

Providing Information to Relatives and Patients about Expressed Emotion and Schizophrenia in a Community-Support Setting: A Randomized, Controlled Trial

Alicia M. Moxon¹, Kevin R. Ronan²

Abstract

The present study aimed to enhance family members' knowledge about schizophrenia and expressed emotion (EE), as well as awareness of their current coping strategies, by conducting a brief educational intervention designed to overcome methodological shortcomings of past studies. People with schizophrenia were recruited into the study along with family members. Relatives and patients were randomly allocated to a treatment group or a waitlist control group. Analyses showed that knowledge increased significantly after the intervention and was maintained at a three-month follow-up. The control condition reflected no changes in knowledge. Other results showed that both relatives' and patients' EE ratings significantly decreased from pretest to posttest. Changes in total EE scores improved after treatment by over twice the magnitude compared to the control condition. All gains were maintained at the three-month follow-up, with continuing improvement seen in family members' attitudes. The analyses overall suggested that although knowledge increased as a result of education, the decreases in EE appeared to be due to education, perhaps combined with non-specific factors such as social and community support. These issues are considered in terms of implementation in community settings and in terms of future research.

Key Words: Schizophrenia, Expressed Emotion, Psychoeducation, Attributions

Introduction

Family education programs provide information about schizophrenia to help overcome stereotypes and to teach patients and family members what they can do to help themselves, including creating and maintaining a more relaxed family environment.

Instead of staying in an outpatient facility, chronically mentally ill patients now tend to be released as soon as possible. However, this can create a "revolving-door" pattern of admission and discharge. Research shows rehospitalization rates of 40 to 50% after one year and 75% upwards after two years (1). This can add to an increasing burden for families, as studies have found that between 46% (2) and 65% (3) of those hospitalized with schizophrenia return on discharge to live with their families (4).

The return of the patient can cause a major upheaval in either his or her life and in those of the family. Those with schizophrenia may feel hurt, angry or resentful for not being understood, helped or for being admitted to hospital. Relatives may feel anxious or helpless because they do not know what to expect. Relatives may also feel other forms of negative affect because they cannot change the illness or feel they can help. Additionally, they may feel angry at the difficult be-

¹ School of Psychology, Massey University,
Palmerston North, New Zealand

² CQU Healthy Communities, Central Queensland University, Australia

Address for correspondence: Dr. Kevin R. Ronan,
Professor of Psychology (Clinical), CQU Healthy Communities,
Centre for Social Science Research,
Central Queensland University, Australia
Phone: 61-7-4930-6746;
Fax: 61-7-4930-6460;
E-mail: k.ronan@cqu.edu.au

Submitted: September 23, 2007; Revised: December 14, 2007;
Accepted: December 19, 2007

havior of the patient or resentful at having to provide more care than is usually required for a person of the patient's age (5). Relatives may then also feel guilty for these feelings. Additionally, patients and family members may feel stigmatized or ashamed, and socially isolate themselves (6).

Combined with all of this is the fact that the patient with schizophrenia generally has an intrinsic vulnerability or lower tolerance for stress (7). Returning to the same environment, particularly in those families with high expressed emotion (EE), is quite likely detrimental for both the patient and the family. Hostility, criticism and emotional overinvolvement may exacerbate symptoms, and potentially contribute to the patient's relapse (8). In fact, a recent study done over seven years established that high EE predicted both increased readmission, as well as extended hospital stays (9). As a response to such outcomes, preventive interventions aimed at reducing stress and increasing adaptive communication have been developed (10).

Family Interventions

Family-based interventions differ widely in their components and methods (11) as they are essentially packages of interventions with different elements involved. The most frequently used elements of family interventions are psychoeducation, behavioral problem solving, family communication and support, and crisis management (12).

There have been a large number of these types of interventions over the past twenty years (13), they have been well researched and many have been manualized (14). As a notable example, McFarlane and colleagues (15) found that after participating in a comprehensive family education program, relatives' mental health and functional knowledge about schizophrenia increased, as did communications between the family members and the patient, high EE was reduced, and unreasonable expectations were lowered. There were also improvements seen in patients' personal functioning and social adjustment. In terms of clinical significance, it has repeatedly been demonstrated that psychoeducational programs aimed at lowering the EE in family environments can also reduce the rate of patient relapse (12).

While not successful for all families, and while some families only experience short-term relief, family-based psychoeducational programs have produced enough evidence to warrant recommendations by several guidelines (16, 17). A continuing problem with this modality, not unlike that experienced by other family treatments for hard-to-treat populations (18, 19), is that there tend to be difficulties with successful dissemination from research to applied settings. Thus, their availability and use in routine clinical practice is limited (20, 21).

One major problem with these comprehensive programs is that they require much in the way of time and re-

sources with training and supervision (22) and, to date applications have been limited largely to research settings, with some recent exceptions (23).

Family Education Programs

An integral part of psychoeducational programs is the dissemination of information, where patients and family members are provided with information on the nature of schizophrenia, including the diagnosis, symptomology, etiology, and course of illness (24, 25); treatment, including medication and family management; prognosis and "management strategies designed to lower the emotional climate of the home to which the patient is likely to be discharged" (26) and other features that can help, including links to available resources and support services (27).

The various brief education packages have much in common. They generally involve one to eight sessions (28-30), which are generally one to two hours each in duration (30). The information provided tends to be concise (31). Further, many education programs also provide easy-to-read pamphlets, which summarize the information presented (29, 32, 33).

Common to all of the interventions is the emphasis on educating the family about schizophrenia. Studies have found that providing such information has the effect of decreasing relatives' reported levels of burden, self-blame, distress and anxiety. Education also may assist the family to conceptualize the illness and its problems from a stress-vulnerability framework (10).

It has been suggested by Tarrier and Barrowclough (32) that such a component might be quite easily integrated within short-term programs carried out in community settings. In one such program they developed (30), information was gathered and assessed from an interview at the outset of the education using the Knowledge About Schizophrenia Interview (KASI). Information in the program itself was structured around relatives' knowledge, beliefs, and misconceptions about the illness. Attention was paid to the assimilation of knowledge, notably where initially held beliefs were contradicted by new information following the program. Following intervention, Barrowclough and Tarrier (30) found significant change in knowledge. In a recent review of these programs (34), the main shortcomings identified were a lack of comparison groups combined with a lack of random assignment, and, as with the more comprehensive family interventions, most of the outcome studies have been carried out in hospital and research settings.

Objective

The present research assessed the merits of a brief education program, designed to retain the effectiveness of programs used more often in research settings. However, it was

carried out in a community setting that had the resources and trained staff available to support its philosophy on a more everyday basis over the longer term to assist and reinforce any gains produced. It was also designed as a randomized, controlled trial to overcome methodological shortcomings of previous research. In addition to a randomized, controlled trial that included assessment by independent assessors, this study extended previous research on family education programs by including multi-informant assessment of EE. Also, three-month follow-up assessed maintenance of any gains. It was expected that providing information about the disorder and its management to patients and family members would result in increased knowledge in family members and lower expressed emotion compared to a randomly assigned control condition

Method

After this research was approved by the Massey University Regional Human Ethics Committee and was found to be consistent with the principles outlined in an internationally recognized standard for the ethical conduct of human research, members of two Schizophrenia Fellowship branches in New Zealand were approached to volunteer to participate in the study if they met the following criteria:

- were aged 17-65;
- had a diagnosis of schizophrenia according to the *Diagnostic and Statistical Manual of Mental Disorders-III-R (DSM-III-R)* or the *Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV)* which could be confirmed by a chart diagnosis;
- provided informed consent to participate in the education program and have their relatives participate in the education program;
- were on prescribed, psychiatric medication which was taken as prescribed;
- had no evidence of an organic brain syndrome or substance use-induced condition which would explain the psychopathology.

Family members were accepted into the study if they met the following criteria:

- gave informed consent;
- resided with or spent more than thirty-five hours of face-to-face contact a week with the patient.

In every case, these family members were chosen by the patient, as they were the people who were seen by the patient to be the most influential and important people in their lives and to be the main provider of emotional support on a regular basis. It is important to note that only one fourth of those initially contacted eventually participated in the study.

Table 1 shows the demographic characteristics of the participants in the present study. As instructed by the de-

velopers of the scale (35), based on a median split of family members' EE scores, families were identified as high or low in EE. The EE median was eleven, thus those who scored 0 to 10 on the pretest were classified as low EE, and those who scored 11 or higher were classified as high EE. There were no significant differences between those who came from high EE households and those from low EE households (all $p's > .05$).

Design

A mixed factorial design was used in the present study. Participants were randomly allocated to either the experimental or waitlist control group. This ensured a random allocation on relevant variables (for example, on demographics). The experimental group contained eleven patients and their family members (overall $n=23$) and the control group contained eight patients and their family members (overall $n=16$).

Table 1 Demographic Information of Participants

Patients (n = 19)	
Male/Female	13M/6F
Age (years):	
Mean	33 (SD=9.82)
Median	30
Range	22-58
Living with:	
Parents or partner at home	13
Others in a flat or flat run by parents	6
Age of onset:	
Mean	20 (SD=3.92)
Median	20
Range	12-26
Years since onset:	
Mean	13 (SD=10.03)
Median	11
Range	2-36
Marital status:	
Never married	13
Married	6
Relatives (n = 20)	
Relationship to patient:	
Mother	11
Father	4
Spouse/partner	4
Sibling	1
Current/previous employment:	
Full-time	4
Part-time	8
SD=standard deviation	

Assessment

Trained, independent assessors (Schizophrenia Fellowship employees) carried out a multimethod assessment at each of the assessment intervals. The dependent variables in the present study were the knowledge about schizophrenia held by the family members, as measured by the Knowledge About Schizophrenia Interview (KASI) (30), and the level of expressed emotion, as measured by the Level of Expressed Emotion Scale (LEE) (35). The independent variable was the psychoeducational program. Demographic information and information about first diagnosis and other factors was also collected.

Patient and Family History Interview

This structured intake form, collected by the assessor, was designed to collect demographic information and information about first diagnosis and other factors.

The KASI

The KASI (30) was designed to assess and evaluate knowledge, beliefs and attitudes about six aspects of schizophrenia (diagnosis, symptomology, etiology, medication, prognosis and management), and the effects of that information on behavior. It takes up to thirty minutes to complete, depending on the length of response and the structuring of the interview. Most questions require a single word answer or a “Yes/No/Don’t Know” choice, but the final section on management additionally contains two open-ended sections. Each section is scored on a four-point scale (1-4) (36). Thus, family members’ responses can be assessed in terms of how helpful their beliefs and attitudes about schizophrenia are likely to be to the management of the illness (30). Interviews were audiotaped for reliability purposes. The senior author scored all interviews, and five interviews were randomly selected and scored by an independent rater (a trained senior clinical psychologist) for reliability calculations. In all instances, this measure was administered first to avoid contamination by later questions and responses to the Level of Expressed Emotion Scale.

The LEE: Patient and Relative Versions

Although the Camberwell Family Interview (CFI) has been consistently demonstrated to be the best instrument for assessing EE (37, 38), the administration and scoring is lengthy and requires in-depth training which is difficult to obtain (39, 40). A disadvantage of this is that it is not then easily used in routine clinical practice.

The LEE was developed to measure the “perceived emotional climate of social environments” (41, p. 216) and was specifically designed to measure the construct of EE as described by Vaughn and Leff (42). Kazarian and colleagues

(43) investigated the comparison of the LEE scores with the CFI ratings and found that for total scores the relationship between the two measures was encouraging, that the LEE’s four subscales have good internal consistency, good test-retest reliability and good temporal stability (35), and the scores were found to be independent of age, gender and contact hours. Further, it has been found that only the intrusiveness and tolerance/expectation scales are significantly correlated with the critical comment scale of the CFI, but the total LEE score and the intrusiveness scale do predict re-hospitalization (35). As a consequence, given the setting, the aims of the study, and the multi-informant measurement, the LEE was chosen as a preferable, everyday alternative to the CFI.

There are two versions of the LEE, a patient and a relative version, which together give a more comprehensive, multi-informant measurement of the affective environment in the family. It is a self-report measure containing sixty true/false items, which are broken into four subscales, reflecting the components of the EE construct (42). These are: 1) intrusiveness; 2) emotional response; 3) attitude toward illness, and; 4) tolerance and expectations. In addition to the four subscale scores, a total score is also rendered, with a higher score denoting higher levels of EE.

The subscales have been shown to possess internal consistency ($KR-20=.84-.95$) and temporal stability (Pearson $r=.67-.82$) over a six-week time frame (35). Three separate studies have demonstrated predictive validity of the LEE. It has also been demonstrated to have construct validity, independent from effects due to sex or age (35). The scores of the two different versions have also been demonstrated to correlate well with the corresponding ratings of the CFI (43).

Assessments and the Education Program

The first testing session conducted by the independent, trained assessor consisted of three assessments for family members, and one for patients:

- 1) Patient and Family History Interview (family members only);
- 2) Knowledge About Schizophrenia Interview (family members only);
- 3) LEE scale (patient and family members).

Both the experimental and control groups attended pretest sessions. The posttest testing session was then conducted approximately two weeks later, following the education program (experimental group) and the control period (control group).

The education program itself (34) was administered over sessions two and three by the first author for both pa-

tients and relatives initially in the experimental group only, and provided information on:

- 1) Diagnosis, symptomology, etiology, medication, and course and prognosis of schizophrenia;
- 2) Management and coping strategies that could help both the patient and relatives, including ten to fifteen minutes of relaxation training at the close of the session, intended to give participants a practical tool to take away and use in their own environments when needed.

The intervention (34) incorporated aspects of programs by Barrowclough and Tarrrier (36), and Falloon and colleagues (44, 45). Additional, limited information drawn from the literature about expressed emotion was provided, with three features: 1) an overview and definition in lay terms; 2) information about the vulnerability a person, particularly those diagnosed with schizophrenia, might possess; and, 3) basic advice on how to help maintain a low stress and stimulus environment in the home for the whole family unit's benefit.

At the beginning of the first of two sessions, an information booklet (36) was given to each person attending the session to help overcome the possible problem of retention and to allow participants to further look at the material in their own time. The booklet was written in simple language, was directly related to the topic and, according to the Flesch reading scale (46), can be understood by at least 75% of the population.

Participants' sense of safety and comfort during the intervention was of prime importance. Participants had the choice of whether they attended this session within their own homes ($n=12$), or in a nominated venue that was familiar to them ($n=27$). The initial session lasted one and one-half to two hours. If more than one relative attended the sessions ($n=1$ case), the education was conducted with them together, although they completed the measures separately, and the patient completed two questionnaires -- one for each family member participating. Patients were given the choice of whether they: 1) had a support person present or 2) attended the session before or after their key family member. In all instances, patients wanted to receive the information separately from their family member. Thus, in all instances, the patient was seen separately. Their reasoning for this was based on patient concerns that included that they would feel "too self-conscious" or "on guard" to be able to actively participate in the education sessions if their key family member was present. Concern was also expressed by the patients that the family members may judge the patients during the session or become embarrassed themselves, which would inhibit the ability to participate freely in the education ses-

sions. Two patients brought a support person with them who was not a family member, and all but four patients chose to receive the information before their key family member did. Twelve out of twenty relatives and eleven out of nineteen patients declined to participate in the optional relaxation exercise at the end of the session. Analyses of the outcome scores between those who participated in the relaxation exercise, and those who did not, showed no significant differences ($p's>.05$). Four clients and one relative requested and received the relaxation exercise to be recorded on cassette tape by the researcher for them to use at home. All participants took the education booklet and a written copy of the relaxation exercise with them at the end of the session.

Knowing that active involvement has been shown to predict benefits in intervention programs (47, 48), information was presented in four-to-five-minute segments followed by a small opportunity for participants to discuss the information heard and how it may or may not relate to their own experiences, as well as ask any questions they may have as related to the information. Social reinforcement (e.g., encouragement, reinforcing body language and positive attention to points raised by participants) was provided to motivate continued involvement, and participants were encouraged to summarize their understanding of the key points at the end of each segment. In the event of misunderstanding of the key points, clarification was provided.

The third and final session consisted of two stages; the first, a summary and time for questions and feedback. Clients and relatives attended this session together so that any further questions about the study or the information learned could be asked. Every family unit reported that after the education sessions, they had met as a family unit and discussed what they had learned from their own perspectives. The second stage of this session for participants was to complete the postmeasures separately with the independent assessor.

This session lasted approximately one-and-a-half hours. Information was also provided to the community-support centers to provide ongoing support for patients and families if the participants requested it. It is important to note that although all participants were members of Schizophrenia Fellowship, there was a broad range of support accessed from daily to none at all. All participants had equal opportunity to access information or support before and after the intervention, as well as during the one-week interval between the intervention sessions. Analyses of the outcome scores between those who accessed support during this interval and those who did not showed no significant differences ($p's>.05$).

Post and Follow-Up Assessment

Following treatment, the independent assessors again administered the KASI and the LEE scales. A further assess-

ment was done three months following intervention with all participants.

Results

Reliability

The degree of interrater agreement for the KASI was 80%. It was concluded that the scores obtained were of acceptable reliability, and that this finding might be generalized from the random sample to the total population of audiotapes.

Group Comparability

Pretreatment differences across conditions were examined by means of one-way analysis of variance (ANOVA) tests or chi-square tests. Variables compared across groups included age, gender, patient's place of residence, family member's and patient's (separate) marital and employment status, age of onset, length of disorder, and whether the participant had previously attended any education courses. For these variables, analyses comparing participants in the treatment condition with those in the waitlist condition resulted in nonsignificant differences ($p's > .05$), which indicates that the subjects were demographically similar in the two conditions.

Similar analyses were conducted on the pretreatment dependent variables of relatives' knowledge and relatives' and patients' (separate) levels of expressed emotion. None of the analyses indicated significant differences ($p's > .05$).

Treatment Fidelity

The treatment manual was not implemented in a rigid fashion, but in a flexible and interactive manner designed to reflect programmatic strategies while permitting individualization on the basis of each participant's needs as identified in the preassessment of the KASI. Individual sessions were reviewed by a senior clinical psychologist based on a checklist of components to be covered, and no protocol violations were found.

Treatment Outcome

The analyses conducted were selected to address the two main hypotheses of the study. Namely, as a result of attending a brief educational program: 1) participants' knowledge would increase, and 2) the level of expressed emotion in the family would decrease compared to the control condition.

The means and standard deviations of the KASI (for relatives only) and the LEE scale (for relatives and patients separately) are presented in Tables 2, 3, and 4, respectively.

Knowledge About Schizophrenia Interview

A Wilcoxon matched-pairs signed-ranks test was performed on the data for all twenty relatives comparing pre-

test and posttest scores for both the treatment and waitlist group. This nonparametric test was used for the KASI data instead of the corresponding parametric test because of the way in which the KASI data is measured. KASI subscales are ordinal in that participants are rank ordered on a single variable, and each value means something in relation to the next. There is not an equal distance between each of these values. Thus, as in similar research using the KASI (30), parametric tests requiring interval or ratio data were not applicable.

Information Acquired: As expected, there were no differences between the pretest 1 (Pre1) and pretest 2 (Pre2) interviews for the control group, showing no change in knowledge on subscales or total score as a function of the control period ($p's > .05$). Knowledge was gained: 1) between pretest and posttest by family members in the Treatment Group (Treatment Group I), and 2) following treatment by relatives in the waitlist control group (i.e., between Pre2 and post). The waitlist group from Pre2-post is from here on referred to as Treatment Group II.

Analysis of the KASI total score for Treatment Group I revealed a significant gain in knowledge ($z=2.810, p<0.005$). There was also a significant gain for Treatment Group II following education ($z=2.530, p<0.005$). For the subscale of Symptomology, analyses revealed a significant gain for Treatment Group I ($z=2.428, p<0.05$), and for Treatment Group II after education ($z=1.633, p<0.05$). For the Etiology subscale, analyses revealed a significant gain for both Treatment Group I ($z=1.780, p<0.05$) and Treatment Group II after education ($z=2.251, p<0.01$). For the Medication subscale, analyses revealed a significant gain for both Treatment Group I ($z=2.232, p<0.01$) and Treatment Group II ($z=2.460, p<0.01$). For the subscale of Course and Prognosis, only Treatment Group I gained significantly in knowledge ($z=1.656, p<0.05$). No change was found for the Treatment Group II, though it approached significance ($z=1.342, p<0.10$). For the final subscale, Management, both Treatment Group I ($z=1.633, p<0.05$) and Treatment Group II gained significantly in knowledge ($z=2.45, p<0.05$). For the subscale of Diagnosis, neither treatment group gained significantly in knowledge ($p's > .05$) (see Table 2).

The LEE Scale

The effects of the educational intervention versus the waitlist control period were analyzed by means of a 2 by 2 (treatment vs. waitlist) mixed factorial ANOVA.

Expressed Emotion: For the Attitude Toward Illness subscale the relatives' version of the LEE, analyses revealed a significant trials effect ($F [1,18]=6.386, p<0.05$) and a significant interaction effect ($F [1,18]=8.34, p<0.01$). That is, following treatment, the score on this subscale improved significantly whereas there was no change following the control period. Analyses of the patient version showed a significant

Table 2 Means and Standard Deviations for the Knowledge About Schizophrenia Interview (KASI)

Measures	Treatment		Waitlist Control			All Relatives
	Pretest	Posttest	Pretest 1	Pretest 2	Posttest	Follow-up
Diagnosis						
M	3.00	3.00	2.88	3.13	3.13	3.00
SD	0.00	0.00	0.64	0.35	0.60	0.34
Range	0.00	0.00	2-4	3-4	2-4	2-4
Symptomology						
M	3.00	3.83	2.88	3.13	3.63	3.61
SD	1.13	0.37	0.84	0.84	0.70	0.70
Range	1-4	3-4	2-4	2-4	2-4	2-4
Etiology						
M	2.42	3.08	2.25	2.13	3.25	3.28
SD	0.67	0.76	0.46	0.35	0.66	0.75
Range	2-4	2-4	2-3	2-3	2-3	2-4
Medication						
M	2.50	3.58	2.75	2.50	3.88	3.78
SD	1.45	0.95	1.28	1.07	0.33	0.55
Range	1-4	1-4	1-4	1-4	3-4	2-4
Course & Prognosis						
M	2.17	2.67	2.75	2.75	3.13	3.11
SD	1.03	0.85	1.28	1.03	0.78	0.68
Range	1-4	1-4	1-4	1-4	2-4	1-4
Management						
M	2.92	3.25	2.50	2.50	3.25	3.22
SD	0.52	0.60	0.76	0.76	0.66	0.81
Range	2-4	2-4	1-3	1-3	2-4	2-4
Total Score						
M	16.00	19.58	16.00	16.13	20.25	20.00
SD	3.10	2.22	3.74	3.04	2.39	1.91
Range	12-21	15-22	10-19	11-29	15-23	16-23

M=mean; SD=standard deviation

trials effect ($F[1,17]=8.316$, $p<0.01$) and a nonsignificant interaction ($p>.10$).

For the Intrusiveness subscale of the relatives' version of the LEE, analyses revealed a significant trials effect ($F[1,18]=8.319$, $p<0.01$) and a nonsignificant interaction ($p>.10$). Analyses of the patient version showed no significant effects ($p's>.10$). For the Emotional Response subscale of the relatives' version of the LEE, analyses revealed a significant trials effect ($F[1,18]=4.28$, $p<0.05$), and a nonsignificant interaction ($p>.10$). Analyses of the patient version showed a significant trials effect ($F[1,17]=13.621$, $p<0.05$) with no significant interaction effect ($p>.10$). For the Tolerance/Expectations subscale of the relatives' version of the LEE, analyses revealed a significant trials effect ($F[1,18]=4.233$,

$p<0.05$) and a nonsignificant interaction ($p>.10$). Analyses of the patient version also showed a significant trials effect ($F[1,17]=4.845$, $p<0.05$) and a nonsignificant interaction ($p>.10$). Analysis of the LEE scale total score for relatives revealed a significant trials effect ($F[1,18]=21.953$, $p<0.005$), and a nonsignificant interaction effect ($p>.10$). Analysis of the LEE scale total score for patients revealed a significant trials effect ($F[1,17]=24.697$, $p<0.005$); the interaction was nonsignificant ($p>.10$).

Analyses here showed that relatives' EE scores significantly decreased from pretest to posttest on all four subscales of the LEE (Intrusiveness, Emotional Response, Attitude Toward Illness, and Tolerance/Expectations), patients' scores decreased on two (Emotional Response and Tolerance/Ex-

pectations), and both decreased on the total score. Interaction effects were found on the relatives' Attitude Toward Illness subscale.

For total score and all other subscales, it is noted that the majority of the variance contributing to the significant trials effect in all instances was as a function of the change in the treated group scores. The change in LEE total score was 2.08 (relative) and 3.09 (patient) for treated groups versus 0.63 and 1.50 for the control groups, respectively (see Tables 3 and 4, respectively).

Follow-Up: Maintenance of Gains

To assess maintenance of change, three-month follow-up scores were compared initially with posttreatment scores. As expected, knowledge scores were maintained at follow-up with most people achieving the same score. Wilcoxon matched-pairs signed-ranks tests showed no significant difference from posttest to follow-up for the total score and all subscales ($p's > .10$). For LEE scores, paired t-tests showed no significant changes in EE between posttest and follow-up ($p's > .10$) for either relatives or patients on both the total

scores and each of the four subscales, except for the Attitude Toward Illness subscale where the relatives' version showed a significant effect ($t[17]=2.38, p<0.05$). That is, this finding reflected an additional significant decrease in EE on the Attitude Toward Illness dimension. Thus, initial gains were maintained and, for the relatives' Attitude Toward Illness subscale, additional positive change was reflected.

Further separate sets of analyses were conducted to assess change from pretreatment to follow-up on total scores to assess overall change. A Wilcoxon test for KASI total scores was highly significant and clearly showed that relatives gained in knowledge during the study from initial pretest to follow-up ($z=3.422, p<0.0006$). Paired t-tests showed significant decreases in EE in the total score for relatives ($t[17]=3.50, p<0.005$) and patients ($t[16]=2.88, p<0.01$) between initial pretest and follow-up.

Discussion

Main Aims and Major Findings

The present study examined the effectiveness of a psychoeducational intervention for family and patients. Taken

Table 3 Means and Standard Deviations for the Level of Expressed Emotion (LEE) Scale – Relative's Version

Level of Expressed Emotion Scale – Relative's Version						
Measures	Treatment		Waitlist Control			All Relatives
	Pretest	Posttest	Pretest 1	Pretest 2	Posttest	Follow-up
Intrusiveness						
M	3.33	2.33	4.38	4.13	3.13	1.72
SD	3.87	4.09	2.56	2.64	1.76	2.44
Range	0-14	0-15	1-8	0-7	0-6	0-8
Emotional Response						
M	3.83	3.08	3.88	3.75	2.75	3.06
SD	3.38	2.60	2.36	2.66	1.56	2.41
Range	1-9	1-10	1-8	1-9	1-6	1-8
Attitude Toward Illness						
M	0.66	0.58	2.13	2.13	0.88	1.33
SD	0.84	1.11	2.36	2.36	1.05	1.85
Range	0-3	0-4	0-7	0-7	0-3	0-7
Tolerance/Expectations						
M	1.92	1.50	1.50	1.25	1.00	1.39
SD	2.47	2.40	1.20	1.28	0.50	2.15
Range	0-9	0-9	0-3	0-3	0-2	0-7
Total EE Score						
M	9.58	7.50	11.88	11.25	7.75	7.50
SD	9.34	8.92	4.30	6.36	3.38	7.87
Range	2-32	2-35	4-19	1-19	1-12	1-29

M=mean; SD=standard deviation; EE=expressed emotion

Table 4 Means and Standard Deviations for the Level of Expressed Emotion (LEE) Scale – Patient's Version

Level of Expressed Emotion Scale – Patient's Version						
	Treatment		Waitlist Control			All Patients
Measures	Pretest	Posttest	Pretest 1	Pretest 2	Posttest	Follow-up
Intrusiveness						
M	4.46	3.36	5.63	5.38	5.38	3.63
SD	4.50	4.27	3.42	3.34	3.20	3.34
Range	0-12	0-13	0-10	0-10	0-9	0-11
Emotional Response						
M	4.81	3.82	4.50	4.00	2.25	4.19
SD	4.85	4.15	3.59	3.46	2.17	4.29
Range	0-13	0-12	0-9	0-9	0-6	0-12
Attitude Toward Illness						
M	2.27	1.64	2.88	2.38	1.25	2.44
SD	2.20	1.82	3.04	2.88	1.56	2.66
Range	0-7	0-5	0-10	0-9	0-5	0-10
Tolerance/Expectations						
M	3.73	3.46	4.00	3.75	2.88	3.69
SD	3.90	3.85	2.27	2.32	2.20	4.08
Range	0-12	0-12	1-7	1-7	1-6	0-12
Total EE Score						
M	15.27	12.18	17.00	15.50	11.75	12.59
SD	13.89	13.48	8.75	8.90	8.15	12.01
Range	1-41	1-39	6-31	6-28	1-22	1-41

M=mean; SD=standard deviation; EE=expressed emotion

together, the findings of the current study demonstrated that family members' knowledge improved significantly after intervention, and that this improvement was maintained at the three-month follow-up, whereas no change was reflected as a function of the two-week control period. The EE also significantly decreased over the course of the study with the effects of intervention having the most beneficial and direct impact on family members' negative attitudes toward the disorder.

Further Investigations and Implications

Previous short-education programs (36, 49) have shown that education alone does not reduce EE or affect relapse rates, but that it can produce increases in relatives' knowledge and general coping and to an extent alleviate relatives' burden and distress (50). This study supported the changes reported in earlier studies, but also found additional positive effects. Over the course of the current study, there were definite reductions in EE. Initial changes on EE were either maintained or, in the case of family members' negative at-

titudes, continued to improve over a three-month follow-up interval. Here, particularly with respect to family members' attitudes, reductions in EE appeared to be due largely to education.

It has been theorized (32) that brief education has value in that it engages the family in treatment and can assist them to assimilate information from a stress vulnerability framework. Pakenham and Dadds (51) found that it had value as it led to increased understanding and short-term reduction of family burden, distress, and anxiety, but not EE. Cozolino and colleagues (52) found no increase in knowledge. Yet, in their study, relatives did report an increased sense of support and decreased feelings of personal guilt. Abramowitz and Coursey (53) also found more effective management of home life and reductions in self-reported distress and anxiety. However, none of these effects lasted to follow-up intervals.

A major point here is that no brief program other than the current study to date has found immediate or longer term reductions in EE. Given the impact of EE on increased hospitalization frequency and duration (9), this finding is

encouraging. If replicated, particularly given the significant impact on family members' attitudes toward the disorder, combined with increased knowledge, providing brief education programs under the auspices of supportive community organizations appears to have potential.

One question here is why did EE decrease in this study when it has not in other studies? It is quite probable that participants entered the study with a certain mindset, level of motivation, and expectations. For those in the control condition, there was quite possibly anticipation that someone within a familiar setting who seemed to understand their situation was going to put aside time to listen and discuss on a knowledgeable, empathic and one-to-one basis. Positive expectancies, and perhaps the effect of retesting, may have been sufficient to produce some nonsignificant changes in EE during the control period. However, this does not sufficiently answer the question as to why the much greater changes in EE were found after intervention, particularly on the relatives' Attitudes to Illness subscale.

The positive results achieved could have been influenced by the fact that this study was conducted through a community organization that believes in and supports the principles advocated in the intervention. All participants belonged to the organization, although not all participants were actively involved with the agency. It is possible that this setting resulted in an atmosphere conducive to both increased expectancies, as well as actual change. More research is needed to assess whether there is more direct data-based support for the potential of community and recovery-focused organizations to influence the way patients and families perceive this disorder and interact with each other. To this end, it would be useful if future research could also measure patients' gains and retention in knowledge about schizophrenia as well as other indicators including relapse and rehospitalization rates.

A final limitation which might have influenced the outcome of this study is that no chart diagnosis was obtained to confirm the diagnosis. Future research would benefit from this information being obtained.

Limitations of the Study

The results of the study are qualified by limitations that included a relatively small sample size of thirty-nine that reduced the power of statistical tests. This study used a sample drawn from the Schizophrenia Fellowship. Only one-fourth of those initially contacted eventually participated in the study. While there were many reasons for this, the main one was that both a key family member and the patient needed to be involved. In many cases, family members were eager to participate, but their diagnosed family member was ill or not willing. Whatever the reason, this sample likely reflected increased levels of motivation by virtue of their willingness to

participate. Thus, the use of the randomized, controlled design was used to increase confidence that findings were simply not due to increased motivation. Nevertheless, it is possible that the patients and relatives who were contacted, but did not participate in the program, would not have gained in knowledge about schizophrenia or decreased in EE. Future research can help shed light on this issue.

As to why EE decreased in this study but not others, some other issues are worth noting. First, the method used to measure EE should be taken into account. The measurement was a self-report measure. Some previous studies (41, 49) have used the CFI. While the LEE scale has been found to correlate well with the CFI, findings based on methodological differences cannot be ruled out. The LEE scale was chosen over the CFI partially because the CFI is an involved interview and not particularly suited for the everyday setting in which the brief intervention was administered. By contrast, the LEE scale is a quick, easy-to-administer and score measure with documented reliability and validity. Nevertheless, it is possible to respond in a socially desirable manner on this measure. It is possible that the EE scores for some people did not accurately reflect their true EE status. However, while there are problems with the use of a self-report measure, confidence in findings is increased through the use of a multimethod, multiple informant approach, the use of independent assessors, and the randomized design. Nevertheless, other possibilities accounting for change include repeated testing, and regression to the mean cannot be ruled out. However, other studies have not found such effects (49).

Conclusions

The effectiveness of this brief program was demonstrated, particularly in terms of knowledge and family members' attitudes toward the illness. This is encouraging and supports the value of these programs in recovery and community-support settings.

Though the present study demonstrated positive findings, it is important to note that brief education is obviously not suitable, or enough, for all. Many patients and relatives need more in the way of problem-solving skills, communication skills, and regular one-to-one assistance. However, programs like those described here appear to have clear merit within a community-based intervention approach.

References

1. Paul GL, Menditto AA. Effectiveness of inpatient treatment programs for mentally ill adults in public psychiatric facilities. *Appl Preventive Psychol: Current Scientific Perspectives* 1992;1:41-63.
2. Bland R, Harrison CA. Investigating discharge destinations for schizophrenic patients. *Aust N Z J Psychiatry* 1995;29(2):288-292.

3. Intagliata J, Willer B, Egri G. Role of the family in case management of the mentally ill. *Schizophr Bull* 1986;12(4):699-708.
4. Family support through self-help – the family movement's past and future. *World Fellowship for Schizophrenia and Allied Disorders Newsletter*; Third Quarter 2004:1.
5. Schene AH, van Wijngaarden B, Koeter MW. Family caregiving in schizophrenia: domains and distress. *Schizophr Bull* 1998;24(4):609-618.
6. Wahl OF, Harman CR. Family views of stigma. *Schizophr Bull* 1989;15(1):131-139.
7. Frith C, Johnstone E. *Schizophrenia: a very short introduction*. New York: Oxford University Press; 2003.
8. Vaughn C, Leff J. The measurement of expressed emotion in the families of psychiatric patients. *Br J Soc Clin Psychol* 1976;15(2):157-165.
9. Marom S, Munitz H, Jones PB, Weizman A, Hermesh H. Expressed emotion: relevance to rehospitalization in schizophrenia over 7 years. *Schizophr Bull* 2005;31(3):751-758.
10. Marley JA. *Family involvement in treating schizophrenia: models, essential skills, and process*. New York: The Haworth Clinical Practice Press; 2004.
11. Leavey G, Gulamhussein S, Papadopoulos C, Johnson-Sabine E, Blizard B, King M. A randomized controlled trial of a brief intervention for families of patients with a first episode of psychosis. *Psychol Med* 2004;34(3):423-431.
12. Dixon LB, Lehman AF. Family interventions for schizophrenia. *Schizophr Bull* 1995;21(4):631-643.
13. Brooker C. Expressed emotion and psychosocial intervention: a review. *Int J Nurs Stud* 1990;27(3):267-276.
14. Kuipers E. Family interventions in schizophrenia: evidence for efficacy and proposed mechanisms of change. *J Fam Therapy* 2006;28(1):73-80.
15. McFarlane WR, Lukens E, Link B, Dushay R, Deakins SA, Newmark M, et al. Multiple-family group and psychoeducation in the treatment of schizophrenia. *Arch Gen Psychiatry* 1995;52(8):679-687.
16. Lehman AF, Steinwachs DM. Translating research into practice: the Schizophrenia Patient Outcomes Research Team (PORT) treatment recommendations. *Schizophr Bull* 1998;24(1):1-10.
17. National Collaborating Centre for Mental Health and the National Institute for Clinical Excellence. *Schizophrenia: full national clinical guideline on core interventions in primary and secondary care*. London: Gaskell and the British Psychological Society; 2002.
18. Curtis NM, Ronan KR, Borduin CM. Multisystemic treatment: a meta-analysis of outcome studies. *J Fam Psychol* 2004;18(3):411-419.
19. Henggeler SW. Decreasing effect sizes for effectiveness studies – implications for the transport of evidence-based treatments: comment on Curtis, Ronan and Borduin (2004). *J Fam Psychol* 2004;18(3):420-423.
20. McFarlane WR, McNary S, Dixon L, Hornby H, Cimett E. Predictors of dissemination of family psychoeducation in community mental health centers in Maine and Illinois. *Psychiatr Serv* 2001;52(7):935-942.
21. Fadden G. Family intervention. In: Brooker C, Repper J, editors. *Serious mental health problems in the community: policy, practice & research*. London: Bailliere Tindall; 1998.
22. Magliano L, Fiorillo A, Malangone C, De Rosa C, Maj M; Family Intervention Working Group. Implementing psychoeducational interventions in Italy for patients with schizophrenia and their families. *Psychiatr Serv* 2006;57(2):266-269.
23. Patterson TL, Bucardo J, McKibbin CL, Mausbach BT, Moore D, Barrio C, et al. Development and pilot testing of a new psychosocial intervention for older Latinos with chronic psychosis. *Schizophr Bull* 2005;31(4):922-930.
24. Falloon IR, Liberman RP, Lillie FJ, Vaughn CE. Family therapy of schizophrenics with high risk of relapse. *Family Process* 1981;20(2):211-221.
25. Anderson CM, Hogarty GE, Reiss DJ. The psychoeducational family treatment of schizophrenia. In: Goldstein MJ, editor. *New developments in interventions with families of schizophrenics*. San Francisco: Jossey-Bass; 1981.
26. Shean GD. *What is schizophrenia and how can we fix it?* Lanham (Maryland): University Press of America; 2004.
27. Harris N, Williams S, Bradshaw T, editors. *Psychoeducational interventions for people with schizophrenia*. Hampshire (UK): Palgrave Macmillan; 2002.
28. Berkowitz R, Eberlein-Fries R, Kuipers L, Leff J. Educating relatives about schizophrenia. *Schizophr Bull* 1984;10(3):418-429.
29. Bebbington P, Kuipers L. The predictive utility of expressed emotion in schizophrenia: an aggregate analysis. *Psychol Med* 1994;24(3):707-718.
30. Barrowclough C, TARRIER N, Watts S, Vaughn C, Bamrah JS, Freeman HL. Assessing the functional value of relatives' knowledge about schizophrenia: a preliminary report. *Br J Psychiatry* 1987;151:1-8.
31. Falloon IR, Boyd JL, McGill CW, Williamson M, Razani J, Moss HB, et al. Family management in the prevention of morbidity of schizophrenia. Clinical outcome of a two-year longitudinal study. *Arch Gen Psychiatry* 1985;42(9):887-896.
32. TARRIER N, Barrowclough C. Providing information to relatives about schizophrenia: some comments. *Br J Psychiatry* 1986;149:458-463.
33. Smith J, Birchwood M. Relatives and patients as partners in the management of schizophrenia. The development of a service model. *Br J Psychiatry* 1990;156:654-660.
34. Moxon AM, Ronan KR. *Providing information to relatives about expressed emotion and schizophrenia: an intervention manual*. New Zealand: Massey University; 1998.

35. Cole JD, Kazarian SS. The Level of Expressed Emotion Scale: a new measure of expressed emotion. *J Clin Psychol* 1988;44(3):392-397.
36. Barrowclough C, Tarrier N. Families of schizophrenic patients: cognitive behavioural intervention. London: Chapman & Hall; 1992.
37. Van Humbeeck G, Van Audenhove Ch, De Hert M, Pieters G, Storms G. Expressed emotion: a review of assessment instruments. *Clin Psychol Review* 2002;22(3):323-343.
38. Gerlisma C, Hall WW 3rd. Predictive power and construct validity of the Level of Expressed Emotion (LEE) scale. Depressed out-patients and couples from the general community. *Br J Psychiatry* 1997;170:520-525.
39. Startup M. Confirmatory factor analysis of the Level of Expressed Emotion (LEE) scale. *Br J Medical Psychol* 1999;72(Pt 3):421-424.
40. Magana AB, Goldstein JM, Karno M, Miklowitz DJ, Jenkins J, Falloon IR. A brief method for assessing expressed emotion in relatives of psychiatric patients. *Psychiatry Res* 1986;17(3):203-212.
41. Cole JD, Kazarian SS. Predictive validity of the Level of Expressed Emotion (LEE) Scale: readmission follow-up data for 1, 2, and 5-year periods. *J Clin Psychol* 1993;49(2):216-218.
42. Vaughn CE, Leff JP. Patterns of emotional response in relatives of schizophrenic patients. *Schizophr Bull* 1981;7(1):43-44.
43. Kazarian SS, Malla AK, Cole JD, Baker B. Comparisons of two expressed emotion scales with the Camberwell Family Interview. *J Clin Psychol* 1990;46(3):306-309.
44. Falloon IRH, Graham-Hole V, Fadden G. Integrated mental health care: a programme of training in clinical management of mental disorders using effective, efficient intervention strategies within a multidisciplinary team. Ariete, Perugia, Italy: Optimal Treatment Project; 1996.
45. Falloon IRH; the Optimal Treatment Project collaborators. Integrated mental health care: a guidebook for consumers. Perugia, Italy: Optimal Treatment Project; 1997.
46. Flesch R. A new readability yardstick. *J Appl Psychol* 1948;32:221-223.
47. Bergin AE, Garfield SL. Handbook of psychotherapy and behavior change. 4th ed. New York: John Wiley; 1994.
48. Falloon IRH, Laporta M, Fadden G, Graham-Hole V. Managing stress in families: cognitive and behavioural strategies for enhancing coping skills. London: Routledge; 1993.
49. Tarrier N, Barrowclough C, Vaughn C, Bamrah JS, Porceddu K, Watts S, et al. The community management of schizophrenia. A controlled trial of a behavioural intervention with families to reduce relapse. *Br J Psychiatry* 1988;153:532-542.
50. Merinder LB. Patient education in schizophrenia: a review. *Acta Psychiatr Scand* 2000;102(2):98-106.
51. Pakenham KI, Dadds MR. Family care and schizophrenia: the effects of a supportive educational program on relatives' personal and social adjustment. *Aust N Z J Psychiatry* 1987;21(4):580-590.
52. Cozolino LJ, Goldstein MJ, Nuechterlein KH, West KL, Snyder KS. The impact of education about schizophrenia on relatives varying in expressed emotion. *Schizophr Bull* 1988;14(4):675-687.
53. Abramowitz IA, Coursey RD. Impact of an educational support group on family participants who take care of their schizophrenic relatives. *J Consult Clin Psychol* 1989;57(2):232-236.