Schizophrenic Patients’ Perceptions of Stress, Expressed Emotion, and Sensitivity To Criticism

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This study was designed to get an “insider’s view” of expressed emotion (EE) from the perspective of schizophrenic patients. Thirty-two patient and “influential other” pairs participated in the study. Patients’ perceptions of EE attitudes in influential others were examined to determine whether they corresponded with actual EE ratings. Patients also rated how “stressed” they felt when interacting with their influential others, and patients’ general sensitivity to criticism (STC) was assessed. As predicted, patients’ perceptions of critical attitudes were related to actual EE ratings of criticism, although patients’ perceptions of emotional overinvolvement (EOI) were not related to EOI ratings. Patients reported feeling more stressed when interacting with high-EE influential others, supporting an “EE as stressor” hypothesis. Finally, patients’ STC influenced the level of stress they reported.

Key words: expressed emotion/EE/perceptions/stress/sensitivity/schizophrenia

More than 3 decades of research has demonstrated that schizophrenic patients are negatively affected by critical and emotionally overinvolved attitudes of family members. These attitudes are referred to as “expressed emotion” (EE). Although EE was initially assessed only in parents, researchers have broadened their scope to include any person close to the patient with whom the patient has frequent contact. The factors that explain the association between high EE and poor schizophrenic course have yet to be understood fully. A predominant explanation is that high-EE attitudes create a stressful environment for patients. There is some support for this. Tarrier and colleagues found that patients had higher levels of arousal in the presence of a high-EE relative. Leff found that unmedicated patients were susceptible to relapse if they were either living with a high-EE parent or experiencing a stressful life event. He proposed that both cause stress, which creates a rise above the optimal level of arousal in a patient. Cutting and Docherty found that patients recounted a significantly greater number of “stressful” memories about high-EE parents than low-EE parents, lending further support to this hypothesis.

Lazarus’ influential model of stress suggests that a person’s appraisal mediates the relationship between environment and the outcome of stress. It certainly is unlikely that patients are simply passive recipients of other people’s stress-provoking behavior. In fact, there is evidence of an interactive process between the patient and the person rated high or low in EE. For example, personality factors such as high conscientiousness in mothers of patients can interact with excitement and depression in the patients, leading to a greater sense of burden in the mother. This sense of subjective burden has been associated with both critical comments (CCs) and emotional overinvolvement (EOI) in mothers. Given the reciprocal nature of human interaction, it seems important to look not only at the influential others’ attitudes but also at patients’ perceptions of those attitudes, which may help explain why interactions with those people lead to higher rates of relapse.

Schizophrenic patients’ perceptions of parental characteristics have been found to predict relapse. For example, patients who perceived their parents to be low in care (ie, indifferent or rejecting) or high in protection (ie, controlling, intrusive, and infantilizing) had a more severe course of illness compared with patients who rated their parents as high in care and low in protection. Low care and high protection is considered analogous to high EE. Kazarian et al found that relatives rated high EE-criticism were perceived by patients as being more intrusive, having less tolerance, and having higher expectations. Lebell and colleagues found that patients’ current feelings toward their relatives and their perceptions of their relatives’ attitudes toward them were significantly related to outcome during a 1-year follow-up, whereas relatives’ own self-reported attitudes did not predict outcome. Scott et al found

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that the best predictor of relapse was patients’ expectations about how their parents would see them.

Family studies of depressed patients and normal college students suggest that the most important variable affecting outcome may not be the level of criticism or overinvolvement per se but rather how much is “getting through to the patient.” Support for this hypothesis came from Tompson and colleagues who examined schizophrenic patients’ perceptions of their relatives’ attitudes. They found that it was the patients’ perceptions of critical behavior rather than the EE ratings that were associated with a high risk of relapse in a 1-year follow-up. Although patients have been found to have difficulties in recognizing negative affect in others, Sczaufca et al found a significant association between patients’ perceptions of criticism from close relatives and the number of CCs made by the relatives. Patients’ perceptions are likely to be influenced by EE attitudes of those close to them and also by their own characteristics, such as their sensitivity to criticism (STC).

Further inquiry into patients’ characteristics is needed to determine whether some patients are more likely than others to perceive interactions with high-EE individuals as stressful. It would be useful to identify factors that might protect patients or make them more susceptible to stress when interacting with someone who is highly critical or emotionally overinvolved.

In this study, schizophrenic outpatients were asked to identify the one person, among those with whom they spent a good deal of time, who was the “most influential” in their lives. The patients were asked to rate the degree to which they perceived these influential others to be critical, protective, and involved in their lives. Furthermore, they rated how “stressed” they tended to feel when they were in their presence. These perceptions were compared with the influential others’ ratings of EE obtained from Camberwell Family Interviews (CFIs) in order to determine whether their EE attitudes were “getting through” to the patients. It was hypothesized that patients would perceive highly critical influential others as critical, highly emotionally overinvolved influential others as emotionally overinvolved, and both as “stressful” in interpersonal interactions. Patients’ general STC also was assessed to determine whether this influenced their perceptions. See figure 1 for hypothesized relationships among study variables.

**Method**

**Participants**

**Patients.** Thirty-two outpatients in treatment at an urban public mental health center participated in the study. Patients were selected if they met *(Diagnostic and Statistical Manual of Mental Disorders, 4th edition)* DSM-IV criteria for schizophrenia or schizoaffective disorder and had a “most influential other” also willing to participate in the study (see criteria discussed subsequently). The Schedule for Affective Disorders and Schizophrenia–Lifetime Version, adapted for use with DSM-IV criteria, was used to make the diagnoses. All patients were receiving antipsychotic medications at the time of the study. Other selection criteria included a minimum global assessment of functioning rating over 30 (on a scale from 1 [worst functioning] to 90 [superior functioning]), no psychiatric hospitalizations within the past 3 months, and no evidence of current substance abuse, organic disorder, or mental retardation. Descriptive information for the patient sample is provided in table 1.

**Influential Others.** Influential other participants in this study included the one individual identified by each patient as the person to whom he or she was closest and

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### Table 1. Descriptive Information for Sample

<table>
<thead>
<tr>
<th></th>
<th>Patients</th>
<th>Influential Others</th>
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<tbody>
<tr>
<td>No. of subjects</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Female, %</td>
<td>38</td>
<td>72</td>
</tr>
<tr>
<td>Caucasian, %</td>
<td>78</td>
<td>81</td>
</tr>
<tr>
<td>African American, %</td>
<td>22</td>
<td>19</td>
</tr>
<tr>
<td>Mean age, y</td>
<td>36.0 ± 1.5</td>
<td>50.8 ± 13.9</td>
</tr>
<tr>
<td>Mean years of education</td>
<td>12.6 ± 1.5</td>
<td>12.9 ± 2.1</td>
</tr>
<tr>
<td>Mean global assessment of functioning score</td>
<td>51.4 ± 12.3</td>
<td>75.0 ± 9.7</td>
</tr>
<tr>
<td>Mean total number of hospitalizations</td>
<td>8.0 ± 9.1</td>
<td></td>
</tr>
<tr>
<td>Mean number of months since hospitalization</td>
<td>40.1 ± 40.4</td>
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<tr>
<td>Mean age at first psychiatric treatment</td>
<td>19.7 ± 5.3</td>
<td></td>
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<tr>
<td>Mean age at first hospitalization</td>
<td>21.8 ± 5.2</td>
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L. P. Cutting et al.
The scales on their own. The interviewer was present during the interview session with the patients. Patients completed the study were administered in the course of the second interview. Patients in this study identified influential others who were most influential within the last year and who remained most influential at the time of the interview. A minimum of one-per-week contact on average was required for patient–influential other pairs. The average number of interactions per week between patients and their influential others was 4.6 ($s = 2.5$; range $1–7$). The critical feature of the relationship was that the person identified was the person who had the greatest impact on the patient’s life (from the patient’s perspective). This relationship was not required to be perceived by the patient as positive; eg, a patient could describe his most influential other as someone he resented because of constant “nagging.”

Patients in this study identified influential others who were parents (48%), siblings (19%), spouses (13%), romantic partners (10%), friends (7%), and offspring (3%). Descriptive characteristics of the influential other sample are outlined in table 1.

Some of the influential others identified were mental health outpatients themselves. Of the 32 influential others included in this study, 14 indicated that they had received psychiatric treatment at some point in their lives (2 influential others opted not to respond to these questions). Of these 14 influential others, 5 had been hospitalized one time for psychiatric reasons, 2 had been hospitalized numerous times, and 4 reported current use of mood or anxiety medication. None of the influential others reported current use of antipsychotic medication. *t* Tests were conducted to investigate whether influential others with a history of psychiatric treatment differed significantly from influential others with no such history on any of the study variables. There were no significant differences found.

### Procedures

The data included in the current study were collected as part of a larger project on language reactivity in schizophrenia. All self-report measures included in the current study were administered in the course of the second interview session with the patients. Patients completed the scales on their own. The interviewer was present during the administration of all measures, and patients were encouraged to ask questions when items were unclear. The “influential other” interview was conducted within 1 month of the patient interview.

**EE Ratings.** The CFI was administered to each influential other participant. This interview is the standard method for rating EE. CFI ratings are based on 2 scales: criticism and EOI.

Following CFI conventions, ratings of criticism were determined by the sum total of CCs made about the patients during the CFI. Influential others who made 6 or more CCs were considered to be high on criticism. The ratings of EOI were made based on a scale from 0 to 5. EOI reflects an exaggerated emotional response displayed as overanxiety, overprotectiveness, or overidentification with the patient. A rating of 4 or 5 is considered to be high in EOI. An influential other scoring high on either criticism or EOI (or both) was classified as high EE.

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The CFIs were conducted by clinical psychology graduate students trained in the method. The interviews were audiotaped and rated later from the tapes. All the ratings of EE were made by one rater, and a second person rated 20% of the tapes for reliability purposes. Both raters were trained by Dr Robert Cole in Rochester, NY. Dr Cole conducts training seminars on conducting and rating the CFI. Both raters for the current study had established good levels of interrater reliability with Dr Cole’s group on 10 reliability tapes (intraclass $r = .80$ for criticism, intraclass $r = .75$ for EOI), prior to rating the interviews in the present study. Interrater reliability on the subset of 20% of the CFIs for the present study yielded very good agreement (intraclass $r = .94$ for criticism, intraclass $r = .90$ for EOI; for statistical method, see Bartko and Carpenter34). CFI ratings were done blind to all other variables in the study.

**Perceived Criticism and Emotional Overinvolvement Scale.** Patients completed a Perceived Criticism and Emotional Overinvolvement (PC & EOI) Scale, which was designed to determine the extent to which patients perceived their influential others to be critical, overprotective, and overanxious about them. The scale consisted of the Perceived Criticism (PC) Scale of Hooley and Teasdale24 and some additional questions to assess perceived EOI (PC & EOI Scale; see table 2). The PC Scale has been demonstrated to have good test-retest reliability and to be strongly predictive of relapse rated in a sample of depressed patients.24 In addition, an item was included asking patients how “stressed” they felt when in the presence of their influential other. Each item on this scale was rated using a 10-point Likert scale, anchored with the words “not at all (involved/protective/upset, etc.)” at one end and “very (involved/protective/upset, etc.)” at the other.

### Table 2. PC & EOI Scale Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.</td>
<td>How involved is ——— in your life?</td>
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<tr>
<td>2.</td>
<td>How protective is ——— of you?</td>
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<tr>
<td>3.</td>
<td>How much does ——— worry about you?</td>
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<td>4.</td>
<td>How upset does ——— get if you are having trouble?</td>
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<td>7.</td>
<td>When ——— criticizes you, how upset do you get?</td>
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who was currently most influential in his or her life. Each patient was asked to nominate the person who had been most influential within the last year and who remained most influential at the time of the interview. A minimum of one-per-week contact on average was required for patient–influential other pairs. The average number of interactions per week between patients and their influential others was 4.6 ($s = 2.5$; range $1–7$). The critical feature of the relationship was that the person identified was the person who had the greatest impact on the patient’s life (from the patient’s perspective). This relationship was not required to be perceived by the patient as positive; eg, a patient could describe his most influential other as someone he resented because of constant “nagging.”

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Sensitivity To Criticism Scale. Patients were also asked to complete the Sensitivity to Criticism Scale developed by Atlas.\textsuperscript{35} This scale presents 30 hypothetical potentially critical situations. For example, one item asks patients to consider their reactions if a friend asked, “Have you considered going on a diet?” After reading each situation, subjects are asked to rate the extent to which they would consider the situation a criticism (perceptual sensitivity) and the extent to which they would feel hurt by the situation (emotional sensitivity). The ratings are made using 7-point Likert scales. The Sensitivity to Criticism Scale has demonstrated good internal consistency and test-retest reliability\textsuperscript{35} and has been found to predict depressive symptoms.\textsuperscript{36} The purpose of using this scale in the present study was to assess the potential influence of patients’ STC on their perceptions of others’ attitudes and on their report of “stressed” feelings when in the presence of their influential others.

Analyses

To test the hypotheses of the study, influential others were classified by their CFI ratings into high- and low-EE groups. Correlations were used to test whether any study variables significantly varied in relation to patients’ symptom severity. Hierarchical regressions were conducted using influential others’ EE ratings and patients’ STC scores to predict PC, perceived EOI, and perceived stress. A total of 6 regressions were conducted. Though an increased risk of type I error accompanies an increase in number of regressions conducted, this risk was reduced by the fact that the regressions conducted were theory derived, rather than data driven.

Results

CFI Ratings

The number of CCs made by influential others in this sample ranged from 0 to 17, with a mean of 4.31 ($s = 4.96$). The mean EOI rating of the sample was 2.0 ($s = 1.32$), on a scale of 0–5. Fourteen influential others (44% of the sample) were rated high in EE based on their criticism and EOI ratings. High criticism ratings were found in 10 influential others (31%), and 6 (19%) were rated high in EOI. Of the 32 influential others interviewed, 18 (56% of the sample) were low in both criticism and EOI, 4 (13%) were high only in EOI, 8 (25%) were high only in criticism, and 2 (6%) were high in both EOI and criticism.

Because the majority of EE research has focused on parents, $t$ tests were conducted to determine if there was a significant difference in the number of CCs or in the EOI ratings made by parent vs nonparent influential others. These analyses revealed no significant difference in the number of CCs ($t_{30} = 0.64$, NS, 2 tailed) but significant difference in EOI ratings of parents vs nonparents ($t_{30} = -3.87$, $P = .0005$, 2 tailed). A comparison of means shows that parents had higher EOI ratings, on average, when compared with influential others who were not parents of the patients ($M = 2.75$, $s = 1.24$ in parents; $M = 1.20$, $s = 0.93$ in nonparents). This is consistent with the literature that has demonstrated that high EOI is most commonly found in mothers.\textsuperscript{37,38}

EE, STC, Stress, and Symptom Severity

Correlations were conducted in order to test the possibility that patients’ clinical status was related to influential others’ EE attitudes, patients’ STC, patients’ perception of criticism and EOI, and patients’ stress. The patients’ Brief Psychiatric Rating Scale (BPRS)\textsuperscript{39} full score was used as a measure of patient symptom severity at the time of testing. The BPRS full score was not related significantly with any of the study’s variables, and results did not approach significance.

PC & EOI Scale

The PC & EOI Scale contained several items that were designed to assess patients’ perceptions of characteristics of EOI in influential others. Item 1 (“‘How involved is —— in your life?’”) was not included because it is a measure of general involvement, which was high in all cases because influential others were highly involved in patients’ lives by definition (ie, part of the selection criteria). Items 2, 3, and 4 were included in an attempt to capture the overly anxious and overprotective qualities of EOI (see table 2). An interitem reliability analysis carried out using these 3 items yielded an $\alpha$ of .74. These items were combined to yield a total perceived EOI score. Mean ratings were as follows: PC was 5.63 ($s = 2.79$), perceived EOI was 21.84 ($s = 7.03$), and perceived stress averaged 3.50 ($s = 2.78$).

Sensitivity To Criticism Scale Scores

The Sensitivity to Criticism Scale was internally consistent when used with the present sample (Cronbach’s $\alpha$ of .95 for all items, .92 for perceptual sensitivity items, and .93 for emotional sensitivity items). The average total score for perceptual sensitivity (“extent to which you consider the situation to be a criticism”) was 127.53 ($s = 33.90$), whereas the mean for emotional sensitivity (“extent to which this would hurt you”) was 108.16 ($s = 34.38$). Although perceptual and emotional sensitivity were highly correlated with each other both in our sample ($r = .72, P \leq .001$) and in the literature,\textsuperscript{35} we chose to use emotional sensitivity in our analyses because it specifically assessed the degree to which patients were “hurt” by PCs. Though the ability to perceive a statement as criticism is a necessary component of this scale (it seems unlikely that a respondent would feel emotionally wounded by a comment that was not perceived as a criticism), the
patient’s emotional response is a purer measure of the construct of interest.

EE, Sensitivity, and Perceived EE

A hierarchical regression was used to predict patients’ PC. In the first step, influential others’ CFI ratings of criticism (high vs low) were entered into the equation. The result indicated that CFI criticism ratings accounted for a significant proportion of the variance in patients’ PC ($R^2 = 0.39, P < 0.05$). However, adding patients’ STC to the regression equation did not increase $R^2$ significantly nor was the interaction term significant. A hierarchical regression used to predict patients’ perception of EOI attitudes found that neither CFI ratings of EOI nor patients’ STC accounted for a significant proportion of the variance.

A hierarchical regression was also conducted using influential others’ overall EE status (high vs low) and patients’ emotional STC to predict patients’ PC. Only influential others’ EE status accounted for a significant amount of the variance in patients’ PC ($R^2 = 0.44, P < 0.01$). Adding the second variable, patients’ emotional STC, improved our ability to explain patients’ perceived stress. The increase of 0.11 in the multiple $R^2$ was significant ($F_{1,29} = 5.23, P < 0.05$). Together, influential others’ EE ratings and patients’ STC accounted for 39% of the variance in the amount of stress patients reported experiencing when in the presence of their influential other.

When influential others were grouped based on their criticism and EOI status (high vs low), results failed to reach statistical significance, although trends were found in the expected direction. In these analyses, the effects of total EE (including both criticism and EOI) were more powerful in predicting perceived stress than the effects of either criticism or EOI ratings alone.

PC, Sensitivity, and Perceived Stress

We were also interested in testing whether patients’ perceptions of criticism and STC would predict how stressed they reported feeling when interacting with their influential others. To test this question, a hierarchical regression was carried out with patients’ PC as the first variable entered into the equation and emotional STC as the second variable used to predict patients’ perceived stress. In the first step, patients’ PC accounted for 16% of the variance in patients’ perceived stress ($R^2 = 0.40, P < 0.05$). Adding the information about patients’ emotional STC significantly improved our ability to predict patients’ stress. The increase of .15 in $R^2$ was significant ($F_{1,29} = 6.12, P < .025$). Taken together, these variables accounted for 31% of the variance in patients’ report of stress.

Discussion

As predicted, patients in our sample reported higher levels of criticism from influential others who were rated high in the EE dimension of criticism. This replicates similar findings by other investigators. Counter to prediction, patients’ perceptions of influential others’ EOI attitudes were not significantly related to the EE ratings of EOI and patients’ STC scores did not predict their perceptions of influential others’ attitudes.

From a theoretical standpoint, the most interesting results of this study were those that related to patients’ reports of stress. As predicted by the “EE as stressor” hypothesis, patients reported experiencing more stress when interacting with high-EE individuals compared with low-EE persons. Interestingly, their reports of stress were predicted not only by the EE status of their influential others but also by how emotionally sensitive the patients were to criticism. Together, these variables accounted for 39% of the variance in the amount of stress patients reported experiencing. These results will be discussed further below.

The correspondence between CFI ratings of criticism and patients’ reports of criticism offers some support for the construct validity of EE. It suggests that critical attitudes expressed during the CFI do translate to behavior in face-to-face encounters with patients. Furthermore, it suggests that schizophrenic patients are able to perceive when they are being criticized. However, the relationship between patients’ PC and actual criticism ratings was rather modest, which suggests that there is not a perfect translation between CCs made in the CFI and criticism perceived by patients in face-to-face encounters.

The predominant explanation for the association between high EE in influential others and patient relapse is that patients experience high-EE attitudes as stressful. Earlier research in support of this hypothesis included evidence that patients had higher levels of autonomic arousal and subjective tension when in the presence of high-EE parents, as well as a greater number of stressful memories involving high-EE parents. The present study adds to this evidence by demonstrating that schizophrenic patients reported feeling more “stressed” when interacting with high-EE influential others compared with low-EE influential others. What is unique about this study’s design is that it elicited patients’ direct reports of whether or not encounters with high-EE individuals were perceived as stressful.
The findings that patients' perceptions of criticism corresponded with EE criticism ratings and that they reported feeling more "stressed" in the presence of high-EE influential others suggest that patients may be fairly accurate perceivers of others' emotional attitudes and good reporters of how these attitudes affect them. On the other hand, this study failed to find a significant relationship between patients' perceptions of EOI attitudes and actual EOI ratings obtained from the CFI. Different explanations are possible for the lack of a significant relationship between patients' perceptions of EOI attitudes and actual EOI ratings made of influential others. First, it is possible that our method of assessing perceived EOI was inadequate. EOI is a complex, multifactorial construct that encompasses characteristics of overanxiety, overprotection, and overidentification. It is a difficult construct to define and quantify succinctly, and the attitudes tend to be more subtle and complex to rate. It is possible that the structured, concrete method of assessing patients' perceptions of these attitudes was insufficient to capture the complexities of EOI obtained from CFI ratings. Another explanation for the null EOI results is that EOI attitudes fail to "get through" to patients. Unlike critical attitudes, which tend to be more straightforward to interpret, EOI attitudes are generally unclear from the present results whether EOI attitudes were confusing to interpret, were perceived to be positive and supportive, or were not perceived at all. It is important to note that only 6 influential others were categorized as high EOI. The small size of this group is likely to have lowered the predictive power of the model, perhaps explaining our failure to find significant results in analyses on the dichotomized EOI variable. It is important to note, however, that influential others' EOI ratings did contribute to patients' perceived stress ratings, suggesting that some effect of these attitudes was getting through to patients. More research is needed to clarify this issue.

The finding that influential others' attitudes and patients' STC both helped to predict patients' stress makes an important contribution to the existing literature on EE and stress. First, it provides a more detailed picture of the complex interactive process involved. It is also important because it may improve our ability to predict which patients will be more vulnerable to relapse when living in a high-EE environment. Improvements in the prediction of relapse would help in designing more effective relapse prevention programs. This research suggests that treatment aimed at lowering patients' emotional STC could help to prevent relapse in high-EE environments. Existing cognitive therapy approaches could be used to focus on schizophrenic patients' tendency to exaggerate the significance of criticism. This might be especially useful in families or relationships in which traditional approaches aimed at lowering EE levels have been unsuccessful or the influential others have refused to be involved in treatment.

In some of the analyses, the effects of total EE were more powerful than the effects of criticism and EOI ratings alone. For example, we found a highly significant difference in the amount of stress patients reported when influential others were grouped by overall EE ratings, but the effects were nonsignificant when criticism and overinvolvement were examined separately. It is interesting that even though the EOI effects were weak in the present study, they still contributed substantially to the effects of overall EE by adding to the effects of criticism alone.

This leads to the question, "What is EE?" Brown and colleagues originally described EE as an index of emotional response made up of separate emotional components: criticism, EOI, and hostility. They believed that each of these components was important in interpreting "the nature of expressed emotion."14(p253) Hostility was later dropped from the construct because it overlapped considerably with criticism, but criticism and EOI continued to demonstrate similar effects (ie, high relapse), especially when examined together. Although criticism and EOI reflect different kinds of attitudes, the present findings support the idea that they are different manifestations of a single construct (EE). Perhaps what unites them is their similar effect on patients. For example, criticism and EOI might be understood as different attempts to control patients' behavior.

The main limitation to this study is its relatively small sample size, as previously indicated. One result of this limitation is that the possibility of racial/ethnic differences in EE, perceived EE, STC, and stress could not be explored. Previous studies have found that African Americans' perceptions of criticism are less likely than Caucasians' to correspond with actual critical attitudes in significant others as assessed by the CFI.40 Rosenfarb and colleagues41 suggest that this disconnect between EE in influential others and patients' perception of EE could be the result of cultural differences in the interpretation of criticism; eg, African American patients may judge critical attitudes to be a reflection of the influential others' caring and involvement. In the current study, analyses were completed in order to examine whether African American participants differed from Caucasian participants in any of the study variables. Although there were generally no significant differences found, it is important to note that the current study included only 7 African American participants, making any investigation of racial/ethnic differences problematic.

The influential other sample was quite heterogeneous. Parents, siblings, romantic partners, and friends were included. This heterogeneity was part of the study's design to broaden the scope of EE beyond a purely familial construct. However, the variability introduced by this
heterogeneity may have weakened the results in this study somewhat.

In contrast to the influential other sample, the patient sample had several specific exclusion criteria, yielding an arguably more homogeneous sample. These criteria were employed to minimize extraneous variables. The sample was further limited by the requirement that the patients have a “most influential other” who was willing to participate in the study. The results may not apply to patients in more acute stages of illness, those currently abusing psychoactive substances, or those who do not have a close relationship.

Effort was made to ensure that patients chose their most influential person for inclusion in the study, regardless of whether the influence was positive or negative. Patients were told that their influential other could be a person that “nags” them all the time and that the patient could feel resentful toward the influential other. However, it is quite possible that the wording used to help the patient select their influential other could bias the patient toward choosing someone with a supportive influence. For example, asking the patient to nominate the person to whom he/she is “closest” does imply that the patient regards the relationship to be a positive one. This possible selection bias is a problem unique to studies using a heterogeneous sample of influential others because studies involving only parents do not require the patient to select the influential other. The size of this study’s “high-EE” category of influential others also may have been smaller than that expected in an EE study using only parents as the influential others, and this may have reduced the strength of the results.

The current study included influential others who interacted with the patient at least one time per week. Many studies have found that the amount of time the patient spends with the influential other has an impact on EE.42,43 This study did not take the amount of time spent with the influential other into account in the analyses. The inclusion of such a variable could have provided a more detailed picture of the ways in which EE, STC, and stress interact in people with schizophrenia.

Although we found a strong relationship between high EE in influential others and patients’ perceptions of stress, directionality of the relationship is not certain. We cannot definitively conclude from these results that it was the influential others’ critical or EOI attitudes that created patients’ stress. Another interpretation of the results is that patients who reported high levels of stress were more difficult to interact with because they were high strung, more sensitive, anxious, or otherwise more irritating to be with. However, given that our results supported a priori hypotheses that were consistent with the literature, we can say that they support the idea that EE attitudes contribute to patients feeling “stressed.”

A natural extension of this study would be to relate patients’ perceptions of EE attitudes, their ratings of stress, and their STC to relapse. We would expect the most vulnerable patients to be those who have frequent contact with high-EE influential others and who are also highly sensitive to criticism because these are the patients who reported the most stress in the present study, and stress is believed to increase the risk of relapse in schizophrenic patients. It might also be useful to try alternative methods of assessing EOI attitudes from the patient’s perspective. When compared with controls, patients tend to have marked deficits in social inference tasks, indicating difficulties in inferring the mental states of others.44 One strategy might be to phrase questions in a way that would not require patients to take the point of view of their influential other but rather to simply respond with their own experience and opinion. So, rather than asking, “How much does your influential other worry about you?” one could ask patients, “How much do you depend on your influential other?” or “Do you feel controlled by your influential other?” This approach, which relies less on “theory of mind,” might improve our ability to assess patients’ perceptions of influential others’ EOI attitudes.

This study offers new information about EE from the perspective of schizophrenic patients. Patients’ perceptions of critical attitudes were related to actual EE ratings of criticism. Patients also reported feeling more stressed when interacting with high-EE influential others, which lends support to the “EE as stressor” hypothesis. Perhaps the most valuable contribution of this study, however, is the finding that patients’ emotional STC also contributed to their levels of stress. This is an important addition to our understanding of the interpersonal dynamics involved in the EE-relapse association.

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**References**

L. P. Cutting et al.


