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The Nithsdale Schizophrenia Surveys
XIII. Parental Rearing Patterns, Current Symptomatology and Relatives' Expressed Emotion

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Background. A population of adult schizophrenic patients was assessed to discover how the patients viewed their childhood, whether their view differed from non-schizophrenic adults, and to determine any association between parental rearing practices as perceived by the patient, childhood personality as perceived by the mother, and current symptoms. Type and level of expressed emotion shown by parents towards patients was also examined.
Method. Parental attitudes, as perceived by 50 schizophrenic patients, were assessed by the EMBU scale. Patients' premorbid personality and social adjustment were assessed through interviews with patients' mothers by the Scale for the Assessment of Premorbid Schizoid and Schizotypal Traits and the Premorbid Social Adjustment Scale. Current symptoms were assessed by the Positive and Negative Syndrome Scale and Subjective Deficit Syndrome Scale.
Results. Patients saw little difference between fathers' and mothers' attitudes. There was a positive correlation between parental rejection and overprotection, and a negative correlation between rejection and warmth. There were no significant correlations between parental rearing attitudes and patients' childhood personality; there was a significant correlation between parental attitudes and current symptoms. Rejection and overprotection were associated with more severe, warmth with less severe symptoms, especially so for positive schizophrenic symptoms and general psychopathology. Although there was no association between the general level of expressed emotion shown by the parent towards the adult patient, and patients' perceived parental rearing attitudes, parents with high expressed emotion on the basis of hostility had higher rejection scores on the parental rearing attitudes scale.
Conclusions. Schizophrenic patients saw their parents as showing much less warmth, and the severity of current symptoms was associated with perceived parental rearing attitudes. The hostility component of high expressed emotion may be a parental trait which exists before the illness begins.

The preceding paper (McCreadie *et al*, 1994) found in schizophrenic patients living in Nithsdale, southwest Scotland, that there was a strong association between abnormalities of premorbid personality, early age of onset of illness and severity of negative symptoms. Premorbid personality was assessed by interviews with patients' mothers. However, how did the patients themselves view their childhood? Is their view different from that of non-schizophrenic adults? Also, is there an association between parental rearing practices as perceived by the patient, and childhood personality as perceived by the patient's mother? Is there an association between parental rearing behaviour and current symptoms? The present study aims to answer these questions.

Another recent study of Nithsdale schizophrenic patients and their relatives (McCreadie *et al*, 1993) found that over a five year period the level of expressed emotion (EE) shown towards patients remained stable in the majority of relatives. As the patients had been ill for a mean of 15 years at the time of first examination, it was not possible to determine whether the fixed set of attitudes of relatives towards patients had been present before the illness began, or whether they had become so only during the course of the illness. The present study, therefore, also examined the relationship between the type and level of EE shown by parents towards adult schizophrenic patients, and their attitudes towards the same patients when they were children, as perceived by the patients themselves.

Method

The identification of patients has been described in detail elsewhere (McCreadie *et al*, 1994). Briefly, a census was carried out on 1 October 1991 of all known schizophrenic patients living in Nithsdale in south-west Scotland: in-patients, day-patients, out-patients, patients managed by community psychiatric nurses, and patients known only to their family doctor. Of the 174 identified, 55 had living mothers: it was these on whom the present study focused. All had

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Table 1
Mean (s.d.) scores on scales of parental rearing attitudes

Scale	Nithsdale parents						German parents[1]		Parents in cross-national study of normal subjects[2]	
	Fathers			Mothers			Fathers	Mothers	Fathers	Mothers
	Towards sons ($n=31$)	Towards daughters ($n=19$)	Towards all ($n=50$)	Towards sons ($n=33$)	Towards daughters ($n=19$)	Towards all ($n=52$)	($n=51$)	($n=51$)	($n=1185$ sets of parents)	
Rejection										
mean	33.7	37.4	35.1	33.3	38.3	35.1	40.9	42.2	34.4–38.4	34.7–38.7
s.d.	9.0	11.5	10.1	8.2	10.1	9.2	11.3	10.6		
Warmth										
mean	41.6	41.1	41.4	44.9	41.5	43.6	38.1	40.7	45.7–54.0	48.8–52.3
s.d.	11.7	11.8	11.6	11.4	11.6	11.5	7.9	7.7		
Overprotection										
mean	29.4	31.5	30.2	31.6	31.2	31.4	28.6	32.5	31.0–38.3	30.0–35.7
sd.	8.0	8.0	8.0	9.2	6.8	8.3	6.9	7.5		

1. Taken from Khalil & Stark (1992).
2. Taken from Perris *et al* (1985). Normal subjects interviewed in Australia, Denmark, Italy, the Netherlands and Sweden. The results in the table indicate the range of mean scores across countries.

an ICD–9 diagnosis of schizophrenia (World Health Organization, 1978).

Patients were interviewed by a psychiatrist (RWBA) and asked to complete the EMBU (Egna Minnen av Barndoms-Uppfostran; Perris *et al*, 1980, 1985; Arrindell *et al*, 1983, 1986). This is an 81-item self-report questionnaire in which patients describe the rearing behaviour of their parents. It contains four scales which assess rejection, emotional warmth, overprotection and favouring subject. Fathers and mothers are rated separately.

The patients had two further interviews: their mental state was assessed objectively by one psychiatrist (DJW) using the Positive and Negative Syndrome Scale (Kay *et al*, 1987); another psychiatrist (DTS) administered a self-report scale, the Social Deficit Syndrome Scale (Jaeger *et al*, 1990), in which patients made their own assessment of their mental state. Information was obtained, through interviews with mothers by another psychiatrist (MAC), about the patients' premorbid personality, as assessed by the Scale for Assessment of Premorbid Schizoid and Schizotypal Traits (PSST; Foerster *et al*, 1991), and social adjustment as assessed by the Premorbid Social Adjustment Scale (PSA; Foerster *et al*, 1991).

Finally, 22 patients at the time of the census were still living with one or both parents; 18 were living with their mother. Where the level of expressed emotion of the parent towards the patient had not already been assessed in the 18 patients still living with their mother (see McCreadie *et al*, 1993), the parents were interviewed at home by a psychiatrist (DJW) trained in the use of the Camberwell Family Interview. Interviews were taped and an assessment made from the recordings. Parents were rated as showing high EE if they made six or more critical comments, showed any degree of hostility, or scored three or more on emotional over-involvement (Leff *et al*, 1982).

Results

Of the 55 patients who had living mothers, 50 completed the EMBU; three refused and two could not cooperate. Thirty-two (64%) patients were male, 18 (36%) were female; their mean age was 37.8 years (s.d. 10.5), mean length of illness 13.9 years (s.d. 10.1).

Table 1 shows the mean scores of fathers and mothers on the three scales: rejection, warmth and overprotection. The fourth scale, favouring subject, has been omitted as it is not of cross-national generalisability (Arrindell *et al*, 1986). For the sake of comparison, scores are also given for the parents of schizophrenic in- and out-patients living in rural Germany (Khalil & Stark, 1992), and for the parents of normal subjects in five different countries (Perris *et al*, 1985). There were no statistically significant differences between fathers and mothers of Nithsdale schizophrenic patients in mean scores on any of the three scales. The fathers and mothers of German schizophrenic patients were more rejecting than Nithsdale parents (fathers: $t=2.72$, $P<0.08$; mothers: $t=3.63$, $P<0.0005$); there were no differences in warmth and overprotection scores.

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Table 2
Correlations among scores on EMBU scales (Pearson's *r*)

	Fathers towards			Mothers towards		
	Sons	Daughters	All	Sons	Daughters	All
Rejection v. overprotection	+0.50†	+0.60†	+0.53§	+0.64§	+0.53**	+0.56§
Rejection v. emotional warmth	−0.52‡	−0.50*	−0.50‡	−0.48†	−0.67†	−0.56§
Emotional warmth v. overprotection	+0.04	−0.03	0.00	−0.08	+0.04	−0.04

*$P<0.05$; **$P<0.02$; †$P<0.01$; ‡$P<0.001$; §$P<0.0001$.

When compared with the parents of normal subjects, Nithsdale parents were not seen as more rejecting or over-protective. However, mean scores for warmth for both Nithsdale fathers (41.4) and mothers (43.6) were considerably lower than for parents of normal subjects (fathers 45.7–54.0, mothers 48.8–52.3).

There was a high correlation between Nithsdale fathers' and mothers' scores; Pearson's *r* was +0.80 for rejection, +0.72 for warmth, and +0.76 for overprotection (all $P<0.0001$). Table 2 shows the correlations among the three scales. There were statistically significant positive correlations between rejection and overprotection, negative correlations between rejection and emotional warmth, and no significant correlations between emotional warmth and overprotection.

There were no statistically significant correlations between scores on the three subscales and the measurements of premorbid personality and social adjustment, namely the PSA and PSST. However, the correlations between emotional warmth and premorbid personality and social adjustment measurements, although weak, were all in a negative direction (range of *r*: −0.10 to −0.26).

Table 3 shows the correlations between the three EMBU scales and PANSS measurements of current

Table 3
Correlations between scores on EMBU scales and PANSS scales (Pearson's *r*)

EMBU scales	*n*	PANSS scales		
		Positive symptoms	Negative symptoms	General psychopathology
Rejection				
Fathers towards:				
all	48	+0.40†	+0.23	+0.45‡
sons	30	+0.41*	+0.28	+0.46†
daughters	18	+0.37	+0.06	+0.39
Mothers towards:				
all	50	+0.39†	+0.29*	+0.42†
sons	32	+0.43†	+0.34*	+0.52†
daughters	18	+0.34	+0.17	+0.32
Warmth				
Fathers towards:				
all	48	−0.19	−0.35**	−0.36**
sons	30	−0.12	−0.22	−0.17
daughters	18	−0.30	−0.45	−0.65†
Mothers towards:				
all	50	−0.14	−0.29*	−0.28*
sons	32	−0.13	−0.30	−0.25
daughters	18	−0.20	−0.22	−0.38
Overprotection				
Fathers towards:				
all	48	+0.33**	0	+0.34**
sons	30	+0.45**	+0.10	+0.48†
daughters	18	+0.21	−0.10	+0.16
Mothers towards:				
all	50	+0.26	0	+0.23
sons	32	+0.29	+0.11	+0.27
daughters	18	+0.17	0	+0.22

*$P<0.05$; **$P<0.02$; †$P<0.01$; ‡$P<0.001$.

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mental state, namely positive schizophrenic symptoms, negative schizophrenic symptoms, and general psychopathology. It can be seen there are positive correlations between rejection and PANSS scores, and that correlations are higher for positive symptoms and general psychopathology than for negative symptoms. The correlations between warmth and PANSS scores are negative, and are higher for negative symptoms and general psychopathology than for positive symptoms. Overprotection scores correlate positively with positive symptoms and general psychopathology; there is no correlation with negative symptoms. Scores of the Subjective Deficit Syndrome Scale also correlated positively with rejection (r ranged from $+0.34$ to $+0.56$, P from NS to <0.001), and overprotection (r from $+0.17$ to $+0.47$, P from NS to <0.005) and negatively with warmth (r from -0.07 to -0.27, P all NS).

Parents of two of the 18 patients still living with their mothers refused assessment of EE, but ratings were available for eight fathers and 16 mothers. Where a parent had been assessed on more than one occasion, those showing fluctuating EE ($n=3$) were grouped with high EE parents, as they are more closely associated with high than with low EE relatives in predicting relapse (McCreadie *et al*, 1993). There were no statistically significant differences between high and low EE parents in scores of any of the three EMBU scales. However, when the subscales which contribute to EE were examined separately, namely critical comments, hostility, emotional overinvolvement and warmth, it was found that high EE parents, as measured by the hostility subscale ($n=4$), had significantly higher scores on the EMBU rejection scale than low EE parents ($n=20$) (mean 43 v. 29; $t=2.96$, $P<0.01$).

There were no statistically significant differences in PANSS scores between patients living in high and low EE households.

There were no statistically significant correlations between parental scores on the EMBU scales and patients' age, length of illness, or age of onset of illness. Finally, the patient's position in the birth order did not affect EMBU scores.

Discussion

Adult schizophrenic patients in Nithsdale, looking back on their childhood, saw little difference between their father's and mother's attitudes. Although the mean scores for warmth and overprotection were slightly higher in mothers, this difference was not statistically significant. The same trend (mothers warmer and more protective) was seen in three of the five national groups of normal subjects (Perris *et al*, 1985), and in the parents of German schizophrenic patients (Khalil & Stark, 1992); in the latter case statistically significant differences between parents' attitudes were achieved because of the small within-group variance.

The positive correlations between rejection and overprotection, and negative correlations between rejection and warmth, were also found in the parents of German schizophrenic patients and of normal subjects. It has been suggested (Arrindell *et al*, 1986) that emotional warmth and rejection are opposite sides of the same coin, namely the higher order dimension of care. The positive correlation between rejection and overprotection suggests they are not two independent dimensions; a similar association was found with another assessment of parental characteristics, namely the Parental Bonding Instrument (PBI; Parker *et al*, 1979).

The principal difference between the parents of Nithsdale and German schizophrenic patients on the one hand, and parents of normal subjects on the other, was in warmth; schizophrenic patients saw their parents as showing much less warmth. A similar finding was reported when parents of schizophrenic patients were compared with parents of normal subjects, using the PBI (Parker *et al*, 1982); patients scored both parents as less caring than did the normal control subjects. Also, although we found no statistically significant association between parental rearing attitudes as perceived by the patients and premorbid personality and social adjustment as assessed by the patients' mothers, there was a small but consistent trend that patients who were rated by their mothers as showing more evidence of schizoid or schizotypal traits or poor social adjustment saw their parents as showing them less warmth. It is impossible to say retrospectively whether lack of warmth shown by parents increases schizotypal traits and poor social adjustment, or whether schizotypal traits and poor social adjustment in a child diminishes a parent's warmth towards that child.

We also found an association between severity of current symptoms, assessed both subjectively and objectively, and perceived parental rearing attitudes. The more rejected and/or overprotected the patient felt as a child, the worse were current symptoms; the more warmth shown to the patient as a child, the less severe were current symptoms. There are at least four possible explanations for this association. Firstly, the patients' current mental state might have influenced their assessment of how they were treated as a child. Perceived attitudes may not be

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actual parental characteristics. Patients who are currently suspicious and hostile may be more likely to recall their childhood as one where they experienced rejection; similarly, patients currently with marked negative symptoms such as blunting of affect and social and emotional withdrawal may be more likely to view their childhood as lacking in warmth. Although such a possibility cannot be discounted, we find it unconvincing.

A second possibility is that parental rearing behaviour has affected the severity of the schizophrenic illness. It is difficult to see how a causal effect may be produced, unless parental rearing attitudes are similar in both the patient's childhood and adult life. A previous study examined perceived maternal characteristics towards the schizophrenic patient as a child, and as an adult, using the same instrument, namely the PBI (Baker *et al*, 1984). Patients who relapsed and were readmitted to hospital tended to rate their mothers similarly over time; non-relapsers and non-readmitted patients tended to rate their mothers more positively over time on care and overprotection scales.

A third possibility is that those patients who are more severely ill in adulthood are more unusual in childhood and thus more liable to experience rejection or overprotection. This seems plausible; however, the measure of 'unusualness' in the present study, namely schizoid and schizotypal traits and poor social adjustment, was not associated with rejection or overprotection and only weakly associated with warmth. In this context it is noteworthy that in a prospective study of the childhood antecedents of schizophrenia (Crow *et al*, 1992), patients with narrowly defined schizophrenia, when compared with controls, showed greater hostility, 'inconsequential behaviours', restlessness, speech and reading difficulties and continence problems. Few of these behaviours were assessed by the PSA or PSST.

A fourth possibility is that genetic factors within the parents which make them more rejecting and overprotective are the same genetic factors within the schizophrenic patient which increase the severity of the illness.

We found no association between parental rearing attitudes and age of onset of illness, a finding similar to that reported by Warner & Atkinson (1988); two other studies have found such an association (Parker *et al*, 1982; Khalil & Stark, 1992).

We found no relationship between the general level of EE shown by parents towards adult schizophrenic patients and the patients' perceived parental rearing attitudes. However, although numbers were small, parents assessed as hostile towards adult patients had a much higher score on the rejection scale. Perhaps therefore hostility, one of the three determinants of high EE, is a parental trait which exists before the illness begins. Overinvolvement and critical comments, which did not correlate with parental rearing attitudes, may develop later in association with the patient's illness.

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