

Expressed Emotion, Attributions, and Schizophrenia Symptom Dimensions

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Using a sample of 40 Anglo American family members of schizophrenic patients, the present study replicates and lends cross-cultural support for an attribution–affect model of expressed emotion (EE). Consistent with attribution theory, the authors found that highly critical relatives (high-EE) viewed the illness and associated symptoms as residing more within the patient's personal control as compared with less critical relatives (low-EE). A content analysis classified the types of behaviors and symptoms most frequently criticized by relatives. Symptoms reflecting behavioral deficits (e.g., poor hygiene) were found to be criticized more often than symptoms reflecting behavioral excesses (e.g., hallucinations). In line with an attribution–affect framework, relatives may be less tolerant of behavioral deficits because they are viewed as intentional, whereas behavioral excesses are easily recognized as core symptoms of mental illness.

Numerous research studies, using a construct termed *expressed emotion* (EE), have demonstrated that the course of schizophrenia is highly correlated with the family atmosphere. A review of 26 studies (Kavanagh, 1992) indicated that patients returning to hostile, critical, or emotionally overinvolved environments (designated as high-EE homes) were twice as likely to relapse within a 9-month period as patients returning to homes in which relatives do not express many critical and hostile attitudes (designated as low-EE homes).

Several researchers have argued the need for a theoretical framework to better understand the EE construct (e.g., Jenkins & Karno, 1992; Leff & Vaughn, 1985). Hooley (1987a) was the first to offer attribution theory as a model for understanding EE. Weisman, López, Karno, and Jenkins (1993) tested Hooley's EE-attribution theory in a sample of Mexican American families with schizophrenia. In line with Hooley's (1987a) model, Weisman et al. found that low-EE relatives tended to make more external and uncontrollable attributions for their family member's behavior (e.g., "Well, I think Victor's avoiding us is all part of his illness, that's what this disorder does to a person"), whereas the attributions of high-EE relatives who expressed

high levels of criticism and hostility tended to be more internal and blameworthy (e.g., "My view of things is that Maria acts that way so my wife doesn't give her any responsibilities around the house"). Using a different methodology, Brewin, MacCarthy, Duda, and Vaughn (1991) and Barrowclough, Johnston, and Tarrier (1994) have found similar linkages between attributions and EE that also support Hooley's (1987a) EE-attribution model.

The studies by Weisman et al. (1993), Brewin et al. (1991), and Barrowclough et al. (1994) suggest that controllability attributions may underlie differences in EE status. However, it remains unclear why some relatives would perceive a schizophrenic patient's symptomatic behaviors to be under volitional control, whereas others would perceive the symptoms to be outside of the patient's personal control. In the present study we hypothesized that attributional differences between high-EE and low-EE families may relate to differences in relatives' knowledge of certain dimensions of symptoms.

In schizophrenia, at least two types of symptom dimensions have been identified. One group, positive symptoms, includes the behavioral excesses or florid symptoms of schizophrenia such as hallucinations, thought disorder, and delusions. A second group, negative symptoms, involves the behavioral deficits such as affective flattening, limited communication, social withdrawal, and apathy (Andreasen & Olsen, 1982). Hooley (1987a) suggested that because the positive symptoms of schizophrenia include the most clearly recognizable signs of psychosis (e.g., hallucinations and delusions), relatives may attribute these symptoms to the patient's mental illness (uncontrollable), and are thus less likely to hold them accountable for this behavior. On the other hand, the less recognizable negative symptoms (e.g., apathy, limited communication, and social withdrawal) are likely attributed to the patient's long-term personality characteristics (a perceived controllable factor), thus leading relatives to become angry and respond with criticism toward the patient in an attempt to change those behaviors.

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Hooley (1987b) found indirect support for her hypothesis in a marital sample including one partner either diagnosed with schizophrenia or an affective disorder. In this study, spouses of patients with predominately negative symptoms reported significantly lower levels of marital satisfaction than did spouses of patients with predominately positive symptoms.

In the present study, the Camberwell Family Interview (CFI; Vaughn & Leff, 1976) was used to make controllability ratings of family members participating in a large longitudinal study of the early course of schizophrenia (see Nuechterlein et al., 1992). The first aim of this study was to replicate and evaluate the ethnic generalizability of Weisman et al.'s (1993) attributional finding. Specifically, we examined whether the relationship between EE and controllability found by Weisman et al. in a Mexican American sample would also be found in an Anglo American sample.

A content analysis was also conducted in the present study to categorize the types of symptoms and behaviors most often criticized by relatives. On the basis of Hooley's (1987a) view that negative symptoms, relative to positive symptoms, are less readily attributed to genuine signs of mental illness and on her observation that negative symptoms have been associated with greater levels of marital dissatisfaction (Hooley, 1987b), we hypothesized that negative symptoms would be targeted more frequently in the content of relatives' criticisms, as compared to positive symptoms.

Another goal of this study was to examine the specific types of symptoms and behaviors of patients that elicited the most criticism from relatives, as little research has addressed this issue (Leff & Vaughn, 1985). In addition, we assessed whether there are systematic differences in the patterns of symptoms and behaviors criticized by high-EE and low-EE family members. By definition, high-EE relatives express more criticisms than do low-EE relatives. However, past research has not assessed whether there are also qualitative differences in where these criticisms lie.

Method

Participants

Participants consisted of 40 Anglo American relatives of schizophrenic patients who were participating in a longitudinal study of the early course of schizophrenia (see Nuechterlein et al., 1992). The schizophrenic patients were between the ages of 18 and 45 years, had an initial onset of psychosis not more than 2 years before project entry, and did not have recent significant and habitual substance abuse. Diagnoses were based on an expanded version of the Present State Examination (PSE; Wing, Cooper, & Sartorius, 1974). Patients had a diagnosis of schizophrenia or schizoaffective disorder, mainly schizophrenic, by Research Diagnostic Criteria (Spitzer, Endicott, & Robins, 1978). PSE interrater agreement for interviewers was required to be at least 85% for the presence of symptoms related to diagnosis of schizophrenia and at least 90% for the absence of items relevant to the diagnosis. See Rosenfarb, Goldstein, Mintz, and Nuechterlein (1995) for a more detailed description of patient characteristics.

Procedure

Expressed emotion. EE ratings for this sample were previously obtained by Nuechterlein et al. (1992), using the abbreviated version of

the CFI (Vaughn & Leff, 1976). The abbreviated CFI is a semistructured interview about attitudes and experiences of the patient's illness and its influence on the life of the family. The interview focuses on the 3 months prior to hospitalization. In the Nuechterlein et al. (1992) project, relatives who made six or more critical comments, who expressed any type of hostility, or who scored 4 or more on a 5-point scale on emotional overinvolvement (EOI) were rated as showing high-EE attitudes toward the patient. All other relatives were designated as showing low-EE attitudes. On the basis of these criteria, the present study included data from 11 relatives rated as having low-EE attitudes and 29 relatives rated as having high-EE attitudes due to six or more critical comments. Although a few relatives expressed hostility, all such relatives also met the criteria for high-EE based on six or more critical comments. Relatives designated as high-EE due to EOI were excluded from the analyses in this study. This is because of the limited number of EOI relatives in the sample ($n = 2$) and because the relationship between the proposed attributional theory and EOI is not clearly defined.¹

In all but six families, EE data were available from more than one relative. In this study it was important to include data from only one relative per patient to maintain independent sampling when examining comments linked to patients. Thus, only one relative was randomly selected for the analyses in households in which two or more family members had identical EE ratings (either all high-EE or all low-EE). In households in which EE status differed among two or more family members (e.g., one low-EE and two high-EE), data from one high-EE relative were randomly selected for the analyses, and data from low-EE relatives were systematically dropped. This choice of a high-EE individual was based on the convention of classifying a family environment as high-EE if any member is rated high (Vaughn & Leff, 1976), and on the fact that the primary focus of these analyses was to understand better the possible reasons for criticisms when they did occur.

Controllability. To rate controllability attributions, a trained coder extracted all statements from the CFI that implied perceptions of the patient's ability to control his or her disorder as a whole and the individual symptoms. A separate coder (not exposed to the entire CFI) then read all the attributional statements and, using the same method as Weisman et al. (1993), made one global rating of perceived controllability on a 5-point scale (1 = *no perceived control*, 5 = *a great deal of perceived control*).

Critical comments. To evaluate the content of critical comments used by Nuechterlein et al. (1992) in assessing EE, a trained coder identified the CFI passage in which each critical comment occurred and extracted the verbatim sentence or paragraph. A second coder, without exposure to the entire CFI, then classified the criticisms into one of the following seven categories: negative symptoms (e.g., blunted affect), positive symptoms (e.g., delusions), antisocial behaviors (e.g. stealing), substance abuse (alcohol and illicit drug use), other symptoms (e.g., obsessive-compulsive behaviors), enduring personality traits (e.g., stubbornness), and other (nonsymptomatic) behaviors (e.g., patient's vocational choice). A detailed manual, influenced by the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., *DSM-IV*; American Psychiatric Association, 1994), was developed to aid in making these ratings. The classifications for positive and negative symptoms were further guided by the symptom definitions from two validated instruments, the Scale for the Assessment of Negative Symptoms (Andreasen, 1982) and the Positive and Negative Syndrome Scale (Kay, 1991).

Symptoms. Brief Psychiatric Rating Scale (BPRS) scores previously obtained by Nuechterlein et al. (1992) near the time of the index CFI

¹ It should be noted that Hooley (1987a) suggested that the attributions made by high-EE/EOI relatives may be more similar to those made by low-EE relatives than to those of other high-EE (critical and hostile) family members.

interview were used to assess the severity of patients' positive and negative symptoms.

Interrater reliability. Four undergraduates, unaware of the research hypotheses, were reliably trained as coders. To assess the reliability of the final ratings, 10 random CFIs were rated by all four coders and by Amy G. Weisman. Intraclass coefficients between the four coders and Amy G. Weisman ranged from .83 to .88 for controllability. The kappa coefficient of agreement between Amy G. Weisman and the four coders ranged from .79 to .88 for categorizing critical comments.

Reliability ratings for EE levels and BPRS scores were obtained in the longitudinal study. The kappa coefficient of agreement on EE level (high vs. low) was found to be .85 (Rosenfarb et al., 1995). Intraclass coefficients for BPRS scores ranged from .77 to .93 across scales, with a mean of .85 (Subotnik & Nuechterlein, 1988).

Results

As hypothesized, our results replicate Weisman et al.'s (1993) earlier EE-controllability finding. In the present study, high-EE relatives ($M = 3.14$, $SD = 0.83$) were found to view the illness and associated symptoms as residing more within the patient's personal control as compared with low-EE relatives ($M = 1.73$, $SD = 0.65$), $t(38) = 4.98$, $p < .01$.² It is important to point out that the association between EE and controllability attributions is not due simply to the same statements being identified both as critical comments and as attributions. Only 24% of the total critical comments extracted when rating EE were subsequently extracted when rating attributions.³

Analyses were also conducted to examine the content of critical comments. Table 1 lists the mean number of criticisms in each of seven content categories. Enduring personality traits, negative symptoms, and other, nonsymptomatic behaviors were targeted most frequently in the criticisms of relatives. Antisocial behavior, substance abuse, and positive symptoms were infrequently criticized by relatives.

Also as hypothesized, negative symptoms were found to be criticized more often than were positive symptoms (see Table 1 for means and standard deviations), $t(36)$ ⁴ = 4.15, $p < .001$.⁵ This does not appear to be a function of the presence of more negative symptoms as compared with positive symptoms at the CFI point. Positive and negative factor scores (Guy, 1976) obtained from the BPRS near the CFI point suggest that positive symptoms, rated using the average of conceptual disorganization, hallucinations, unusual thought content, and grandiosity ($M = 3.55$, $SD = 1.05$) were actually more severe than negative

symptoms, rated using the average of emotional withdrawal, motor retardation, blunted affect, and disorientation ($M = 2.14$, $SD = 0.91$), $t(39) = 6.26$, $p < .001$.⁶

With respect to differences in the content of criticisms between EE groups, we found that high-EE relatives ($M = 2.19$, $SD = 1.90$) criticized negative symptoms more frequently than did low-EE relatives ($M = 0.55$, $SD = 0.69$), $t(35) = 2.67$, $p < .05$. It is interesting that patients from high-EE families ($M = 1.97$, $SD = 0.77$) were not found to manifest more severe negative symptoms on the BPRS than were patients from low-EE families ($M = 2.57$, $SD = 1.29$; $p > .05$).⁷ Thus, the increased criticism and hostility expressed by high-EE relatives does not appear to be a simple function of a greater number of behavioral deficits among the patients in these families. No difference was found between high-EE relatives ($M = 0.35$, $SD = 0.80$) and low-EE relatives ($M = 0.18$, $SD = 0.60$) in the frequency of criticisms regarding positive symptoms ($p > .05$).

The frequency of criticisms regarding two other categories of behaviors also distinguished high-EE and low-EE families. Specifically, high-EE relatives ($M = 2.77$, $SD = 2.54$) were found to complain about longstanding personality characteristics (e.g., stubbornness) more so than did low-EE relatives ($M = 0.36$, $SD = 0.67$), $t(35) = 3.08$, $p < .01$. High-EE relatives ($M = 1.23$, $SD = 1.24$) also expressed greater numbers of complaints regarding nonsymptomatic behaviors (e.g., patient and relative at odds over patient's career choice) than did low-EE relatives ($M = 0.36$, $SD = 0.67$), $t(35) = 2.17$, $p < .05$.

Because the EE grouping is formed on the basis of the overall number of criticisms during the CFI, we examined whether the

² Given that the accepted norm of six or more criticisms designating high EE is somewhat arbitrary, we also analyzed this hypothesis looking at EE as a continuous variable. Again, we found a strong and significant relationship between increasing number of critical comments on the part of relatives and a tendency to view the patient's disorder and behavior as under the patient's personal control ($r = .58$, $p < .001$).

³ This is comparable to the 30% overlap reported by Brewin et al. (1991).

⁴ Note that this analysis is based on only 37 cases. The list of specific criticisms used in the EE ratings from the Nuechterlein et al. (1992) study was missing in 3 cases. Thus, we were unable to evaluate the content of the critical comments in these instances.

⁵ When broken down by EE groups, this finding held only for high-EE relatives, $t(25) = 4.20$, $p < .001$. There was also a trend in the expected direction for low-EE relatives, $t(10) = 1.17$, $p = .27$. The lack of a statistically significant relationship among low-EE relatives might be related to the low overall base rate of criticisms in this group.

⁶ This relationship held for both high-EE relatives, $t(28) = 6.10$, $p < .001$, and low-EE relatives, $t(10) = 2.23$, $p < .05$. It is important to point out that the CFI focuses on relatives' experiences with patients during the 3 months preceding hospitalization. Thus, although negative symptoms were less severe than positive symptoms at the time of the CFI, levels of positive and negative symptoms may have varied during the 3-month period covered by the CFI. This point is further addressed in the Discussion section.

⁷ It is important to point out that the instruments used to guide the ratings of critical comments extracted from the CFI assess more comprehensive symptoms than the four addressed in the BPRS negative symptom rating. Hence, a direct correspondence between the critical comments targeting negative symptoms and ratings of severity of negative symptoms based on patient interviews may not be expected.

Table 1
Mean Number of Criticisms by Symptom-
Behavioral Category

Symptom-behavioral category	Criticisms	
	<i>M</i>	<i>SD</i>
Enduring personality traits	2.05	2.42
Negative symptoms	1.70	1.85
Other behaviors	0.97	1.17
Other symptoms	0.81	1.13
Antisocial behavior	0.32	0.71
Positive symptoms	0.30	0.74
Substance abuse	0.16	0.44

high-EE relatives showed a significantly different pattern of criticisms than low-EE relatives once this higher base rate was taken into account. To evaluate this, we divided the frequency of criticisms made by each relative in each content category, by the total number of criticisms made by the relative. Analyses of the data based on these proportion scores yielded no statistically significant differences between EE groups ($p > .05$ for all). Thus, similar patterns for content of criticisms are suggested for both high-EE and low-EE family members.

Discussion

Results of this study indicate that high-EE relatives view patients as having more control over their illness and associated symptoms than do low-EE relatives. This finding replicates and lends cross-cultural support to Weisman et al.'s (1993) earlier observation with a Mexican American sample. Together, these findings suggest that the criticism and anger of high-EE relatives may stem from the view that patients can and ought to exert more control over their symptomatic behaviors.

This study also provided an in-depth look at the types of symptoms and behaviors that relatives find to be the most disturbing. Enduring personality traits, negative symptoms, and other, nonsymptomatic behaviors were targeted most frequently in the criticisms of relatives. On the other hand, complaints about positive symptoms were quite rare. The results of this study support Hooley's (1987a) view that positive symptoms are less prone to elicit criticism from relatives than are negative symptoms. Because the positive symptoms of schizophrenia include the most clearly recognizable signs of psychosis, relatives may attribute these symptoms to the patient's mental illness (uncontrollable), and are thus less likely to hold them accountable for this behavior. On the other hand, the less recognizable negative symptoms (e.g., apathy, limited communication, and social withdrawal) are more likely to be attributed to personality characteristics (a perceived controllable factor), thus leading relatives to respond with anger and criticism toward the patient.

In the present study, we also found that high-EE relatives tended to criticize patients for their negative symptoms more so than did low-EE relatives. On the other hand, no EE group difference was found in the frequency of criticisms regarding positive symptoms. Consistent with an attribution-affect framework, high-EE relatives may be more critical of negative symptoms than low-EE relatives partially because they are unaware that these behaviors reflect core symptoms of schizophrenia. High-EE relatives may, instead, view negative symptoms as behaviors done intentionally to bother them. Some evidence already suggests that high-EE relatives are less informed about schizophrenia in general (Cozolino, Goldstein, Nuechterlein, West, & Snyder, 1988) and have poorer understanding of the negative symptoms in particular (Harrison & Dadds, 1992).

Relatives with high EE attitudes were also found to criticize patient's nonpsychiatric behaviors and beliefs more so than did low-EE relatives. Examples of these included criticisms regarding patients' personal habits and values, their career decisions, and their choices in selecting life partners. In addition, patients from high-EE families were criticized more often for enduring personality traits, such as selfishness and rudeness. This finding may indicate (as several previous researchers have suggested),

that EE is an interactive process influenced by both relatives' characteristics and patients' traits and behaviors.

Although high-EE relatives show significantly more criticisms than low-EE relatives in only some content areas, it is important to point out that the overall content is not significantly different for high-EE and low-EE family members. Rather than reflecting a true dichotomy, the process that underlies EE appears to lie on a continuum. In other words, if low-EE relatives were to express more criticisms, these remarks would also likely be directed primarily at negative symptoms and enduring personality traits. As previously stated, the fact that low-EE relatives do not express as many criticisms as high-EE relatives likely stems from some combination of the following factors: (a) They are more educated about the disorder, (b) they do not view the symptoms as under the personal control of the patient, and (c) they are dealing with less difficult and less demanding family members.

In summary, our results are consistent with an attribution-affect model of EE. Relatives who view symptoms of schizophrenia as purposeful and under their family member's volitional control appear to express more critical and hostile attitudes toward their ill relative. Our results suggest that behavioral deficits may be especially prone to elicit these negative attitudes. One way for clinicians to help reduce highly critical attitudes might be to educate family members about the fact that behavioral deficits, such as emotional withdrawal or poor hygiene, might not appear to be core symptoms of mental illness, but are in fact integral components of schizophrenia. It may also be important to help relatives recognize that, even for patients actively attempting to take control of their illness (by taking medications, doing skills training, etc.), some disruptive symptoms are apt to persist or recur.

One limitation of this study is that the time frame covered by the CFI (3 months preceding hospitalization) is of longer duration than the time frame addressed by the BPRS (2 weeks around the CFI point). This raises an important methodological consideration that could lead to an alternative to our attributional interpretation of greater criticisms regarding negative as compared to positive symptoms. Although we found positive symptoms to be more severe than negative symptoms near the CFI point, positive symptoms may have been less severe than negative symptoms during the 3-month period covered by the CFI. Thus, relatives may have targeted negative symptoms in their criticisms more so than positive symptoms when discussing this time-frame because negative symptoms were more prominent and visible then, or because they were more likely to intrude on social relationships, not necessarily because they were perceived as controllable. This issue warrants further investigation.

It is also important to point out that factors other than attributions toward illness are likely to account for some of the variance observed in EE attitudes. As mentioned above, patients' non-symptomatic traits and characteristics are likely to have some impact on relatives' feelings toward them. Cultural, socioeconomic, historical, and political factors may be other potentially important variables influencing relatives' reactions toward mental illness (Jenkins & Karno, 1992). If the understanding of the EE construct is to be advanced, it is important that these and additional areas continue to be explored.

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