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Long-Term Effects of Treatment in a Pre-School Day Centre: A Controlled Study

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Summary: A five-year follow-up of 25 children who attended a psychiatric day centre for pre-school children is described. This group was compared at eight years of age with two matched control groups who had not received intensive treatment. There were few differences between the treated and untreated groups. Possible reasons for the findings are discussed and some methodological issues involved in carrying out evaluation studies are raised.

Evaluation research in child psychiatry has been limited and unduly concentrated on drug therapy, although drug use is relatively uncommon in this age group. The paucity of research could be due in part to methodological problems specific to childhood (Barrett *et al*, 1978). For instance, it can be difficult to decide whether treatment or outcome measures should focus on the child only, or include other family members. In addition, complex developmental influences affect outcome in ways which do not arise in adults.

The basic requirements for adequate research in the field of evaluation have been extensively discussed (e.g., Garfield and Bergin, 1978) and there is no reason why the sophistication used in some adult studies could not be applied to child psychiatry, even if the issues are more complex.

One aspect of this complexity is the need to take into account the role of parents (or teachers) in the treatment process. The involvement of parents as agents of change is particularly relevant to the young child and has been examined in some single case studies evaluating behaviour therapy. In one such study, a reversal by the parents to their baseline responsiveness produced a corresponding reversal to baseline behaviour of temper tantrums (Williams, 1959). In practice such an A-B-A strategy is difficult to implement except in drug trials. Monitoring several symptoms using multiple baselines could demonstrate the specific effects of particular interventions as one target behaviour at a time is tackled, although generalization of response in either parent or child would be a confounding factor in such a strategy.

Using the child as his own control avoids the necessity of having a control group and is useful where small numbers of children are involved. Making within group comparisons on a single treatment group is also a useful strategy when small numbers are involved as Purcell *et al* (1969) ingeniously showed. In their study they examined the effect of two weeks' separation from the parents in a group of 25 asthmatic children who stayed at home with a substitute caretaker whilst the parents went away. They successfully predicted beforehand that those children whose attacks were precipitated rarely by physical factors, (e.g. infections) and usually by emotional ones, would respond best to the separation.

Comparisons of treated and control groups rarely meet the desired criterion of random assignment from a common pool of subjects. Comparisons have been made between rates of improvement in treated groups and natural remission in subjects drawn from the general population, but this method is criticized because it cannot ever be fully known in what respect clinic populations and a community sample differ. The complex pathway to obtaining treatment produces highly selected samples (Goldberg and Huxley, 1980). For instance, Shepherd *et al* (1971) found that mothers of clinic attenders had more nervous symptoms and worried more about their children than a control group drawn from the same population matched for severity of symptoms. Inevitably, researchers encounter problems when attempting to match experimental and control groups on selected variables. It is usually not feasible to match for more than a few variables. Although the variables selected may be clinically significant, there may be other equally important variables for which it is impossible to match, or which turn out to have particular relevance in outcome. Random assignment of clinic attenders to treatment and control groups increases the probability that outcome will be examined in comparable groups.

We report here a long term study of effects of treatment in a group of pre-school children and discuss some of the methodological problems encountered in using a matched control group obtained from a community sample. A previous paper described a one-year follow-up of a group of 25 children who had attended a psychiatric day centre for pre-school children and compared them with a matched group of children with behaviour problems in the community who did not have this intensive treatment (Woollacott *et al,* 1976). At that time no significant differences in outcome were found between the two groups. As the community sample was also followed up at eight years (five years after original assessment), it seemed of interest to compare outcomes again, this time on a long-term basis, in children who had attended the day centre and matched controls who had not.

Method

The original day centre group consisted of 25 consecutive attenders aged two-and-a-half to three-and-a-half years seen over an 18-month period. The treatment they received was discussed in the previous paper, as were the details of the first follow-up study (Woollacott *et al,* 1976). Information was obtained on initial attendance at the day centre and again one year later at follow-up from an interview with the parent covering the child's behaviour and development and a variety of family and social factors. Among measures used was a behaviour screening questionnaire (BSQ). This questionnaire has 12 items of behaviour, each rated 0 to 2, with a maximum total of 24; a cut-off point of 10 on this questionnaire is known to distinguish children with psychiatric disorder and those without (Richman and Graham, 1971). A final clinical rating was made on the severity of the child's behaviour difficulty ranging from none through dubious, mild, moderate to severe, on a 5-point ordinal scale from 0 to 4. Other summary ratings were made on marital relationships, and parental psychiatric status. The child's language development was also assessed using a brief screening measure of level of syntax and ability to name pictures (Stevenson and Richman, 1976).

The community sample was identified in an epidemiological survey of behaviour and language using the screening measures already described (Richman *et al,* 1975). These measures selected 99 children with behaviour problems, 99 control children without behaviour problems and 10 children with marked language delay but no behavioural problems. An additional ten children with a marked language delay (Richman *et al,* 1975) were also selected for further study.

The 25 day centre children were compared with a matched control group of 25 children selected from this intensively studied community sample. A computer was used to rank the community children on their BSQ score and then in order on the clinical ratings, the mother's mental state and language development. Control children were selected by taking the day centre child's BSQ score and matching for this, and then matching as nearly as possible on the other variables in order. In this way, 25 control children were selected who had been assessed at three years of age and one year later at four years using the same procedures as with the day centre cases.

The day centre group was contacted again at eight years of age whilst attending junior school. An assessment, similar to the initial one at three years of age, was made by an interview with the parents and, in addition questionnaires on behaviour were completed by parents and teachers (Rutter, 1967; Rutter *et al,* 1970). The child's IQ was assessed on the short form of the WISC (Wechsler, 1974; reading accuracy and comprehension were measured on the Neale reading scale (Neale, 1958) and the Schonell spelling test was given (Schonell and Schonell, 1950).

Most day centre children were tested by the interviewer, but in two cases testing was not possible as the tests were too difficult for the children. Five children had already been tested by various psychologists whilst attending special facilities; these test results were used to avoid duplication and for convenience. The intensively-studied community group were also contacted again at eight years of age and received the same assessment as the day centre group.

Cases at follow-up

All the original 25 children from the day centre were traced, but three parents refused further contact. One of these children was known to be attending a day school for maladjusted children and another a similar boarding school. All the 25 children from the original control group were also traced and interviewed, but the three matched with the day centre attenders who refused contact were excluded from further analysis.

Adequacy of control group

Our follow-up study in the community enabled us to identify various factors related to persisting problems. In particular we found that male sex, poor early language development, a clinical rating of moderate or marked severity and family disharmony, were all predictive of adverse outcome (Richman *et al,* 1982).

In order to try and match for sex and language development which seemed important in outcome, we generated another comparison control group, in addition to the original, from the community sample using the computerized data obtained at three years of age. This second control group consisted of 22 children

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matched by sex and as nearly as possible on clinical rating and language score.

Results

Table I shows the children's mean BSQ scores and clinical ratings at three years of age. There was no difference in mean BSQ scores but there was a significant difference at the .05 level between the clinical ratings of the day centre cases and the original matched controls at three years, but not between the day centre cases and the sex and language-matched control group.

Findings at eight years of age

Significant improvement occurred in all groups over the five-year period between three and eight years of age. Improvement was least marked in the day centre cases but this difference was not significant. The day centre cases were also more likely to be rated as deviant on the parent and teacher Rutter questionnaires, but again this difference was not significant (Table II).

Comparisons between the groups were made on a number of indices which might have been affected by treatment or related to outcome.

School and psychological testing

Many of the children had problems attending kindergarten, but there were no differences between the groups in this. It could be that day centre children settled somewhat better at infant school because of the help the parents had been given in finding a suitable placement (Table II).

By the time the children were eight years of age there were no differences in the numbers who were receiving extra educational help in school. However, more of the day centre cases were at special schools: three attended facilities for autistic children, three were in schools for the retarded and two in schools for the delicate. This compared with only one child attending an ESN school in the original control group, and two at special schools in the sex and language-matched group. This increased attendance at special schools could reflect the greater needs of these children, the demand for service made by middle-class parents, or the help given by the day centre in finding suitable placements.

On assessment of educational and psychological measures, three day centre cases were untestable, as was one original control child, and four children from the sex and language-matched control group. In those children who could be tested there were no significant differences in scores between the groups. However, reading backwardness was more common in the day centre cases, and specific reading retardation was significantly higher in this group (Table III).

Changes in family indices

There were no significant differences between the groups in the mother's mental state or in the marriage ratings at either assessment (Table IV and V). A considerable number of mothers continued to be depressed at the second assessment (when the children were eight years of age), but most of the depressions were now mild. Improvement in maternal depression was significant in the day centre cases and original control group, but not in the sex and language-matched group, possibly because the rates of maternal

TABLE I

Mean BSQ scores and clinical ratings of cases and controls at three and eight years of age

	Day centre cases n = 22	Original controls n = 22	Sex and language-matched controls n = 22
Mean BSQ scores	13.8	13.8	13.8
Clinical rating at 3 years			
Mild	36.4 (8)	36.4 (8)	31.8 (7)
Moderate	13.6 (3)	54.5 (12)	40.9 (9)
Severe	50.0 (11)	9.1 (2)	27.3 (6)
Clinical rating at 8 years			
None or dubious	18.2 (4)	27.2 (6)	18.1 (4)
Mild	22.7 (5)	40.9 (9)	40.9 (9)
Moderate	40.9 (9)	31.8 (7)	36.4 (8)
Severe	18.2 (4) *	– **	4.5 (1) **

* P <.05; ** P <.01. Significance levels of Wilcoxon matched pairs signed ranks test comparisons between clinical ratings at three and eight years of age (all significant differences are improvements).

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TABLE II

Comparison of Rutter questionnaire scores and school difficulties between case and controls at eight years of age

	Day centre cases (%)	Original controls (%)	Sex and language-matched controls (%)
Severe problems over attending kindergarten	n = 20 6 (30)	n = 22 3 (14)	n = 22 7 (32)
Severe problems over attending infant school	n = 22 2 (9)	n = 22 4 (18)	n = 22 7 (32)
Receiving extra help in school	n = 22 10 (45)	n = 22 7 (32)	n = 22 8 (36)
Attending special school	8	1	2
Deviant on teacher Rutter questionnaire	n = 20 10 (50)	n = 18 6 (33)	n = 22 8 (36)
Deviant on parent Rutter questionnaire	n = 18 12 (67)	n = 21 12 (57)	n = 21 12 (57)

No significant difference.

TABLE III

Comparison between day centre cases and controls at eight years of age on educational and psychological measures

	Day centre cases n = 19 (%)		Original controls n = 21 (%)		Sex and language-matched controls n = 18 (%)	
	Mean	SD	Mean	SD	Mean	SD
Psychological tests						
Mean WISC Verbal IQ	114	22.1	109	23.3	110	21.5
Mean WISC performance IQ	111	16.1	114	17.0	109	21.4
Mean WISC Full Scale IQ	111	13.8	110	14.7	108	15.8
Reading backward:						
RA 12 months below CA	9 (47)		4 (19)		5 (28)	
Specific reading retardation:						
RA 12 months below IQ predicted RA	13 (68)		6 (29)		4 (22)	

$P < .05$ comparing day centre cases with each control group.

TABLE IV

Comparison of mother's mental state in day centre cases and controls at three and eight years of age in percentages

	Day centre cases n = 22	Original controls n = 22	Sex and language-matched controls n = 22	
Mothers' mental state				
Problem at 3 years of age	76	77	54	NS
Problem at 8 years of age	59*	52*	41	NS

* $P < .05$—significance level of Wilcox on matched pairs signed ranks test comparisons between ratings at 3 and 8 years of age.

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TABLE V

Proportion of poor marriages in day centre cases and controls at 3 and 8 years of age in percentages

	Day centre cases n = 16	Original controls n = 20	Sex and language-matched controls n = 21
Marriage rated as poor:			
At 3 years	59	43	55
At 8 years	50	55	38
Single parent:			
At 3 years	5	1	–
At 8 years	6	2	1

No significant changes between ratings at 3 and 8 years using the Wilcoxon matched pairs signed ranks test.

depression were lower to begin with. The day centre cases had more broken marriages initially when the children were three-years-old but, in those still married, marital discord was equally common in all groups. There was no significant tendency in any of the groups for the marriages to improve.

There was a social class bias in attenders at the day centre, in that more of them came from non-manual families, and this difference nearly reached significance at eight years of age ($P < .06$), with 56 per cent of the cases coming from non-manual families, compared with 20 per cent of the original controls and 23 per cent of the sex and language-matched controls.

Attitude to the day centre

The mothers were asked at the follow-up interview whether the child's attendance at the day centre had been helpful. At least one of the three who refused contact had a negative attitude to the day centre. Of the remaining 22 mothers, 17 (77 per cent) reported that they themselves had definitely been helped by attendance, largely through discussion with social workers and sharing their problems with other parents. They thought that attendance had been useful for the child in ten cases, and seven had been helped with school placement. In only three cases was attendance considered helpful for the family as a whole. Many mothers had felt that they had come to the day centre for help with the child's problem and had been extremely reluctant to focus on marital and family difficulties. It is obviously a complex issue as to how family relationships were affected by attendance, whether the number of marital separations was affected and how these separations subsequently influenced the child.

Discussion

A common criticism of evaluation studies of treatment is that the follow-up period is too short. Variations in outcome may occur immediately after the end of different treatments, but it can be justifiably argued that if differential gains are not maintained for a reasonable period, their value is diminished. It is also possible that a treatment which appears to have no short-term advantage may in the long run produce a better outcome. One could of course question the value of a long follow-up period when dealing with a young age group. It would be unrealistic to expect that treatment will necessarily have a long-term effect on family functioning or a child's coping skills. Many influences and stresses occur over the years which may be more crucial to the child's current functioning than a period of treatment occurring years previously.

Our findings show that there were no significant differences in long-term outcome between the day centre cases and the two control groups. There could be a number of reasons for this including lack of comparability between the groups, inefficacious treatment, or the fact that both the cases and controls were particularly handicapped children unlikely to improve markedly whatever help they received.

It remains open to question whether the treatment and control groups were truly comparable. We have already mentioned the problems inherent in trying to generate a matched control group from a community sample whose parents had not sought treatment, rather than randomly assigning clinic attenders to treatment and control groups. Our clinic parents could have been more anxious or stressed than control parents. On the other hand they might have been more adaptable and motivated to change to help their children.

We attempted to match treatment and control groups on the most clinically relevant variables. The first control group differed in some important parameters and although the second sex and language-matched control group was apparently more

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satisfactory, their families might have been less disturbed. We did obtain detailed information about family relationships during the interview but differences in severity could have been obscured because of a ceiling effect in the measures or because relatively crude indicators of family functioning were used.

We did not measure family interactions by direct observation and cannot say whether there were marked differences in the communication patterns of affective relationships in the families of the cases compared with the controls or whether these changed after treatment.

Even if the families were comparable there could have been important differences amongst the children themselves. The day centre attenders for instance might have been more vulnerable because of temperamental or constitutional factors. It is possible that they were overall biologically more at risk since three were diagnosed as autistic and three as retarded, compared with two retarded and one autistic child in the sex and language-matched group and only one retarded child in the original control group. The day centre cases had higher rates of specific reading retardation at eight years of age and this could be a reflection of increased constitutional or biological handicaps. When the retarded and autistic children were excluded the cases were still more likely to have reading retardation but verbal performance and full scale IQ's were not significantly different between the groups, nor was there a significant verbal performance discrepancy. However, these last measures are relatively crude measures of functioning.

Without intensive treatment would the day centre cases have done as well as the controls? Assuming that the children or their families were more handicapped they could have fared worse had they not attended the day centre, and the children might have been less settled in school.

The supportive and containing role of the day centre is seen as one of its most important functions and this was acknowledged by the majority of mothers. It would be of interest to examine in detail which aspects of the day centre setting were helpful and whether less intensive or expensive facilities would be seen as equally helpful. The children and their families received a complex treatment 'package' whose elements were not clearly specified. In future research it would be pertinent to examine the short-term effectiveness of specific treatments for specific target behaviours or interactions rather than using broad measures of treatment and outcome. It would also be important to use within group comparisons to examine, in more depth, characteristics of both children and families which might affect responsiveness to treatment.

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