

# Expressed Emotion in the Partners of a Non-Clinical Adult Sample: A Comparison With Relatives of Patients With Schizophrenia and Depression

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## Abstract

**Background.** Expressed emotion (EE) status has been proven to be a good predictor of relapse in schizophrenia and mood disorders. However, EE in schizophrenics and depressed patients was never compared to a healthy control group, and there is no data of healthy and happily married partners (HHP) yet.

**Method.** 80 subjects without a DSM-IV lifetime diagnosis and contented with their partnerships participated in the study. They were compared with a number of samples relatives of schizophrenic and depressed patients from the published literature (N=537) with version of the Camberwell Family Interview (CFI) that was adapted to the use in healthy individuals.

**Results.** HHP made significantly fewer critical comments to their partners than any compared clinical sample of schizophrenic and depressed patients. Furthermore, they were less hostile, less emotional over-involvement, made more positive remarks and showed more warmth than the relatives of the patients' groups. The women of the HHP expressed significantly more criticism than their partners whereas the male partners made more positive comments.

**Conclusions.** Relatives of clinical groups had significantly higher scores in the EE-Status than HHP. It might seem to be obvious that this can be explained by the stress caused by a psychiatric disease, but this cannot inevitably be inferred from our results. High-EE could also be a behavioural manifestation of a schizophrenia or depression genotype. Further studies, looking at causal relations in particular, are needed. (*German J Psychiatry* 2008; 11: 84-90).

**Keywords:** Expressed emotion, Camberwell Family Interview, healthy controls, depression, schizophrenia

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## Introduction

Expressed emotion (EE) is established as a reliable empirical measure of some of the emotional aspects of family life (Brown & Rutter, 1966). The construct of EE is based on how relatives of a psychiatric patient

spontaneously talk about the patient. Relatives are classified as being high in EE if they make more than a specified threshold number of critical comments or show any signs of hostility or marked emotional overinvolvement. EE is rated from vocal and verbal information obtained by taping the semi-structured Camberwell Family Interview (CFI, Vaughn & Leff, 1976). From this instrument, five scales can be derived. Critical comments (CC) and positive remarks (PR) are

frequency ratings. Hostility, warmth and emotional over-involvement (EOI) are global ratings. CC, hostility and EOI have been summarized in the term EE for they have been the most predictive of relapse.

In the past decades, studies of EE have been conducted in various patient samples, and EE status has been generally shown to be a good predictor of relapse of psychiatric disorders. E.g., the risk of relapse for schizophrenic patients returning into high EE families after discharge is about twice higher than for patients in low EE families (Vaughn & Leff, 1976; Vaughn et al., 1984; Moline et al., 1985; Parker & Hadzi-Pavlovic, 1990; Bebbington & Kuipers, 1994; Butzlaff & Hooley, 1998; Wearden et al., 2002). A meta-analysis, conducted by Butzlaff & Hooley (1998), revealed that EE is even a better predictor of poor outcome in mood disorders (Vaughn & Leff, 1976; Hooley et al., 1986; Okasha et al., 1994) and eating disorders than it is for schizophrenia.

In particular, criticism as the main indicator of EE, has been shown to affect the course of disease. The mean number of CC for relatives of schizophrenic patients varies across the different studies between 3.6 (Ito & Oshima, 1995) and 12.7 (Brewin, 1994). The mean number of critical comments for relatives of depressed patients was determined to be 7.4 in a study by Okasha et al. (1994). Hooley et al. (1986) and Vaughn and Leff (1976) reported mean values of 8.3 and 7.2, respectively, for partners of depressed patients. In schizophrenia, cut-off scores of 6 or 7 for criticism have been found to predict most accurately relapse rates between patients living with high-EE families as opposed to low-EE families (Brown et al., 1972; Vaughn & Leff, 1976).

Compared with schizophrenia, a cut-off point of 2 or 3 is more appropriate to distinguish relapse and non-relapse for depression (Vaughn & Leff, 1976; Hooley et al., 1986). One reason for this difference is seen in the kind of relatives that were included in the studies: In contrast to schizophrenia research, where EE is measured among parents of patients, EE studies concerning depression usually refer to their partners. Hooley et al. (1986) assume that, in general, patients' reaction to partners' criticism is more sensitive than to parents' criticism.

Even though EE status and EE scale scores have been described well for many different patient samples in the last years, there is a paucity of studies that examine groups of healthy subjects without a DSM-IV lifetime diagnoses. One study examined parents of healthy children (Schreiber et al., 1995). So far we know, healthy and happily married adults (HHP) have never been examined. Thus we were interested in conducting an EE-study with individuals without psychiatric diagnosis who rated their partnership as satisfactory. To our knowledge there is no evidence yet that EE-scores would be naturally lower in HHP.

## Method

### Subjects and assessments

Inclusion criteria for HHP included no psychiatric or psychological treatment in the past or present, no psychiatric disease based on DSM-IV (American Psychiatric Association, 1994), and no severe somatic illness. To constitute a homogeneous group, we decided to restrict participants to happily married couples living together in a heterosexual partnership. Women and men had to estimate their satisfaction with their relationship on a visual analogue scale from 1 ("extremely unhappy") to 10 ("extremely happy"). We decided to make a cut-off at the middle of the scale at 5 to exclude individuals with relevant severe problems in partnership. Subjects were drawn from a newspaper announcement. The Mini International Neuropsychiatric Interview (MINI; Lecrubier et al., 1997) was applied in order to rule out any current or lifetime psychiatric disorder. Both partners of each dyad were interviewed separately and the content of interviews was not disclosed to the other partner. Because the original CFI asks for the course of disease, current psychopathology and its impact on the family life, the questionnaire was modified for the use with HHP. The interview was maintained in its original form as far as possible and no further topics were added. Specific questions referring to the disease were dropped: psychiatry history, current episode, personal care and habits, delusions/hallucinations, bizarre behaviour, questions about admission, and perception of illness. We kept the sections family time budget, irritability, quarrels, nagging and grumbling, bodily functions, under-activity, slowness, over-activity, violence, withdrawal, memory loss, fears/anxiety, worry, overt misery, obsessions, drinking and gambling, street drugs, household tasks, marital relationship, affection/warmth/interest and medication. The item "drug or pills" was handled in a general manner unrelated to psychiatric disease. The item "changes since the beginning of the illness or trouble concerned with the illness" was transformed in "troubles in general and changes referring to the time of living together, especially in the past three months". The modified version had no effect on the length of the interview, which was still around 90 minutes.

### Statistical Analyses

For the comparison of means we included the data of previous studies. First we had the original data for criticism of Vaughn et al.'s study (1984) at our disposal. We included other studies when the following data were published: number of interviewed relatives, mean (M) and standard deviation (SD) at least for CC. In only 5 studies concerning EE and schizophrenia we found the required details: Brewin (1994), Ito & Oshima (1995), Orhagen et al. (1995), Schreiber et al. (1995) and Vaughn and Leff (1976). Additionally, the CC mean score and SD of Brown et al.'s study (1972) were reported by Vaughn and Leff (1976). All together, 7 studies could be included for comparisons of means between

**Table 1: Comparison of CFI variables between women and men of the healthy and happily married couples**

	Women			Men			Wilcoxon Test <sup>1</sup>		
	mean	SD	Range	mean	SD	range	Z	n	p
critical comments	2.55	2.05	0-9	1.28	2.23	0-10	3.88	40	≤0.001
hostility	0.00	0.00		0.00	0.00			40	
warmth	3.75	0.90	2-5	3.85	0.74	2-5	0.52	40	0.60
EOI	0.00	0.00		0.00	0.00			40	
positive remarks	4.63	2.66	0-12	6.80	3.08	1-15	3.70	40	≤0.001

schizophrenic samples and HHP. In 3 CFI studies on depression, the number of relatives, and the mean and SD for CC was published. These included Hayhurst et al. (1997), Hooley et al. (1986) and Vaughn and Leff (1976). In Priebe et al.'s (1989) study, the raw data were shown, making it possible to calculate the mean scores and SD for CC. Nevertheless, these results were not included in the analysis, as the examined sample contains symptom-free patients who had been treated with lithium for three years, and perhaps for this reason, the CC mean score was atypically low. Likewise, the data of Hayhurst et al. (1997) did not seem to be appropriate material for our comparison, as the study differs from other depression studies in many respects. First, the given percentage for relapse and non-relapse patients is not in accordance with the given percentage of previous studies. Second, the mean of CC is - besides a small sample size - atypically low and the range of the number of critical comments is very low (0-7). From the depression studies, the studies of Hooley et al. (1986) and Vaughn and Leff (1976) were included for the comparison with the sample of HHP.

Additionally, the study of Schreiber et al. (1995), containing information about CC of parents of healthy siblings of schizophrenic children, could be used for the comparison with our HHP group.

The statistical analysis was conducted with the software Statistical Package for the Social Sciences (SPSS). T-tests for pooled data of samples were calculated. Additionally to each t-test, effect sizes were calculated to give statements of practical importance beyond the t-test results. According to Hedges and Olkin, (1985), a score of < 0.19 can be interpreted as no effect, 0.21 to 0.40 as a small effect, 0.41 to 0.60 as a medium effect, 0.81 to 1.00 as large effect, and >1.00 as a strong effect. For Vaughn et al.'s (1984) study and our own data, we could apply a stricter standard. Considering that EE-scores are non-parametric data, Mann-Whitney-U-test were preferred.

## Results

*Non-clinical sample.* The mean age of the 80 subjects was 38.26 (SD 9.83). The mean of age for women was 37.43 (SD 9.1; range 24-57); for men the mean was 39.10 (SD 10.55; range 24 to 66). The duration of partnership was 13.45 years (SD 10.95; range 1.5 to 40). The contentment with the relationship based on a visual analogue scale (VAS) from 1 to 10 was 8.90 (SD 0.90) for women and 8.93 (SD 0.93) for men. All participants were German, with the exception of one couple from Kazakhstan, one man from Sweden and one woman from Hungary. However, all of them have been living in Germany for over 18 years; spoke German fluently and there were no differences in their CFI attributes compared with the other HHP.

The mean number of CC for the total sample is 1.91 (SD 2.22). By using a cut-off score of 6, 5 out of the 40 women were classified as high-EE, with 4 times 6 critical comments and one time 9 critical comments. 2 out of the 40 men, each with 10 critical comments, were classified in the high-EE group. In one couple, the woman as well as her partner lay over the cut-off point. Thus, 6 out of 40 pairs could be categorised as high-EE. Hostility and EOI did not occur in the whole sample. Partners did not differ in hostility, EOI and warmth. Women expressed more criticism, whereas men had a higher score for positive remarks than their partners. EE-scores for men and women of the HHP are shown in Table 1.

## Comparison with schizophrenic patient groups

*Original data.* The comparison of means could be calculated from original data by Vaughn et al. (1984) whereas the other comparisons were based on pooled data. The relatives of schizophrenic patients expressed significantly more criticism

**Table 2: Comparison of critical comments (CC) between healthy and happily married partners (HHP) and relatives of schizophrenic patients in Vaughn et al. (1984)**

	HHP (n=80)			Relatives of schizophrenic patients (n=85)			Mann-Whitney-U Test		Effect Size
	mean	SD	range	mean	SD	range	Z	p	d
CC	1.91	2.22	0-10	6.62	4.65	0-24	7.81	≤0.001	1.28

**Table 3: Comparison of critical comments (CC) between healthy and happily married partners (HHP)<sup>1</sup> and relatives of schizophrenic patients**

	Relatives of schizophrenic patients			t-test for pooled data			Effect Size
	n	mean	SD	t	d.f.	p	d
Schreiber et al., 1995	17	4.1	2.1	3.72	95	≤0.0001	1.00
Orhagen et al., 1995	26	9.12	5.75	9.34	104	≤0.0001	2.11
Ito & Oshima, 1995	142	3.56	4.56	3.04	220	≤0.001	0.42
Brewin, 1994	26	12.72	6.5	12.84	104	≤0.0001	2.90
Vaughn & Leff, 1976	46	8.22	11.11	4.93	124	≤0.0001	0.91
Brown et al., 1972	126	7.86	14.40	3.66	204	≤0.0001	0.52

than the HHP (Table 2). The comparison between the 2 samples shows a strong effect.

*Pooled data.* Furthermore, the CC scale scores of the HHP were compared with the relatives of schizophrenic patients from the following studies: Schreiber et al. (1995), Orhagen et al. (1995), Ito & Oshima (1995), Brewin (1994), Vaughn & Leff (1976), Brown et al. (1972). The results as given in Table 3 confirm the findings of the comparison with Vaughn et al.'s original data (1984). All relatives of schizophrenic patients expressed significantly more criticism than the controls, and the effects range from large to strong. Although the mean CC score in the Japanese study (Ito & Oshima, 1995) is clearly lower than the one of the European samples, it was still significantly larger than the mean score in the HHP group. However, effect size was medium. The authors therefore take cultural differences into consideration (Japanese might be more reserved in their emotional expression in general).

*Additional CFI scales.* The data by Orhagen et al.'s study (1995) allows additional comparisons of means concerning the CFI scales EOI, warmth and positive remarks. HHP showed significantly less EOI, expressed more warmth and more positive remarks than the relatives of the schizophrenic patients and effects range from large to strong (Table 4).

*After family intervention.* Orhagen et al. (1995) and Brewin et al. (1994) examined the impact of an educational group intervention, designed to reduce levels of expressed emotion, with the relatives of schizophrenic patients. The intervention was conducted over several months. Even after criticism was reduced through family intervention, the relatives of schizophrenic patients made still more critical comments than the HHP (Table 5). However, the effect sizes diminished compared to the results of the analysis of the baseline scores (before intervention) and HHP scores (Table 3).

## Comparison with depressive patient groups

The CC scale scores of the HHP were compared with the relatives of depressed patients from Hooley et al.'s (1986) and Vaughn and Leff's (1976) studies. The relatives of depressive patients showed significantly more criticism than the controls. Here again, the effect sizes largely differed from the normal controls (Table 6).

## Comparison with a sample of parents of healthy siblings

The parents of Schreiber et al.'s sample (1995) of healthy children still show more criticism than the HHP. But the effect size is small and furthermore it is the lowest compared to any other effect size that was calculated in our study (Table 7).

## Discussion

There have been numerous studies with patient samples, and additional meta-analyses, which confirmed EE as a meaningful predictor for the course of disease and long-term outcome. However, only one study (Schreiber et al., 1995) examined EE in healthy subjects, the siblings of schizophrenic children. To our knowledge, there has not been any investigation in EE research yet concerning a non-clinical sample of healthy and happily married partners.

In most of the past studies, the percentage of high and low EE relatives was given and the mean score especially for CC

**Table 4: Comparison of EOI, warmth and positive remarks between HHP and relatives of schizophrenic patients (Orhagen et al., 1995).**

	HHP (n=80)		relatives of schizophrenic patients (n=26)		t-test for pooled data			Effect Size
	mean	SD	mean	SD	t	d.f.	p	d
EOI	0.00	0.00	2.85	1.38	18.66	104	≤0.0001	4.20
Warmth	3.80	0.18	2.69	1.26	7.71	104	≤0.0001	1.74
Positive remarks	5.71	3.06	3.35	3.05	3.42	104	≤0.0001	0.77

**Table 5: Comparison of critical comments (CC) between healthy and happily married partners (HHP)<sup>1</sup> and relatives of schizophrenic patients after family intervention**

	Relatives of schizophrenic patients after family intervention			t-test for pooled data			Effect Size
	n	mean	SD	t	d.f.	P	d
Orhagen et al., 1995	26	6.39	5.89	5.73	104	≤0.0001	1.28
Brewin, 1994	26	4.16	4.6	3.37	104	≤0.001	0.76

was often mentioned as an important detail to describe the sample. Particularly, the number of critical comments raised interesting information about differences between patient groups and their relatives: Concerning criticism the threshold for a relapse seems to be much lower for depressed patients than for schizophrenic patients (Brown et al., 1972; Vaughn & Leff, 1976, Hooley et al., 1986). Criticism as the main and best described interview scale therefore was of particular interest in our study.

The EE scores of HHP were similar to low-EE relatives. Of all 80 subjects, only 7 (8.8%) were classified as high-EE, using the common cut-off point of 6 critical comments. The percentage of high-EE relatives in clinical groups is between 23% (Leff et al., 1987) and 77% (Tarrrier et al., 1988), mostly above 50% (Dulz & Hand, 1986; Mac Millan et al., 1986; Barrelet et al., 1990; Buchkremer et al., 1991; Bertrando et al., 1992) with large variations in EE by culture. Rates in Western Europe tend to be more than 50% for relatives of persons with schizophrenia. Our HHP sample is obviously considerably underneath the usual percentage of clinical groups.

In all comparisons with clinical samples the mean CC score of controls was smaller (Brown et al., 1972; Vaughn & Leff, 1976; Vaughn et al., 1984; Hooley et al., 1986; Brewin, 1994; Ito & Oshima, 1995; Orhagen et al., 1995; Schreiber et al., 1995). The results are unambiguous. The controls were less critical than schizophrenic and depressive samples. Furthermore the HHP showed more warmth, stated more positive remarks and were less emotional over-involved than the relatives of schizophrenic patients (Orhagen et al. (1995). The large or strong effect sizes reflect the clinical relevance of the differences between the HHP and clinical groups.

Even if relatives' criticism could be lowered through family interventions (Brewin, 1994; Orhagen et al., 1995), HHP stayed less critical though. It seems to remain a burden that still results in higher CC scores compared with HHP. In this context it would be of interest, if relatives' criticism approaches that of HHP with the patients' recovery. So far, there is only one study (Priebe et al., 1989), supporting the assumption that CC is decreasing when the patients' symp-

toms are in remission. Interesting further information is given by the effect sizes again. They become much smaller after a family intervention was conducted. The lowest effect size is given in the comparison with Schreiber et al.'s (1995) sample of parents of healthy siblings of schizophrenic patients. Nevertheless this comparison needs to be interpreted with caution. With regard to the EE, expressed by parents about siblings of patients with schizophrenia in Schreiber et al.'s study, it needs to be acknowledged that having a child with schizophrenia in the family may have had an effect (in either direction) on parental EE with regard to other children. In contrast to Schreiber et al., our sample of HHP explicit comprised healthy and happily married partners which might not be representative for common partnerships.

In summary, our results indicate that high-EE is much less common in healthy subjects compared to clinical groups. The lower EE-scores of undisturbed and contented couples compared with those of schizophrenic or depressive patients' relatives might be explained by the stress caused by the disease or stress in general but this cannot inevitably be inferred from our data. Probably burden caused by a mental illness of a family member and presumably stress in general is closely associated with the degree of criticism, because the HHP are not burdened by heavy problems and accordingly discontentment with their partnership. - Other life stressors such as unemployment or lack of social support may have a similar impact on the rate of EE as feeling stressed with one's partnership probably has. -

An additional result of our study is that healthy women made twice as many critical comments than their male partners. The comparison of men and women's EE data therefore suggest a gender related difference for criticism in partners.

More detailed information about the single EE scale scores split in specific relative groups (mothers, fathers, female and male spouses etc.) would allow to differentiate much better between conceivably typical patterns of EE for single groups and was a good help to future EE research.

In conclusion, our study points out that EE-scores are sig-

**Table 6: Comparison of critical comments (CC) between healthy and happily married partners (HHP) and partners of depressive patients**

	HHP (n=80)			relatives/partners of depressive patients		t-test for pooled data		Effect Size	
	mean	SD	n	mean	SD	t	d.f.	p	d
CC for HHP and partners in Hooley et al., 1986	1.91	2.22	39	8.3	5.8	6.64	117	≤0.0001	1.69
CC for HHP and relatives in Vaughn & Leff, 1976	1.91	2.22	30	7.19	9.86	4.52	108	≤0.0001	0.97

nificantly lower in HHP compared to the relatives of clinical groups. However, based on our data it is not possible to elucidate, whether high EE-scores in the relatives of schizophrenic or depressed patients are an underlying cause of morbidity, or rather a consequence of a family situation which is burdened with mental illness of one of their members. Furthermore, high-EE could be a behavioural manifestation of the schizophrenia or depression genotype that is measured in the biological relatives of patients (Goldstein et al., 1992).

Probably stress caused by a disease results in higher EE-scores. However, we have not enough data to confirm this interpretation and more research is needed focusing on a causal link between a psychiatric disease and specific EE-scores.

A limitation of our study is given by the selection of only happily married couples. A sample of non-psychiatric couples that representatively reflects main life stressors would be of interest to future investigation a) to find a representative occurrence of high-EE and low-EE in the normal population and b) to further clarify - in a long-term study - the protective value of low-EE.

Some further limitations of our study need to be emphasized. Firstly, we did not have a control group but compared our data with data from earlier studies. Secondly, by exclusively choosing couples we wanted to create a homogeneous group of relatives. It must be considered that in most EE studies, mixed relatives were included, mainly consisting of parents. Thus, in most cases we compared the CC scores of parents or mixed groups of relatives with those of partners in our sample. The only exception was Hooley's study of depressed patients and their partners. Finally, the fact must be acknowledged that both partners in each dyad were interviewed. Therefore, one half of the sample of eighty interviews is not independent from the other half. However, even if either the healthy men's mean of CC or their partners' mean of CC was used for comparison with clinical groups, the results would have obviously been the same.

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