques as represented by indices of punishment, supervision, deprivation or privileges and reasoning were used (Kolvin et al., 1981).

Life Events

Recent life events were studied covering the previous 12-month period. The data were collected and examined using themes from the Life Events Inventory described elsewhere (Goodyer, Kolvin & Gatzanis, 1987).

The Measures of Behaviour

The children in the study were assessed on the Conners (1969) and Rutter (1967) teacher scales on three main occasions:

1) at *baseline* before any child was involved in preventive activity;
2) again at *1 year* after the start of the study;
3) at *2 years* after the start of the study.

In addition, the parents were interviewed about their children's behaviour at the baseline, at 1 and at 2 years after the start of the study, using the *Newcastle Behaviour and Temperament Scales* (Kolvin et al., 1975; Garside et al., 1975).

The Children and the Schools

About 170 children and their families were studied. They all attended seven inner-city primary schools in a deprived area of Central Newcastle. In order to limit the effect of just starting school, at the beginning of the study the children were in their second year of infant school, i.e. they had all completed one full year of infant school and were aged 6 years and some months. Once they were entered in the study, the children were followed up until they reached age 8 and some months. By this time, many children had moved on from infant to junior school. All the schools within the study area were included.

The Economic Climate

The study was undertaken at a time when there were very high levels of unemployment throughout the country. Within our study area, levels of up to 36% male unemployment were recorded in the 1981 census by the OPCS, as cited in City Profiles (City of Newcastle upon Tyne, 1983). However, at the start of the study period in 1985, we found that the main breadwinner was unemployed in over 60% of our inner-city families.

Findings

School Differences

The average change in behaviour of the children in the different schools was examined. Substantial between-school differences were identified which could result from intake factors, differences in school organisation and style of education as well as the social climate of the school. However, as the children were randomly allocated within schools to treatment (preventive activities) or control groups, such school differences are unlikely to influence the treatment programme substantially or differentially.

The Effects of Treatment

Assessment of the effects of treatment proved complex. Children were allocated to "treatment" or "no-treatment" programmes. How-

ever, the data still had to be analysed according to the extent to which the children completed the therapy programme and also the extent of deprivation to which they had been exposed. Furthermore, over the period of intervention, there had been industrial action within schools and the effects of this in relation to the therapeutic programme and subsequent stages of data collection are being studied. Fuller details will be reported in subsequent publications.

Home and Family Factors

We are therefore left with the attempt to estimate the importance of home and family factors in relation to changes in behaviour over time. For simplicity of presentation, we start by merely correlating the environmental indices with changes in behaviour in the short term and longer term. The findings are expressed in terms of significance of correlation rather than magnitude at the 5%, 1% and 0.1% levels.

Correlation of Change in Behaviour and Family Deprivation

We correlated the seven measures of family deprivation with short-term and long-term changes in neurotic, conduct-disordered and hyperactive behaviour, as well as overall measures of behavioural change. The composite *deprivation index* representing severity of deprivation usually correlated highly significantly ($p<0.01$ on three occasions) or very highly significantly ($p<0.001$ on two occasions) with behavioural change; the exception consisted of change in neurotic behaviour in the short term. However, this global picture obscures different patterns according to the type of deprivation (Tables 11.1 and 11.2).

1) *Parental ill-health* seems to have significant associations only in the short term, probably reflecting the transient nature of much ill health.
2) The family *dependence on social welfare* is mainly associated with long-term behavioural changes. This probably reflects the more chronic nature of social dependence.

Table 11.1. Correlation of environmental influences and change in behaviour: Short-term effects.

	Neurotic	Conduct	Hyperactive
Social welfare dependence	–	–	–
Poor parental health	**	**	–
Marital breakdown	–	–	*
Poor physical care	–	–	*
Poor mothering	–	*	–
Educational disadvantage	–	–	*
Severity of deprivation	–	***	**

Significance of correlations: * = $p<0.05$, ** = $p<0.01$, *** = $p<0.001$

Table 11.2. Correlation of environmental influences and change in behaviour: Long-term effects

	Neurotic	Conduct	Hyperactive
Social welfare dependence	**	***	**
Poor parental health	–	–	–
Marital breakdown	–	**	*
Poor physical care	–	**	*
Poor mothering	–	*	–
Educational disadvantage	**	–	**
Severity of deprivation	**	***	**

Significance of correlations: * = $p<0.05$, ** = $p<0.01$, *** = $p<0.001$

Table 11.3. Correlation of environmental influences and change in behaviour

	Neurotic		Conduct		Hyperactive	
	ST	LT	ST	LT	ST	LT
Play environs	–	–	–	–	–	–
Mother/child involvement	–	–	**	*	*	*
Daily stimulation	–	–	**	***	***	***

Significance of correlations: * = p<0.05, ** = p<0.01, *** = p<0.001

3) *Marital dysfunction* seems only to have a relationship with change in conduct disorder and hyperactivity.

4) *Poor physical care of the child* and *poor mothering* tend to have few strong associations but poor physical care is the more prominent. However, as described below, other measures of poor mothering provide a better picture.

5) *Parental educational disadvantage,* unlike parental health, tends to be associated mainly with long-term changes, suggesting that its influences are not transient.

The Influence of Home Environment Factors

The influence of the home environment, as reflected in the availability of a safe play environment, the level of maternal involvement with the child and the availability of daily stimulation for the child, are considered in this section. The findings demonstrate that the mere presence of toys bears little relationship to change in behaviour. Far more important is evidence of *mother's involvement,* but especially her *stimulation of the child.* There are very significant associations with changes in antisocial behaviour and hyperactivity, but not with neurotic behaviour. These findings reinforce hypotheses about the importance of mothering qualities as central mediators of behavioural change (Table 11.3).

The Effect of Maternal Resilience and Self-Esteem

The association between maternal resilience and maternal self esteem, and the degree and direction of behaviour change, was examined. Especially important are findings in relation to the sense of resilience and sense of being overwhelmed. For simplicity's sake, we only provide data on the latter. Five of the six correlations with change in behaviour proved to be very highly significant. This level of association with change in behaviour is superior to that found with the composite deprivation index, which suggests that how families respond to or cope with deprivation is likely to represent an important operative mechanism by which deprivation brings about its effects. Another mechanism may be a feeling of learned helplessness which, on balance, appears to have an association with behaviour change equal to that of the composite deprivation index itself; this is equally true of mother's sense of self-esteem (Table 11.4).

Table 11.4. Correlation of environmental influences and change in behaviour.

A Resilience	Neurotic		Conduct		Hyperactive	
	ST	LT	ST	LT	ST	LT
Overwhelmed	***	***	*	***	***	***
Learned helplessness	**	**	**	**	**	**
Self-esteem	*	***	**	*	***	**

Significance of correlations: * = p<0.05, ** = p<0.01, *** = < 0.001

Other Family Factors

Other family factors, such as family cohesion, were also examined but did not give any better association with change in behaviour than did marital disruption.

Recent Life Events

Recent life events that were judged to have a negative impact and a disappointing minor association with behaviour change in the long term.

Child-Rearing Techniques

Finally, family child-rearing techniques were examined. Although at this age parental supervision had only a marginal association (and hence was excluded from the Table), firm management or discipline had a significant association with improvement in conduct-disordered behaviour and hyperactivity, thus suggesting that "firmness" helped to control these behaviours. Deprivation of privileges had less strong associations and appeared to link with improvement in the short term rather than long term—it appeared also to influence neurotic behaviour. However, reasoning with children seemed to have the strongest associations but, again, mainly in relation to conduct-disordered behaviour and hyperactivity (Table 11.5).

Environmental "Explanatory" Variables (Independent Variables) and Change in Behaviour

It is crucial to try to estimate the relative contributions of different environmental experiences in relation to changes in behaviour. For these purposes, two-way analyses of variance were undertaken in an attempt to explore the contribution of prevention on the one hand, and a series of nine environmental experiences on the other. It was found that preventive intervention seldom had an inde-

Table 11.6. Independent effects of explanatory variables over and above deprivation index: 2-way ANOVA

	Change in conduct	Change in hyperactivity
Explanatory Variables		
(Analysis A)		
Deprivation index	*	–
Resilience	*	**
(Analysis B)		
Deprivation	**	–
Overwhelmed	–	*
(Analysis C)		
Deprivation Index	**	–
Helplessness	–	*
(Analysis D)		
Deprivation Index	**	–
Self Esteem	–	–
(Analysis E		
Deprivation index	**	–
Reasoning	*	–
(Analysis F)		
Deprivation index	**	–
Maternal Stimulation	–	**

Significant effects: * at 5% level, ** at 1% level
Analyses were undertaken on polar groups.

Table 11.5. Correlation of environmental influences and change in behaviour.

B Child Management	Neurotic		Conduct		Hyperactive	
	ST	LT	ST	LT	ST	LT
Firmness or punishment	–	–	***	***	**	*
Deprivation of privileges	–	**	**	–	*	–
Reasoning	*	–	***	***	***	**

Significance of correlations: * = p<0.05, ** = p<0.01, *** = p0.001

pendent significant effect, whereas environmental explanatory variables commonly had significant effects. The results, suggesting that prevention does not contribute substantially to change, must be seen as tentative in view of the technical problems reported.

The next step was an attempt to ascertain which of the environmental variables studied had effects over and above that of deprivation (see Table 11.6). For these purposes, we concentrated on resilience, being overwhelmed, learned helplessness, mother's self-esteem, mother's level of reasoning with the child and mother's stimulation of the child.

The deprivation index had a significant effect in only two of the six analyses in relation to change in neurotic behaviour. (Because these were both at the 5% level, they have not been listed, in all six of changes in conduct-disordered behaviour, but never in the case of change in hyperactive behaviour.) The indices of coping, of a sense of being overwhelmed and of learned helplessness had independent effects either in relation to changes in conduct-disordered behaviour or in hyperactivity. However, in the case of learned helplessness, there are complex interactions that are not easy to interpret. Maternal stimulation also had a highly significant effect in relation to hyperactivity. Although with regard to other changes, self-esteem did not have any independent effects, mother's reasoning with the child had a significant effect in relation to changes in conduct behaviour.

Multiple regression analysis provides a picture of the best predictors (within the same prediction set) of change in the different types of behaviour that were studied. For these purposes, only changes by the 2-year follow-up were used as dependent variables. Table 11.7 provides a summary of the significant predictors. The independent variables were poor coping, overwhelmed, extent of stimulation by mother, parental punishment (firmness), reasoning with child and extent of family deprivation. The commonest significant predictors were the measures of being overwhelmed by, or coping with, adverse life experiences and firmness in the management of the child: the deprivation index only once proved a significant predictor. The only other important predictor was the extent to which the mother stimulated her children.

Table 11.7. Multiple regression analysis of significant predictors of change in behaviour over 24-month period (samples same as in Table 11.6).

Change in Neurotic Behaviour	
Overwhelmed	***
Firmness	***
Change in Conduct Disordered Behaviour	
Reasoning	***
Deprivation index	***
Firmness	***
Change in Hyperactive Behaviour	
Maternal stimulation	***
Overwhelmed	***
Coping	***
Change in Psychosomatic Behaviour	
Overwhelmed	***
Coping	***
Overall Change in Behaviour	
Overwhelmed	***
Firmness	***

All the above predictors were significant at the $p<0.001$ level.

Discussion and Conclusions

Our findings suggest that any changes in behaviour in infant school children are profoundly influenced by the children's environment. The greater the severity or extent of deprivation, the less positive the change, and vice versa. This implies that the more chronic the deprivational factors, the stronger are the associations with lack of improvement or even deterioration of behaviour in the long term. Most of the discrete deprivations studied were linked in one or other way in the short or long term with changes in conduct-disordered behaviour and/or hyperactivity, but less frequently with neurotic behaviour. However, dependence on social welfare, poor parental health and educational disadvantage did correlate with change in neurotic behaviour. These findings suggest that the politicians' attitude toward social policy may be more important in introducing innovative social and economic measures as a primary preventive tool than any secondary preventive measures by the psychologist or sociologist.

Nevertheless, family deprivation does not necessarily imply that a particular mother's involvement with her child will be poor, nor that there will be poor stimulation of the child, nor that mother will necessarily use

"negative" child-rearing or management techniques. Furthermore, it does not imply that they will be resistant to intervention even if such adverse factors are present.

Hence, it is important to attempt to ascertain the *relative contribution* of the environmental influences on changes in behaviour. However, this is not a straightforward matter, as some of these explanatory factors are likely to be at least moderately correlated with each other (multicolinearity). If we allow ourselves to ignore these intercorrelations, we can draw some tentative conclusions.

It would seem that, more important than the deprivation itself, is the *mother's resilience in the face of family and environmental deprivation*, that is, how well she copes with her life circumstances, combined with the quality of involvement, stimulation of her children and the thought she gives to her child-rearing practices. While there may well be some fluctuations in the parents' coping in the face of persistent deprivation—and we need to take this into consideration—unfortunately we only collected information on parents' coping and sense of being overwhelmed, at one point in time. Nevertheless, these measures proved to be quite powerful predictors of behavioural change. This suggests that such fluctuations were not considerable, or at least that family styles do not change substantially over fairly short periods.

In summary, the findings from analysis of variance provide some clues as to the processes and mechanisms by which adverse family experiences bring about their effects. They suggest that the effects of deprivation may be mitigated by the techniques that the mother employs in coping with family problems, her involvement with her children and her approached to child rearing. These must be seen as crucial *protective factors* in the face of family adversity.

The findings from multiple regression analysis reveal that different combinations of predictors emerge as significant in relation to the different types of behavioural changes. It is notable that either maternal resilience or not being overwhelmed by deprivation—or both—are characteristic of all the explanatory variables that proved significant in every analysis, with the exception of change in conduct-disordered behaviour. In these latter circumstances, the good predictors are reduced degrees of deprivation, which is a circumstance that is likely to be beyond the family's control, and both reasoning with children and dealing firmly with transgressions. In the case of change in neurotic behaviour, the good predictors are not being overwhelmed by life adversity, and dealing firmly with children. The good predictors of change with hyperactive behaviour consist of good maternal stimulation combined with good resilience (coping) and not being overwhelmed by life adversity.

Psychosomatic behaviour has significant predictors similar to those of neurotic behaviour. It is to be noted that it is only change in conduct-disordered behaviour that has so different a pattern of predictors of change—and this is surprising, as conduct-disordered behaviour and hyperactive behaviour are often thought to be similar, if not overlapping, disorders.

As the environmental factors seem to be such powerful influences of behaviour of children in deprived families, if prevention programmes are to be successful in bringing about more permanent changes in behaviour in infant school children, they will have to take such factors into consideration. They will have to act directly on the children, but also influence parental response to environmental experiences. In addition, they will have to give thought to how social case workers can help families to improve parenting and problem-solving skills and also the coping mechanisms they employ in relation to adversity. The schools themselves cannot be ignored—considerable between-school differences have been noted in relation to improvement in child behaviour over time. This suggests that ways need to be sought of optimising school environment as a contribution to mitigating the effects of family deprivation.

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