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The Influence of Family Expressed Emotion on the Course of Schizophrenia in a Sample of Spanish Patients
A Two-Year Follow-Up Study

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A sample of 60 Spanish schizophrenic patients was studied to ascertain the relationship between their relatives' expressed emotion (EE) and relapse at follow-up. The relatives' EE and patients' relapse were operationalised following Leff & Vaughn's criteria. At nine months a significant association was not found between the relatives' EE and relapse, but this association became significant on reclassifying the relatives' EE scores after decreasing to four points the cut-off point for critical comments. At 24 months no association was found between EE and relapse. There was a tendency for patients who interrupted their medication or who did not work to relapse more frequently, particularly among the high-EE group.

The influence of family emotional climate on the course of schizophrenic psychosis has been empirically and repeatedly demonstrated over the past two decades. In this sense, it has been concluded that the emotions expressed by the key relative towards the patient and his or her behaviour constitute the best prognostic indicator of relapse nine months after hospital discharge. Studies indicate that the relative capacity of expressed emotion (EE) is equally valid on taking into account other variables of prognostic value, such as age, symptom patterns, and premorbid adjustment (Falloon, 1988; Koeningsberg & Handley, 1986; Kuipers & Bebbington, 1988).

On the other hand, few observational studies analysing family EE and the course of schizophrenia at longer term have been reported in the literature. Documented studies include those by Leff & Vaughn (1981) and MacMillan *et al* (1986), who report that family EE is significantly associated with relapse rate over two years, although in the study by MacMillan (1986) doubts arise as to the role of the mediating factors. However, Mintz *et al* (1987), in reanalysing MacMillan's data concluded that "closure regarding the significance of EE in schizophrenia relapse is not yet warranted". More recently, Leff *et al* (1990), in a subsample of the Chandigarh Cohort Study of first-contact schizophrenic patients, found that the global EE index at initial interview did not predict relapse of schizophrenia over the subsequent two years. However, they found a significant association between initial hostility and subsequent relapse.

The aim of the present study was to determine whether family EE is able to predict relapse over two years, in a sample of Spanish schizophrenic patients.

Method

The study included all patients who presented a first episode or psychotic relapse followed by hospital admission, treated at the psychiatric centres of the Servicio Valenciano de Salud (Valencia, Spain) between January 1987 and February 1988. Because of an accidental fire the number of beds available at the Valencia University Clinic Hospital was reduced, and therefore the last 11 patients studied did not undergo required in-patient treatment; instead, intensive domiciliary treatment was conducted.

The inclusion criteria were as follows:

(a) diagnosis of schizophrenia according to DSM–III criteria (American Psychiatric Association, 1980)
(b) age between 17 and 45
(c) living with a close relative since at least 3 months prior to the onset of psychotic decompensation
(d) absence of signs or symptoms of psychotic depression, drug addiction or organic disease.

All patients diagnosed schizophrenic were evaluated within the first week after their relapse; those satisfying the above criteria were included in the study.

A psychiatric interview followed to establish diagnosis and gather personal information on each patient. The relatives were in turn evaluated within the first six weeks following the last admission (either in-patient or intensive home treatment). Relatives' EE was evaluated by the Camberwell Family Interview (CFI), according to the criteria of Leff & Vaughn (1976). The abridged version in Spanish of the CFI was used (Centro de Salud Mental, Camarillo, California), introducing modifications and adjusting expressions not used in Spain to other, more common equivalents. In the case of more than one relative living with patients, we chose the relative who spent most time with, and who was directly in charge of, a patient. For reasons of convenience, and in the absence of advice to the contrary, all interviews were carried out in centres or hospitals, rather than in the homes of patients. All

interviews were tape-recorded and blindly scored by one of the interviewers (IM), who has been trained by Dr Vaughn.

Follow-up was over two years, and consisted of monthly formal contacts carried out by the research team in the corresponding health centres; in-patients were followed up in hospital, whereas those who refused to report to the corresponding centres were followed up in their own homes. All patients continued to have treatment from their own psychiatrists, who were not involved in this research.

Clinical evaluation was achieved by comparing the severity of psychotic symptoms such as hallucinations, delusions, and incoherent speech, at discharge (either from hospital or from intensive home treatment) and during follow-up. Psychotic relapse or reactivation was identified on the Psychiatric Assessment Scale (PAS; Krawiecka *et al*, 1977) in its Spanish version (Pérez-Fuster, 1986), and following the criteria of Vaughn *et al* (1984):

> "1. A total increase of three points on one or more of the three scales was designated a significant exacerbation, with the caveat that a single point changed from 0 to 1 on any scale was discounted. Zero represented an absence of symptoms, while 1 indicated symptoms that were not clearly pathologic. 2. If a change occurred on only one scale, a two-point increase was also designated as a significant exacerbation, provided that a maximum severity score of 4 on that scale occurred. Thus, score increases from 0 to 2 or from 1 to 3 were not considered a significant exacerbation."

However, to avoid having to exclude those cases presenting maximum scores on all three scales at the start, one extra point was added to each scale of the PAS, enabling us to identify relapses or exacerbations in those cases with persisting symptoms from the start. Therefore a score of 4 in any scale could be increased to 5 if the symptoms significantly interfered with a patient's social and family life.

The rest of the sociodemographic, clinical and therapeutic information was obtained through an interview specially designed for the purpose.

Results

Seventy patients with a provisional diagnosis of schizophrenia were selected. Two were excluded on the grounds of not having lived continuously with their close relatives (parents) or spouse. Five more who failed to satisfy the diagnostic criteria of schizophrenia (DSM-III) were also excluded. One patient committed suicide before the follow-up, and two more refused to cooperate. Thus, 60 patients were finally included in the study.

The age distribution and sociodemographic profile of the patients agrees with that habitually involved in investigations of this type. They were young (mean age, 26.8 years; s.d., 7.1), single (78%), poorly educated (77% only primary school), and most were unemployed (53%). However, it should be pointed out that the proportion of women involved (28 females v. 32 males) was greater than in other, similar studies.

Fifty-three patients (88%) lived with their parents, whereas seven (12%) lived with their spouse.

Eighteen per cent had not been admitted previously, whereas for 38% this constituted their first hospital admission. Mean duration of the illness was 4.7 years (s.d., 4.4), and 70% were receiving doses in excess of 200 mg/day chlorpromazine equivalent. All patients carried on treatment with their own psychiatrists, who were not involved in the research project. Bearing in mind that follow-up in our study started with the latest relapse – unlike in other studies, where follow-up was initiated with hospital admission for the latest episode – it should be pointed out that the 11 patients not admitted to hospital for the latest episode were sociodemographically no different from those admitted. Likewise, there were no statistically significant differences between the PAS scores in both groups.

In accordance with the classical scoring criteria, family EE was considered to be high when in the course of the interview (CFI) six or more critical comments were recorded, hostility was expressed, or scores of 3 or more were reached on the emotional overinvolvement (EOI) scale. Likewise, family EE was judged to be low in the remaining cases. The two groups thus differentiated were similar in proportion (52% and 48%, respectively).

The mean number of critical comments was 3.1. Twenty-five per cent of relatives expressed six or more such comments. The percentage of cases where no critical comments were recorded during the interview was slightly higher (30%).

On the other hand, the frequency of hostility (25%) was surprising. Such hostility was generally expressed as 'rejection', and the most noteworthy observation was that hostility was not always associated with a high degree of criticism; rather, hostility was related to marked EOI, which in all cases reached maximum scores.

With respect to this last scale, a high percentage (30%) registered scores of 3 or higher, with a mean score of 2.3; scores over 3 were observed in 11 cases.

In 28% of cases, the duration of patient–family contact was estimated to be under 35 hours weekly.

There were no differences of interest in the distribution of global EE or its different components. Likewise, no differences were observed between the group requiring hospital admission and those cases managed on an out-patient basis during the latest episode.

Follow-up

The overall relapse rate after nine months was 25% (15/60). There was no significant association between relapse and global family EE or its different components, according to classical scoring criteria.

However, a cut-off point of four or more critical comments offers a better discrimination in terms of relapse ($P<0.05$) (Table 1). On the other hand, no cut-off point was found for the EOI scale to discriminate between those who relapse and those who do not. In turn, hostility exhibited a tendency towards relapse only among those patients exposed to higher levels of family hostility – and this also failed to reach statistical significance.

On reclassifying the sample in terms of EE, and taking into account the new cut-off point for critical comments, the relapse rates were found to be significantly different

Table 1
Relationship between different 'critical comments' cut-off points and relapse

No. of critical comments	No. of relapses	Relapses	% relapse rate	χ^2
⩾1	30	12	37.5	0.95
0	15	3	17	
⩾2	25	10	28.5	0.57
<2	20	5	20	
⩾3	16	9	39	2.15
<3	29	6	17	
⩾4	14	9	39	3.97*
<4	31	6	16	
⩾5	12	6	33	0.95
<5	33	9	21	
⩾6	11	5	31	0.45
<6	34	10	23	
⩾7	10	3	23	0.03
<7	35	12	25.5	

*$P<0.05$.

($P<0.01$) between the high-EE patients (40%; 12/30) and the low-EE patients (10%; 3/30) (Table 2).

Of the 60 initial patients, one dropout was recorded after 12 months. Thus, the final data corresponding to the 2-year follow-up period refer to a sample of 59 patients.

In no case were there changes in the form of living arrangements; that is, no patient had to be excluded from the final analysis for this reason. On the other hand, doubts arose in two cases as to the definitive clinical diagnosis. Doubts arose as to whether these patients could be considered schizoaffective, and we opted to retain them.

A total of 18 patients (33%) relapsed between 9 and 24 months' follow-up. On including the 15 cases that relapsed during the initial nine months, the overall relapse rate corresponding to the two years of follow-up was 56% (33/59).

Table 2
Relationship between EE components and relapse over 2 years

	9 months		24 months	
	Relapse	No relapse	Relapse	No relapse
Critical comments				
<4	6	31*	18	19
>3	9	14	15	8
EOI				
<4	11	38	27	21
>3	4	7	6	5
Hostility				
present	11	36	25	22
absent	4	9	8	5
EE_2				
low	5	23	16	12
high	10	22	17	14
EE_1				
low	7	24	17	14
high	8	20	16	12

*$P=0.04$. Other differences relapsed v. no relapsed, not significant.
EE_1 = cut-off score.
EE_2 = modified cut-off score.

We again analysed the relation between global EE and its components, and the relapses recorded during these two years; the most significant data are shown in Table 2, where significance was appraised with the χ^2 test. In those cases where the latter could not be applied, Fisher's exact test was carried out.

Although the differences in relapse rate show the expected tendency, in no case did they reach statistical significance.

Likewise, those patients living with low-EE relatives failed to show a delay in relapse in relation to the high-EE group – where, perhaps, relapse would be expected at an earlier stage.

No sociodemographic variable, with the exception of sex, appeared to be significantly related to relapse. The number of males who relapsed was greater than the corresponding number of females, with differences in terms of EE: high-EE males relapsed more frequently than their low-EE counterparts (58% v. 24%), whereas the opposite occurred among women (11% v. 23%). Again, this differentiating effect was maintained in the critical comments distribution, although in no case was statistical significance reached.

Similarly, there were no significant differences between those who relapsed after 24 months and those who did not, in terms of the number of hours of face-to-face family contact; this was true both when analysed independently and in conjunction with global EE or its different components.

In order to compare our results with those of Vaughn *et al* (1984), we repeated the analysis, eliminating those patients who presented persistent symptoms ($n=16$): again, no significant differences were noted. The same results were obtained on excluding those patients not admitted to hospital as a result of the latest relapse ($n=11$).

We also analysed the preventive effect of treatment with neuroleptics. In this sense, a patient was considered to be taking medication regularly when no interruption was indicated in the clinical history. Of the 27 patients who at one time or another stopped their medication for at least 1 month continuously during these 2 years of follow-up, 21 relapsed (77%), the differences with respect to those who did not interrupt medication (35%) being statistically significant ($\chi^2=4.94$, $P=0.02$).

This relapse tendency on interrupting neuroleptic medication increases in the absence of work activity (71% relapses v. 30% among low-EE patients, and 100% v. 50% in high-EE patients) (Table 3).

Discussion

The distribution of family EE and its different components places our study in an intermediate position between that reported in Anglo-Saxon countries and the distribution found in India or Spain (Gutiérrez *et al*, 1988). We would like to emphasise the high incidence of emotional overinvolvement recorded, which is only comparable to the figures reported in the Madrid sample (Arevalo & Vizcarro,

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Table 3
Distribution of relapses at 24 months according to work, medication, and EE status

Low EE			
With medication			
work	2/4	(50%)	6/14 (43)
do not work	4/10	(40%)	
No medication			
work	1/3	(33%)	11/17 (65)
do not work	10/14	(71%)	
High EE			
With medication			
work	1/3	(33%)	6/16 (37)
do not work	5/13	(38%)	
No medication			
work	2/4	(50%)	10/12 (83)
do not work	8/8	(100%)	

(1989) and, to a lesser extent, to those reported by Vaughn & Leff in London (1976) (Table 4).

The outstanding observation in the present study is the high percentage of hostility recorded, which distinguishes our sample from other Spanish studies – particularly the Galician report. Overall, our sample is not very homogeneous, as the relatives studied were emotionally overinvolved and exhibited relatively high hostility rates, together with barely critical, more tolerant attitudes.

These differences are probably caused by cultural variables. Thus, the Galician study population belonged to a rural/costal environment; the Madrid sample was urban, and our own patients were both urban and rural. It is known that in socioculturally less developed environments the attitude towards altered behaviour tends to be more tolerant, with fewer expectations in terms of social function.

The results of the present study fail to demonstrate any significant association between EE and relapse using the classical Vaughn & Leff criteria after a two-year follow-up. The differences between our results and those of other studies may reflect the fact that we did not exclude those patients who were not fit to answer the PSE questions, thus loading our sample with a higher proportion of severely deteriorated patients. Nevertheless, the scores obtained on the PAS at the start of follow-up were similar to those reported by Vaughn *et al* (1984) (mean, 4.23; s.d. 3.20).

A further point of discrepancy with respect to the results reported by Vaughn may be the fact that we took into account the EE of the family member presenting the greatest contact with the patient. According to standard instructions, in two-parent households both parents should be interviewed and the parent with higher EE selected for analysis (Leff & Vaughn, 1985, p. 34). In our sample there were only 13 such households. To test the hypothesis that the results of our analysis might be affected by misclassification of low-EE households which may be high as a consequence of not having interviewed both parents, we reanalysed our data under the assumption that those two-parent households classified as low EE and where the patient had relapsed at follow-up were in fact high EE. The results showed again that there was not a significant association between EE and relapse at 24 months following classical cut-off scoring criteria ($\chi^2=0.41$, $P=0.32$) nor when the modified criteria were applied ($\chi^2=0.003$, $P=0.96$).

Another possibility may be related to the time of evaluation of family EE. Thus, a basic assumption in this body of research is that a CFI conducted with a relative at a time of crisis elicits emotional attitudes that reflect the relative's behaviour towards the patient over long periods of time. Hence, EE ratings made when the patient is in remission are much less likely to predict subsequent relapse (McCreadie & Phillips, 1988). We did not evaluate EE during

Table 4
Percentage distribution of family EE among schizophrenic patients in different studies

	Los Angeles (Vaughn *et al*, 1984)	London (Vaughn & Leff, 1976)	Chandigarh (Leff *et al*, 1987)	Galicia (Gutierrez, 1988)	Madrid (Arévalo & Vizcarro, 1989)	Valencia (Montero *et al*, 1990)
EE status						
low	34	42	77	66	42	52
high	66	54	23	34	58	48
EE components						
no critical comments	4	33	56	38	27	30
critical comments						
⩾6	53	44	12	16	34	25
mean	6.8	7.5	1.8	3.2	5.1	3.1
hostility	28	18	16	6	15	22
EOI	15	21	4	16	25	30
hostility/fewer than 6 critical comments	0	0	29	0	0	9

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hospital admission, but shortly after discharge. Still, strictly speaking, our patients were not in clinical remission when the CFI was conducted with a relative.

In the two UK studies as well as in the California replication, males relapsed more frequently than females. Furthermore, to quote Vaughn *et al* (1984, p. 1173), "it was high EE males who were responsible for the significant association" between EE and relapse. In our study, males were also found to relapse more often than females – high-EE males tending to relapse more frequently than their low-EE counterparts, albeit not to a significant degree. This trend was not observed among women. It might be thought that the greater representation of females in our sample – unlike in other studies – could mask the effect of EE.

Another interpretation of our failure to find a significant relationship between EE and relapse could be that EE as defined by Vaughn & Leff only predicts relapse among in-patient schizophrenic males. McCreadie & Phillips (1988), in a series including ambulatory patients, likewise found no association between EE and relapse rate after a 12-month follow-up. In any case, we were also unable to detect a positive correlation between EE and relapse among the 49 patients admitted to hospital following their latest psychotic relapse.

An alternative explanation could be the existence of a differential sensitivity to critical attitudes of their relatives characterising Spanish schizophrenics.

In order to optimise discrimination between subgroups, the cut-off points were varied. The pioneering London study (Brown *et al*, 1972) used a critical comments score of 7 or more for individuals, and 2 or more for joint interviews. In the Chicago study (Moline *et al*, 1985), the best results were achieved with a critical comments cut-off score of 9. According to Parker *et al* (1988), variation in cut-off scores is appropriate for calibration within a particular group, and the results must necessarily be judged as optimised and as not necessarily quantifying the true relevance of the risk factor. In our case, on modifying the cut-off point on the critical comments scale, an adequate discrimination was obtained in terms of relapse, after nine months, but this was not maintained after two years' follow-up.

There are two possible explanations for this. It may be argued that EE varies with time. Studies centred on the evolution of community intervention programmes stress the decrease in critical comments, with time, in the control groups (Leff & Vaughn, 1985; Tarrier *et al*, 1989). Indeed, in a recent study (Leff *et al*, 1990), clear modifications in EE and in each of its components were detected on comparing EE initially and after one year.

The other possible explanation is based on the idea that, with time, other factors such as family burden and the lack of social support – to mention two examples – begin to have an effect, thus helping to increase the percentage of relapses and, probably, to mask the long-term effect of EE.

Such factors may be operating with greater intensity in our environment, where a strong tendency to keep the patient at home combines with a marked lack of community support of the family. This results in prolonged contact between patients and their relatives, who in turn eventually perceive the patient as a growing burden.

Once again, the preventive role of neuroleptic drugs in both groups is confirmed, the risk of relapse after abandoning treatment being greater among high-EE patients who are unemployed than in the remaining groups.

Our sample is not large enough to permit us to contrast a complementary hypothesis, according to which family EE would be correlated with long-term psychotic relapses, in the absence of employment. Whether employment may exert a beneficial effect *per se* or by diminishing face-to-face contact is impossible to say at this stage. We think that samples larger than those so far employed in EE research may be required if we want to tease out the influence of the increasing number of intermediate variables involved in the association between EE and relapse.

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References

AMERICAN PSYCHIATRIC ASSOCIATION (1980) *Diagnostic and Statistical Manual of Mental Disorders* (3rd edn, DSM-III). Washington, DC: APA.

AREVALO, J. & VIZCARRO, C. (1989) 'Emoción expresada' y curso de la esquizofrenia en una muestra española. *Analisis y Modificación de conducta*, **15**, 3–24.

BROWN, G. W., BIRLEY, J. & WING, J. K. (1972) Influence of family life on the course of schizophrenic disorders: a replication. *British Journal of Psychiatry*, **121**, 241–258.

FALLOON, I. (1988) Expressed emotion: current status. *Psychological Medicine*, **18**, 269–274.

GUTIÉRREZ, E., ESCUDERO, V., VALERO, J. A., *et al* (1988) Expresion de emocionesy el curso de la esquizofrenia. II. Componentes en revisión. *Analisis y Modificación de conducta*, **15**, 275–316.

KOENINGSBERG, H. & HANDLEY, R. (1986) Expressed emotion: from predictive index to clinical construct. *American Journal of Psychiatry*, **143**, 1361–1373.

KRAWIECKA, M., GOLDBERG, D. & VAUGHAN, M. (1977) A standardized psychiatric assessment scale for rating chronic psychotic patients. *Acta Psychiatrica Scandinavica*, **55**, 299–308.

KUIPERS, L. & BEBBINGTON, P. (1988) Expressed emotion research in schizophrenia: theoretical and clinical implications. *Psychological Medicine*, **18**, 893–909.

LEFF, J. & VAUGHN, C. (1981) The role of maintenance therapy and relatives' expressed emotion in the relapse of schizophrenia: a two-year follow-up. *British Journal of Psychiatry*, **139**, 102–104.

—— & —— (1985) *Expressed Emotion and Families: Its Significance for Mental Illness*. New York: Guilford Press.

——, ——, GOSH, N., *et al* (1987) The influence of relatives' expressed emotion in the course of schizophrenia in Chandigarh. *British Journal of Psychiatry*, **151**, 166–173.

——, ——, BEDI, H., *et al* (1990) Relatives' expressed emotion and the course of schizophrenia in Chandigarh. A two-year follow-up of a first-contact sample. *British Journal of Psychiatry*, **156**, 351–356.

MACMILLAN, J. F., GOLD, T., CROW, T. J. *et al* (1986) Expressed emotion and relapse. *British Journal of Psychiatry*, **148**, 133–143.

MCCREADIE, R. G., PHILLIPS, K. (1988) The Nithsdale Schizophrenia Survey VII. Does relatives' high expressed emotion predict relapse? *British Journal of Psychiatry*, **152**, 472–481.

MINTZ, J., MINTZ, L. & GOLDSTEIN, M. (1987) Expressed emotion and relapse in first episodes of schizophrenia. A rejoinder to MacMillan *et al* (1986). *British Journal of Psychiatry*, **151**, 314–320.

MONTERO, I., ADAM, A., GOMEZ, A., *et al* (1984) Influencia de la terapia psicosocial en la evolución de la Esquizofrenia: un estudio comparativo. *Actas Luso-Españolas de Neurologia Psiquiatria*, **12**, 267–278.

——, GOMEZ-BENEYTO, M., RUIZ, I., *et al* (1990) Expresividad Emocional y evolución de la esquiofrenia: una replica al trabajo de Vaughn. *Actas Luso-Españolas de Neurologia Psiquiatria*, **18**, 387–395.

PARKER, G., JOHNSTON, P. & HAYWARD, L. (1988) Parental 'expressed emotion' as a predictor of schizophrenic relapse. *Archives of General Psychiatry*, **45**, 806–813.

PEREZ FUSTER, A., BALLESTER, M., GIRON, M., *et al* (1989) Fiabilidad, validez y sensibilidad de la Escala de Evaluación Psiquiatrica de Krawiecka. *Actas Luso-Españolas de Neurologia Psiquiatria*, **17**, 111–118.

TARRIER, N., BARROWCLOUGH, C., VAUGHN, C., *et al* (1989) Community management of schizophrenia. A two-year follow-up of a behavioural intervention with families. *British Journal of Social and Clinical Psychology*, **15**, 157–165.

VAUGHN, C. & LEFF, J. (1976) The measurement of expressed emotion in the families of psychiatric patients. *British Journal of Social and Clinical Psychology*, **15**, 157–165.

——, SNYDER, K., JONES, S., *et al* (1984) Family factors in schizophrenic relapse. Replication in California of British research on expressed emotion. *Archives of General Psychiatry*, **41**, 1169–1177.

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