

Expressed Emotion and Schizophrenia in Italy A Study of an Urban Population

P. BERTRANDO, J. BELTZ, C. BRESSI, M. CLERICI, T. FARMA, G. INVERNIZZI and C. L. CAZZULLO

Forty-two schizophrenic patients and their close relatives took part in an Italian replication study of expressed emotion (EE). The patients were selected from the psychiatric ward of a general hospital in Milan and were subsequently followed up for nine months. All patients attended a community service clinic as out-patients, and all but one were prescribed neuroleptics for the duration of the study. Relatives were assigned to the high-EE group if they scored 4 or 5 on the emotional overinvolvement (EOI) scale, or showed hostility, or made six or more critical comments. On this basis, 18 (42%) families were rated as low EE and 24 (57%) as high EE. At follow-up, the admission rate for the 9-month period was significantly higher for the high-EE group ($P < 0.05$). Furthermore, significantly fewer patients were readmitted from families showing high warmth ($P < 0.05$). The presence of high warmth appeared to be associated with a lower admission rate, even in high-EE families.

The expressed emotion (EE) index assesses the emotional 'climate' of families with mentally ill members (Brown *et al*, 1958, 1962). Patients living with relatives rated as 'high-EE' have a greater likelihood of relapse, especially when they are not receiving regular drug treatment (Vaughn & Leff, 1976a).

In order to determine families' EE status, each relative living with the patient is administered a semi-structured interview, the Camberwell Family Interview (CFI), generally during the hospital admission of the patient (Brown & Rutter, 1966; Rutter & Brown, 1966). Ratings are made on five scales: emotional overinvolvement (EOI), criticism (CC), hostility (H), warmth (W), and positive remarks (PR), but only scores on the first three scales are used to assign families to either the high- or low-EE group. Thus, a family is described as 'high-EE' when at least one family member obtains a high score on EOI, criticism, hostility, or any combination of the three.

A series of studies have demonstrated that family EE predicts patients' symptomatic relapse, both in Anglo-American settings (Brown *et al*, 1972; Vaughn & Leff, 1976a; Vaughn *et al*, 1984; Moline *et al*, 1985) and a variety of other cultural settings (Karno *et al*, 1987; Wig *et al*, 1987). Leff (1989) has suggested that high values of warmth may have an opposite effect to that of high EE, enhancing patients' psychosocial adjustment. However, very little is known about the role played by warmth and positive remarks in family life and patient outcome.

Some of the EE studies did not stress any statistically significant family EE-related differences in relapse, namely the London study of MacMillan *et al* (1986), the Nithsdale study (McCreadie & Phillips,

1988) in Scotland, the Australian study by Parker *et al* (1988), and the Hamburg study by Koettgen *et al* (1984). Moreover, the Geneva research study by Barrelet & Ferrero (1990) produced controversial results.

MacMillan *et al* (1986) have argued that neuroleptic drug treatment and the length of the untreated illness are more precise predictors of relapse than are EE scores, at least among first-onset patients. However, Mintz *et al* (1986) have disputed these conclusions after reanalysing MacMillan's data.

A series of studies on affective style (AS) – a direct measure of patient–family interaction – has demonstrated a link between relatives' attitudes (EE) and behaviour (AS), and has shown that EE can be understood as part of relatives' communication style, which can be observed in interaction with patient styles (Doane *et al*, 1981; Strachan *et al*, 1986, 1989; Miklowitz *et al*, 1989). Several intervention programmes for families have been developed in the light of these research findings (Leff *et al*, 1982, 1989; Falloon *et al*, 1984; Anderson *et al*, 1985; Strachan, 1986).

Since the psychiatric reform of 1978, the Italian psychiatric services have been organised along community lines. They provide out-patient treatment for chronic psychiatric disorders, including schizophrenia, and exclude the possibility of admission to a psychiatric hospital (Mangen, 1989; Ongaro Basaglia, 1989). As a result, the majority of schizophrenic patients, especially the younger ones, are cared for at home, adding a family dimension to the general social problems of mental illness (Giannichedda, 1989). Moreover, Italian culture tolerates and encourages the expression of emotions;

we deemed it interesting, therefore, to attempt to replicate the EE findings in an Italian setting, and to examine, in particular, whether adaptive or protective family emotional factors could also be operating in Italian families.

Method

From the Milan metropolitan area 42 patients were recruited into the study during their hospital stay in the psychiatric ward of a general hospital. To enter the study, patients were required to:

- (a) have received a diagnosis of schizophrenia or schizophreniform disorder (DSM-III-R; American Psychiatric Association, 1987), based on information gathered at admission
- (b) have lived with a member of the same family (family of origin or spouse) in the 6 months before admission
- (c) have more than 35 hours per week contact with at least one relative
- (d) be aged over 16.

Patients were excluded from the study if they showed evidence of central nervous system organic disorder (e.g. epilepsy, traumatic brain injury), evidence of or mental retardation (pre-morbid IQ < 70, DSM-III-R criteria), or if they were participating in any form of family treatment or a day-hospital programme. Patients in individual psychotherapy were not excluded.

The first 48 subjects meeting these criteria were initially selected for the study. Six subjects were subsequently dropped: one subject remained in hospital for the duration of the study, one subject took part in a family therapy programme and four subjects dropped out.

The final sample comprised 42 patients, of whom 32 were male (76%) and 10 female (24%). The mean age was 29.7 years (s.d. 10.5, range 17–56), and the mean duration of education was 14 years (s.d. 4.5, range 5–22). A diagnosis of schizophrenia was made for 39 (93%) patients (disorganised type ($n = 26$), paranoid type ($n = 5$), undifferentiated type ($n = 6$), residual type ($n = 2$)), and three (7%) an initial diagnosis of schizophreniform disorder. These last-named patients were, however, subsequently re-diagnosed as schizophrenic (paranoid type ($n = 2$), disorganised type ($n = 1$)). A total of 38 patients (90.6%) were still living in their original household, while a further two (4.7%) lived with their spouses and two (4.7%) with other relatives. Since this was a field study, we could not randomly assign patients to placebo and neuroleptic medication groups. However, we were able to supervise the medication administered by community service psychiatrists, who collaborated with us in this way for the purposes of the research study.

Assessment of clinical, social, and treatment factors

The clinical and social characteristics of our sample were assessed by means of a standardised questionnaire, which was administered by one of our researchers and completed with the help of information supplied by patients, relatives, and the clinician in charge of the case. We considered a

range of patient, family, and treatment variables, which included the following.

Patient factors. A number of variables were investigated, including level of education, residence and marital status, employment status, and friendships and intimate relationships.

Clinical history and assessment. We looked at three onset variables: age of first onset of symptoms, age of first contact with a psychiatrist, and age of first hospital admission. The age of first onset of symptoms was assessed on the basis of the key relatives' (mostly parental) report, while information from a variety of sources was used to determine the other dates. All admissions prior to the index-study admission were noted, and families were questioned about suicide attempts or other stressful events occurring in the year before the onset of the illness.

The patients' symptom status was assessed at the time of inclusion into the study by Andreasen's Scales for the Assessment of Positive and Negative Symptoms (SAPS and SANS) (Andreasen, 1981a,b). A retrospective assessment of symptoms at onset was also made with the help of the same scale.

Treatment interventions. The treatment variables investigated included the type and dosage of all neuroleptic medication administered to the patients during the period of the study, the number of lapses during the drug treatment, compliance, and possible associations with other drugs and other treatments. When monitoring concurrent (non-drug) treatments, we paid particular attention to the psychotherapy and to any rehabilitation intervention that could have some influence upon family EE.

Assessment of family EE

Every relative living with a patient who agreed to take part in the study was offered the CFI (Vaughn & Leff, 1976b) at the patient's index hospital admission. The CFI is a semi-structured interview that focuses on the patient's symptoms and behaviour, their impact on family life, and the respondent's reaction to such events. Every interview was tape-recorded for later scoring by two independent raters. Both raters, who had been trained by Dr C. E. Vaughn, achieved full reliability on all the scales during training. Before the beginning of the study, the CFI was translated into Italian, and then administered to a pilot sample of relatives. The Italian version of the CFI was then re-examined by an English-speaking rater with perfect knowledge of Italian (Dr Kath Porceddu), who also cross-valued the pilot interviews.

The ratings of EOI, criticism and hostility were used to assign each family to the high- or the low-EE group. A relative was categorised as high EE if he or she made six or more critical comments, or scored 3 or more on EOI, or expressed hostility (Leff & Vaughn, 1985). Families with no member exceeding these cut-off values were assigned to the low-EE group.

This study also aimed to determine whether a clinically significant level of warmth could protect the patient against relapse. We therefore established a cut-off value to distinguish between families showing 'high' and 'low' levels of warmth. When at least one family member scored

4 or 5 on the warmth scale, the family was defined as high on warmth.

Relapse

The measure of outcome used in this study was the number of times a patient was readmitted to hospital in the 9-month period after discharge.

The Italian National Health Service has implemented a standardised policy with regard to the hospital admission of patients suffering from schizophrenia. Generally speaking, schizophrenic patients are admitted (typically for a period of 1 week) only if they are overtly symptomatic and show typical positive symptoms. Only patients in urgent need of care are admitted; even heavily overburdened relatives have no recourse to a hospital bed unless the patient clearly demonstrates an exacerbation of symptoms.

Once a patient was admitted to hospital, one of the researchers contacted the Health Service psychiatrist in order to check details of the patient's clinical condition, to make sure that a full clinical relapse had actually occurred. Bimonthly telephone calls were made to all families who took part in the study in order to check patients' progress. Information provided by families was then compared with records of patient contacts with the psychiatric services in the National Health Service case register. In this way we were able to be reasonably sure that out-patients had not relapsed during the study period. Nevertheless, the characteristics of our follow-up procedure are likely to result in a fairly conservative measure of relapse.

Results

The 42 families were initially assigned to EE groups on the basis of the cut-off values used in the more recent EE studies (Leff & Vaughn, 1985); that is, six or more critical comments, a score of 3 or more on EOI, and a positive rating for hostility. Accordingly, 32 families (76.2%) were rated as high EE and 10 (23.8%) as low EE.

At first we detected the rate of subjects who had experienced at least one hospital admission during the follow-up period, by means of the cut-off values mentioned above. The EE obtained did not show any correlation with a higher hospital admission rate ($\chi^2 = 1.709$, NS). We then raised the EOI cut-off from 3 to 4. This EOI cut-off, higher than the one currently used in EE research in Anglo-American households, was adopted after discussing the emotional characteristics of the relatives' interviews with expert clinicians. Interestingly enough, this was the original value used in the first EE studies (Vaughn & Leff, 1976a, Vaughn *et al.*, 1984). The cut-off value was reduced from 4 to 3 during the first intervention studies (Leff *et al.*, 1982), since it reflected the variations of family EE after treatment better, and this value was then retained for following studies (Leff, 1989).

As a result, outcomes ($\chi^2 = 4.10$, $P < 0.05$) now show an admission rate significantly higher among high-EE subjects ($P < 0.05$). We then calculated the average number of admissions for each group. This result is also significant:

1.04 readmissions (s.d. = 0.24) for high-EE subjects, v. 0.31 readmissions (s.d. = 0.15) for low-EE subjects (Student's *t* test = 2.60, $P < 0.05$).

The CFI was administered to 61 out of the 125 relatives living with patients. Most of the relatives who were not interviewed were brothers or sisters. If patients lived with their parents, we tried to interview both parents. However, this was not possible in 11 families and only one parent was interviewed.

As already reported, the use of generally accepted cut-off values and a high EOI value of 3 enabled us to assign 32 families to the high-EE group and 10 to the low-EE one. As for the 61 relatives assessed, 39 (63.9%) were rated as high EE and 22 (36.1%) as low EE. Among high-EE relatives, 14 (35.9%) showed high criticism, 16 (41.0%) high EOI, and 8 (20.5%) high levels of both. Thirteen relatives were rated as hostile, and, for 12 of these relatives, hostility was associated with a high level of criticism. As a result, only one relative (2.6%) was assigned to the high-EE group because of hostility.

The use of the modified EOI cut-off value categorised 24 (57.1%) families as high EE and 18 (42.9%) as low EE. Of the 61 individual relatives interviewed, 32 (52.5%) scored high in EE and 29 (47.5%) low in EE. Among high-EE relatives, 17 (53.1%) showed high levels of criticism, 9 (31.2%) were rated as high on EOI, and 5 (15.7%) scored high values of both. The levels of hostility and its relationship with criticism remained unchanged.

In 11 families, only one of the parents living with the patient agreed to be interviewed. Since five of the 11 parents who were interviewed in these families were assessed as low EE, there was a possibility of underestimating family EE, as limited to these five cases. However, all parents who did not agree to be interviewed had a face-to-face contact with the patients lower than 35 hours per week.

Families were divided according to their level of warmth; 10 families (23.8%) were rated as high and 32 (76.2%) low on warmth. We carried out a replication of the analysis performed on high- and low-EE groups. Subjects living in high-warmth households recorded significantly fewer admissions than subjects living in low-warmth household: one subject admitted versus 17 ($\chi^2 = 4.15$, $P < 0.05$).

Low warmth seemed not to distinguish the average number of admissions, although this could have been due to the disparity of subgroups (32 cases v. 10).

We then divided patients into four subgroups and cross-tabulated EE and warmth assessments; subjects were classified as follows: low EE/low warmth ($n = 13$), low EE/high warmth ($n = 5$), high EE/low warmth ($n = 19$), and high EE/high warmth ($n = 5$). No significant association was detected between the two variables ($\chi^2 = 0.025$, $P = 0.875$, NS).

We then evaluated the hospital readmission rates for each of these subgroups. The numbers are very small but the results are indicative: low EE/low warmth, three patients admitted; low EE/high warmth, one admitted; high EE/low warmth, 14 admitted; and high EE/high warmth, none admitted. Strikingly, the high-EE/low-warmth group had the highest readmission rate. In contrast, no patients were readmitted from the high-EE/high-warmth group.

Table 1
Degree of relationship, EE levels, and warmth levels in relatives of schizophrenics

	Total <i>n</i>	Low warmth (1-3) <i>n</i>	High warmth (4-5) <i>n</i>
<i>Mothers</i>			
High EE	21	18	3
EOI	8	5	3
CR/H	8	8	0
H	1	1	0
EOI+CR	4	4	0
Low EE	13	9	4
Total	34	27	7
<i>Fathers</i>			
High EE	8	6	2
EOI	1	0	1
CR/H	6	6	0
EOI+CR	1	0	1
Low EE	8	8	0
Total	16	14	2
<i>Others</i>			
High EE			
CR	2	2	0
Low EE	9	8	1
Total	11	10	1

In order to clarify further the relationship between warmth and EE, we compared warmth and EE levels among parents and patients' siblings and spouses. Table 1 shows that the high-EE/high-warmth group was composed entirely of parents, predominantly mothers. All high-EE/high-warmth parents were high on EOI, and only one father was also high on criticism.

High- and low-EE groups proved to be unrelated to the majority of the variables investigated. The two groups did not differ with respect to age, sex, education, job, and friendships and intimate relationships. Moreover, both groups showed similar profiles on the SAPS and SANS.

The two groups did differ, however, in their history of prior admissions. Patients living in high-EE households had had twice as many admissions (4 had >6 admissions, 8 had between 4 and 6, 11 had 1-3, and only one had no prior admission) as patients from low-EE households (one patient had more than 6 admissions, one had between 4 and 6, 11 had 1-3 and 5 had no admissions) (mean 5 (s.d. 5.74) v. mean 2.05 (s.d. 2.57), Student's *t* test = 2.18, $P < 0.05$). A four-way breakdown of the number of admissions illustrates how the high-EE groups were over-represented in the categories with the highest number of readmissions.

The mean age of first onset of symptoms, as reported by relatives, was also significantly lower in the high-EE group as compared with the low-EE group (18.30 (s.d. 3.82) years v. 21.55 (s.d. 5.65) years, Student's *t* test = 2.14, $P < 0.05$). However, there was no difference between the high- and low-EE groups in the mean age of first contact with the psychiatric services (19.90 (s.d. 4.40) years v. 23.22 (s.d. 6.03) years, Student's *t* test = 1.96, NS) or in the mean

age of first hospital admission (21.08 (s.d. 3.15) years v. 24.30 (s.d. 6.40), Student's *t* test = 1.99, NS).

As regards family warmth levels, no significant differences emerged between high- and low-warmth groups on any of the demographic and clinical variables.

Neuroleptic medication

At the beginning of follow-up, all patients were receiving neuroleptic medication. Only one patient did not continue with neuroleptics after the first 2-month follow-up. The treatment was discontinued under the guidance of the clinician in charge. Twenty-five patients were treated with oral neuroleptic medication (haloperidol $n=18$, chlorpromazine $n=1$, clopenthixol $n=3$, perphenazine $n=1$, benperidol $n=1$, pimozide $n=1$), eight with long-acting (depot) neuroleptics (haloperidol decanoate), and eight with both. No significant differences in readmissions emerged from assigning patients from high- or low-EE households to those different regimens.

In order to define further the role of drug treatment during the follow-up, all neuroleptic doses were transposed into the equivalent mg/day of haloperidol. Patients were divided into two or three groups according to the dose prescribed, and each class was cross-tabulated with the EE one. We experimented with the following divisions: 1-3 mg/d, 4-9 mg/d, >9 mg/d; 1-6 mg/d, >6 mg/d; 1-8 mg/d, >8 mg/d. None of the statistical analyses proved significant, demonstrating that the dosage was unrelated to hospital readmission.

An examination of the other treatment variables considered in this study revealed no treatment differences between the high- and low-EE groups. Furthermore, psychiatrists rating compliance (blind) were unable to detect differences in compliance between high- and low-EE subjects.

Discussion

Probably the most interesting finding of our research study concerns the role played by EOI in determining the emotional climate in the households of Italian schizophrenic patients. In fact, by the generally accepted EOI cut-off value, EE did not emerge as predictive of relapse; on the contrary, the passage to a higher threshold confirmed the predictive value of the EE index. From a cross-cultural point of view, we consider the variation of the cut-off value justified because of the prevailing emotional style of the Italian population. It must be pointed out that the high EOI rate detected in our sample of families is remarkably higher than those observed in a number of British studies (Vaughn & Leff, 1976b; Vaughn *et al*, 1984; Moline *et al*, 1985). Moreover, variations in the cut-off values in order to obtain the best prediction have already been proposed by some of the original EE researchers (Brown *et al*, 1972), in some specific sociocultural settings (Moline *et al*,

1985; Barrelet & Ferrero, 1990), and with pathologies different from schizophrenia, such as depression (Vaughn & Leff, 1976a; Hooley *et al*, 1986), or anorexia nervosa (Szmuckler *et al*, 1985). Having applied the variation of EOI cut-off values mentioned before, our findings appear to concur with the results of most expressed emotion studies (Vaughn & Leff, 1975a; Vaughn *et al*, 1984; Wig *et al*, 1987): high EE at index admission is positively associated with a subsequently higher relapse rate among patients. An examination of patients' clinical history also reveals that high EE is associated with a greater number of prior admissions (Parker *et al*, 1988).

The patients living in high- and low-EE households who took part in this study did not differ in demographic or clinical characteristics. We can, therefore, affirm that our results are not biased by sample characteristics which do not depend on EE. In particular, the two subgroups reported the same drug treatment and compliance. We can thus reasonably hypothesise that the lower relapse rate observed in the low-EE group was not due to differences in the neuroleptic treatment.

Two points of particular relevance are highlighted by the present study. The first concerns the previously reported findings, also suggested by our own study, that the lapse between the first symptom onset and the first hospital stay is longer in patients belonging to high-EE families (MacMillan *et al*, 1986; Parker & Johnston, 1987). This implies that there may be a difference in the duration of the untreated illness between the two groups, although this possibility was not specifically tested for in this study. It must be emphasised that the age of first onset was the only element assessed on the basis of a family's subjective perception which was not validated by other sources.

Different hypotheses can be put forward to explain this result. Firstly, high-EE relatives may be more alert to and less tolerant of abnormal behaviour, and therefore perceive a problem before the patient becomes overtly symptomatic. An equally valid assumption is that high-EE patients show schizophrenic symptoms earlier. The design of our study does not resolve this issue. However, Mintz *et al* (1989) have shown that high-EE relatives tend to overestimate the duration of the illness in comparison with a 'best estimate' obtained from different sources (patients, relatives, psychiatric staff). Since our own study, like those of MacMillan *et al* (1986) and Parker & Johnston (1987), relied mainly on relatives' reports, the status of the observation is also unclear.

The second point concerns the influence of warmth on relapse. Leff (1989) considered warmth as a 'protective factor' against relapse. The early

naturalistic studies on EE showed a significant association between high warmth and a lower relapse rate (Brown *et al*, 1972; Vaughn & Leff, 1976a). Our results lend further support for this finding and indicate that high warmth is associated with a lower admission rate in both low- and high-EE families. It must be pointed out, however, that relatives high on both EE and warmth are mostly high on EOI. In only one case was high warmth associated with a critical attitude (Table 1).

The character of EE has been the subject of many theoretical investigations (Leff & Vaughn, 1985; Greenley, 1986; Koenigsberg & Handley, 1986; Hooley, 1987; Leff, 1989). Leff & Vaughn (1985) have stated that high- and low-EE relatives mainly differ in their ability to recognise that their schizophrenic relative's behaviour is caused by an illness, the adequacy of their reaction to the situation, and their ability to manage their response style. Our results are consistent with such a hypothesis. An emotionally exaggerated reaction to the memory of 'strange' signs may be seen as the triggering factor which makes it difficult for high-EE relatives to date the onset of the illness. On the other hand, relatives respectively high and low on warmth differ in their ability to empathise and identify with the patient. We are speaking of two independent interactive concepts: rational comprehension from low-EE relatives, and empathy from high-warmth ones.

It is interesting that a marked empathy (high warmth) seemed to be protective, even when there was a poor rational comprehension (high EE with prevailing EOI). This led us to propose a division of high-EOI relatives into two subgroups. The first group of 'warm overinvolved' relatives were required to score 4 or 5 on both the warmth and EOI scales. Relatives presenting such a style would not be expected to have much control over their emotional reactions, yet they would be able to understand and identify with the patient, and, at all events, to 'neutralise' the symptoms. This could be one of the factors that enable patients to overcome their symptomatic crisis, thereby avoiding a serious relapse requiring hospital admission. The second proposed group of 'cold overinvolved' relatives would also be expected to respond to a critical situation in a highly emotional way. However, since they would have little understanding of the patient, they would also be expected to increase patient difficulties instead of easing them, agitating and exacerbating the relapsing episode. Further evidence of an association between EOI and warmth would be required in order to elaborate the mechanisms implied by the present argument. Moreover, the role of criticism and hostility in such mechanisms is still to be clarified.

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***Paolo Bertrando, MD, PhD, Psychiatrist, Institute of Psychiatry of the University of Milan and the Association for Research on Schizophrenia (ARS), via Tamagno 5, I-20124 Milano, Italy; Jutta Beltz, MD, Psychiatrist, Institute of Psychiatry of the University of Milan and ARS; Cinzia Bressi, MD, Psychiatrist, Institute of Psychiatry of the University of Milan and ARS; Massimo Clerici, MD, PhD, Psychiatrist, Institute of Psychiatry of the University of Milan and ARS; Tommaso Farma, MD, Psychiatrist, ARS; Giordano Invernizzi, MD, Chairman, First Psychiatric Clinic, Institute of Psychiatry of the University of Milan; Carlo Lorenzo Cazzullo, MD, MRCPsych, Chairman, Institute of Psychiatry of the University of Milan and Scientific Director of ARS**

***Correspondence**