Attributions and Affective Reactions of Family Members and Course of Schizophrenia

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The authors tested an attribution-affect model of schizophrenic relapse attending to the role of families' positive affect (warmth) and negative affect (criticism). Coders listened to interviews of 40 family members taken from C. E. Vaughn, K. S. Synder, S. Jones, W. B. Freeman, and I. R. Falloon (1984) and rated their attributions of controllability for the symptoms and behaviors of their relatives with schizophrenia. For family members not designated as emotionally overinvolved, perceptions that their relatives' symptoms and behaviors were under the patients' control were related to family members' warmth and criticism and to patients' clinical outcomes. Of the affective reactions, only criticism predicted outcome. In addition, patients' use of street drugs was related to attributions, criticism, and outcome. Together these findings suggest that families' attributions and criticism are important in understanding the relationship between family factors and course of illness.

In the study of schizophrenia, patients who return after hospitalization to live in homes marked by the expression of criticism, hostility, or emotional overinvolvement experience significantly greater rates of relapse than those returning to homes that lack these negative reactions (Kavanagh, 1992). Family members with these emotions and attitudes have been characterized as high in expressed emotion (EE), whereas those without these emotions and attitudes have been characterized as low in expressed emotion (Brown, Birley, & Wing, 1972). It is not clear, however, why such disparate emotions and attitudes are present in these households (Jenkins & Karno, 1992; Koenigsberg & Handley, 1986). The clinical status of the patients does not appear to account for the differences in the families' emotional climate (Miklowitz, Goldstein, & Falloon, 1983; Mueser et al., 1993). In an effort to identify the underlying processes that distinguish high EE from low EE relatives, several recent studies have examined the attributions families make for an ill relative's condition. From an attributional perspective, the way that family members perceive the patient's behavior is central to the household's emotional climate (Hooley, 1987). Specifically, perceptions that the patient's behavior is either within or outside of his or her volitional control largely determine whether family members react with anger or with sympathy toward the patient (Weiner, 1993, 1995), which may explain the differing emotional atmospheres of high and low EE households.

Direct examination of the attributions family members make for patients suffering from schizophrenia has shown that high EE relatives characterized by critical or hostile attitudes view the disorder and related behavior as relatively controllable by patients (Barrowclough, Johnston, & Tarrier, 1994; Brewin, 1994; Brewin, MacCarthy, Duda, & Vaughn, 1991; Weisman, López, Karno, & Jenkins, 1993; Weisman, Nuechterlein, Goldstein, & Snyder, 1998). For example, one high EE mother commented about her daughter not helping with household chores:

Then she'd go for weeks and there wouldn't be any way you could try to get her to make dinner. No way. As I say, she's difficult to deal with because she does have a mind of her own. She does what she feels like.

Low EE relatives, on the other hand, make attributions of a more uncontrollable nature. For instance, in discussing her daughter's attention difficulties one mother stated,

It's the worst illness that one can have ... in the brain. That's the axle of one's life, right? To have a sound mind, to do things, to think, to go here and there, and she's not able to do any of that.

In this case the mother perceives that her daughter's attention problems are clearly due to an illness that is outside of her control. One limitation of the growing evidence that family members' attributions and expressed emotion are related is that such evi-
dence only suggests that attributions are important in predicting schizophrenic relapse. Attributions are assumed to be associated with clinical course because they are related to expressed emotion, which researchers know is related to outcome. However, a direct examination of the relationship of attributions to outcome is missing from available naturalistic studies, although there is one treatment-based study that found an association between family attributions and relapse (Barrowclough et al., 1994). After controlling for treatment condition, family members' attributions of control were found to be related to an increased likelihood of relapse. Similar findings in a naturalistic study, one in which families are not randomly assigned to specific interventions, would further advance an attributional model of relapse.

A second limitation with studies of families' attributions is that investigators have focused primarily on the relation between attributions and negative affect. According to attribution theory, perceptions of controllability are related not only to negative affect, such as anger and annoyance, but also to positive affect, such as sympathy and compassion (Weiner, 1993, 1995). Relatives who tend to perceive the disorder as controllable are likely to respond angrily toward patients and, in turn, offer them little help. In contrast, relatives who perceive the ill family member's symptoms and behavior as outside his or her control, such as the result of an illness, are expected to be sympathetic and supportive (López & Wolkenstein, 1990). Aside from its theoretical value, the consideration of positive affect is important because it reflects the role of families' prosocial responses to the course of illness. To date, the emphasis of family factors research has been to identify negative family characteristics related to a patient's relapse. By also considering families' prosocial responses, research might begin to discern positive family factors that serve as protective factors against relapse.

Qualitative observations support the relationship between attributions of control and both negative and positive affect. High EE relatives who are critical or hostile doubt whether their disturbed family members are truly ill and, at times, use combative or intrusive efforts to make patients change. In contrast, low-expressed-emotion relatives' attitudes toward the legitimacy of the patient's condition are coupled with the expression of sadness, pity, and a tolerant, nonintrusive approach to coping (Jenkins, Kanno, de la Selva, & Santana, 1986; Leff & Vaughn, 1985). Only one quantitative study has examined the relationship between family members' attributions and positive affect. In the same study mentioned earlier, Barrowclough and her associates (1994) found control attributions and warmth to be related; specifically, the more warmth expressed by family members, the less volitional control they judged their ill relatives to have. The association of warmth and outcome, however, was not assessed. To test a complete attributional model of relapse, it is important both to examine the relationship of attributions to positive as well as negative affect and to assess the association between both affective reactions and outcome. By doing so, researchers can ascertain the role of family members' prosocial as well as asocial responses as they relate to the course of schizophrenia.

The purpose of the present study was to build on past attributional research of expressed emotion by testing directly the interrelationships of attributions, affective reactions (both positive and negative), and outcome. We were guided by a mediational model of attribution and affect that Weiner (1980) and others (e.g., Betancourt, 1990; Reisenzein, 1986) have applied to the study of help giving (for a review, see Weiner, 1995). First, we examined the association of family attributions to relapse. We expected that the more relatives perceived patients' symptoms and problematic behavior as controllable, the greater likelihood the patients would relapse and have clinical symptoms at follow-up. Second, we examined the relationship between family members' attributions and their affective reactions. We hypothesized that as relatives judged the patients' symptoms and troublesome behavior as being within their control, the more negative affect and the less positive affect they would express toward the patients. As a third step, we tested the association of families' affect to the patients' outcome. We expected that negative affect would be related to more relapse and symptomatology but that positive affect would be related to less relapse and symptomatology. Finally, we examined the combined and independent contributions of attributions and affect to the patients' outcomes. A mediational model of attribution–affect–outcome would be supported if affect explained a significant proportion of the hypothesized attribution–outcome linkage (Baron & Kenny, 1986). In sum, the model being tested was that family members' perceptions of patients' control over their symptoms and problematic behavior covary with both negative and positive emotional reactions, which in turn covary with patients' relapse. In this model, the family member's affective response toward the patient is thought to be the more proximal determinant of the patient's clinical status.

Method

Participants

Drawn from a previous study by Vaughn, Snyder, Jones, Freeman, and Falloon (1984), participants were 40 key relatives of 40 patients with schizophrenia, 1 relative per patient. Key relatives were defined as those who reported frequent face-to-face contact with the patients. These family members were classified into three groups: high EE due to criticism or criticism and hostility (n = 17), high EE due to emotional overinvolvement (n = 7), and low EE (n = 16). Patients were selected from a state hospital in southern California and met the following selection criteria: (a) 17–50 years of age; (b) hospitalized 1 month prior to initial interview; (c) of Anglo-American descent; (d) living with a parent, spouse, or close relative 1 of the 3 months prior to admission; and (e) diagnosed as having schizophrenia based on the Present State Examination (PSE; Wing, Cooper, & Sartorious, 1974).

Of Vaughn et al.'s (1984) original 69 patients, the 15 patients with unchanging, persisting symptoms were omitted because the present study sought to examine the relationship of relapse to attributions and affect. Participants for this study were chosen from among the 54 (36 from high EE households and 18 from low EE households) who were classified as either having experienced relapse or no relapse during a 9-month follow-up period. However, of those 54, 11 family members' audiotaped interviews could not be located and 3 were inaudible, making the coding of these families' attributions and affect not possible for the present study.1 Thus,
the remaining patients from 24 high EE and 16 low EE households constituted the present sample. Most of the sample (85%) was male.

Procedure

Three undergraduate students were hired to code statements of controllability from the original Camberwell Family Interview (CFI; Vaughan & Leff, 1976) audiotaped interviews. Training consisted of 6 weeks of instruction and extensive practice with 20 CFI interviews not included in the sample. All coders were blind to the hypotheses and to the EE status of the family members interviewed. Coding procedures for controllability were adapted for use with the audiotaped interviews from those used in Weisman et al. (1993), for which the coding was based on written transcripts.

Family Measures

Expressed emotion. An abbreviated form of the CFI was used to classify the key relatives as high or low EE. The CFI is a 1.5-hr semi-structured interview administered to family members with the aim of assessing the circumstances in the home 3 months prior to the patient’s admission to the hospital. A description of the relative’s attitudes toward the patient and his or her propensity for responding to the patient’s behavior in a certain manner (e.g., in a critical manner) results from discussing the disease’s onset, development, and impact on family life (Leff & Vaughan, 1985; Vaughan & Leff, 1976). All interviews were audiotaped for later analysis.

The original coding of the CFI was used to derive indexes of criticism, hostility, and emotional overinvolvement (EOI) based on family members’ responses to the CFI. Six or more critical comments, any degree of hostility, a score of 4–5 on a 6-point scale for EOI, or any combination of these results in high EE classification (Leff & Vaughan, 1985; Vaughan & Leff, 1976). The reliabilities of the CFI and specific rating scales were reported as adequate in Vaughan et al. (1984). In the case where more than 1 family member (e.g., 2 parents) was interviewed for a given patient, the higher of the 2 relatives’ scores was used to determine the EE classification of the household.

When interviews of 2 parents of the same EE status were available for a given patient, either the mother or the father was randomly selected. An exception occurred with high EE relatives designated as EOI. In the five cases in which 2 high EE parents were available for a given patient, 1 due to EOI and 1 to high levels of criticism, the EOI relative was selected. Because EOI family members constitute such a small percentage of the high EE population, oversampling of these relatives ensured their inclusion within the present sample. In addition, there were four cases in which both EOI and high criticism were present in 1 family member. These relatives were designated as EOI relatives.

Controllability. The three coders listened to audiotapes of the CFI; then they identified and entered into word-processing files the verbatim statements implicating the patients’ level of control over their disorder, symptoms, or behavior. A statement implying high controllability is “Jim is not really sick. He just acts that way to avoid being given any responsibility.” An example of low perceived controllability is “You have to understand the erratic behavior when someone is as ill as Julie.” Each statement was rated on a 5-point scale from 1 (no perceived control) to 5 (high perceived control). The coders also recorded the context of the patient’s behavior noted in each recorded statement. At the end of each interview, the coders made an overall rating of perceived controllability on a similar 5-point scale (1 = no perceived control, 5 = perceived control over all aspects of the disorder). The coders were taught to base their ratings on their overall impressions rather than on some formula, such as the average of the rated statements.

Ratings were not restricted to attributions concerning the cause of patients’ schizophrenia. Control-related perceptions concerning specific symptoms and related behaviors were also included. Thus, attributions of both causal and behavioral controllability were coded. For example, the statement “It’s not his fault... his condition is due to birth complications,” refers to the cause of illness. However, the statement, “I know he can pick up his mess—he just refuses to,” concerns a specific behavior, not the cause of this behavior. Furthermore, no distinction was made between statements referring to past beliefs about the disorder and present attitudes. Statements were coded regardless of whether they implicated how the relative felt before learning that the patient was diagnosed as mentally ill (e.g., “I used to think she yelled like that just to irritate me”) or how the relative felt at the time of the interview (e.g., “Now I know that she’s sick and can’t help her behavior”). By disregarding the time frame, we ensured that the raters did not have to judge, oftentimes with little information, when the families held the specific attitudes. Finally, only perceptions of patient control over the behavior itself and over the cause of their behavior or disorder were considered as indicating personal control. Statements implicating relatives, doctors, or other parties as responsible for the disorder or its symptoms and related behaviors were not coded for controllability. The effective reliability of the three coders for the entire sample was .88, as computed by the Spearman-Brown formula (Rosenthal & Rosnow, 1991). The mean rating of the three coders was used as the unit of analysis.

It should be noted that one slight modification was made to the coding procedures developed by Weisman et al. (1993). On the basis of the earlier coding procedures, if at any time during the interview the family member mentioned that the patient was ill or sick, then coders were instructed to make a rating of no greater than 3, which corresponds to the midpoint on the 5-point controllability rating scale. The rationale for this procedure was that a family member who recognized the patient as ill, regardless of what else he or she might say, likely saw the patient as at most only partly to blame for his or her actions. In the current study, rather than making this a rule, we presented it as a guideline that the coders could deviate from if they believed the evidence suggested otherwise. We made this change for two reasons. First, toward the end of the CFI, the interviewer asks directly whether the informant believes his or her hospitalized relative is ill. Thus, there is the possibility that a family member may state that the relative is ill only in response to this specific inquiry, whereas throughout the interview the family member may point out on several occasions the considerable control that the patient has over his or her disorder or behavior. In such cases, we wanted to make sure that in making their ratings, coders had the flexibility to weigh the context of all statements implicating controllability rather than simply emphasize one comment over others. A second and related reason for loosening the illness rule was that during the piloting of the coding procedures, we recognized that the implication of this rule was that coders could impose their views regarding the patient’s controllability. In other words, they might rate a patient’s behavior or symptom with a certain degree of controllability on the basis of their beliefs that the behavior was or was not controllable. Throughout the training we emphasized the importance of the coders rating the relatives’ perceptions of the patients’ controllability, not the coders’ perceptions of the patients’ controllability. We recognize that the coders’ perceptions can color their ratings; however, a valid test of an attributional model of relapse can be carried out only if the attributional ratings are based as much as possible on the relatives’ beliefs, not the beliefs of the coders or of the investigators.

CFI Critical rating. Similar to Brewin et al. (1991), the number of critical comments was taken from the original CFI measures to assess family members’ negative affect toward the patient. The number of critical comments ranged from 0 to 24. Given this study’s interest in examining
positive affect, the CFI measure of warmth was also included. The rating of warmth reflects a global rating based on positive voice tone ranging from 0 (low) to 5 (high).

**Patient Measures**

*Clinical ratings.* The clinical status of patients at admission, discharge, and follow-up during a 9-month period was assessed by Vaughan et al. (1984) using two clinical rating scales: a schizophrenic-symptom cluster derived from the PSE and the Psychiatric Assessment Scale (PAS: Krawiecck, Goldberg, & Vaughan, 1977). At admission, the PSE schizophrenic-symptom cluster scores ranged from 3 to 19, whereas at follow-up they ranged from 0 to 13. The PAS contains eight dimensions of symptomatology, including two dimensions of negative symptoms (flattened/incongruous affect and poverty of speech) and three dimensions of positive symptoms (delusions, hallucinations, and incoherence). Each dimension was rated on a 4-point scale ranging from 0 (absent) to 4 (severe). The positive and negative symptoms scores were derived by adding the ratings for each of the relevant dimensions and then dividing the sum by the number of dimensions. Thus, the unit of analysis was the patient’s mean positive and negative symptom score. The actual ranges of positive and negative symptoms at admission were 1.3-4.0 and 0-3.0, and at follow-up they were 0-3.7 and 0-3.0.

To assess the patients’ clinical status during the follow-up period, Vaughn and colleagues contacted key relatives for each patient on a monthly basis to assess whether any deterioration had occurred in the patient’s condition. When such a change was reported, clinical evaluations assessed whether the patient had relapsed. All patients who had not experienced a relapse by 9 months were assessed at that time. The PSE, PAS, and monthly telephone logs were used to classify the patients’ clinical course into three categories: no relapse (0), relapse (1), or persisting symptoms during the follow-up period. As discussed above, patients in the last category were not included in the present study.

**Patient correlates of clinical outcome.** Prior expressed-emotion research has found some patient variables to be related to clinical outcome, including use of street drugs, gender, medication compliance, and degree of patient contact with family. Patients were identified as having used street drugs if they reported using drugs such as cocaine, barbiturates, and “angel dust.” Use of marijuana was excluded. The patients’ street drug use was coded as either no street drug use (0) or street drug use (1). The patients’ gender was identified by both the clinical rater and family members and was coded as male (0) or female (1). Medication compliance was defined as using a prescribed dosage of neuroleptics during at least 75% of the follow-up period with no period of 4 consecutive weeks in which no medications were taken. Adherence to the medication regimen was coded as irregular (0) and regular (1). Patients with less than 35 hr of contact with their family members were designated as having a low degree of contact (0), and those with more than 35 hr of contact were designated as having a high degree of contact (1). (See Vaughan et al., 1984, for further details of these measures.)

**Results**

**Correlations and Descriptive Statistics**

Patterns of correlations (N = 40) were consistent with the hypothesized attribution–affect model of relapse. As expected, family members’ attributions of controllability were related to the patients’ poorer clinical outcome (relapse: $r = .24, p = .14$; schizophrenic symptoms: $r = .23, p = .16$; positive symptoms: $r = .30, p = .06$), although these correlations fell short of accepted levels of statistical significance. Attributions were significantly related to family members’ affect in the expected direction. The more family members viewed ill relatives as having control over their symptoms and behavior, the less they expressed positive affect (warmth: $r = -.37, p = .03$) and the more they expressed negative affect (criticism: $r = .55, p < .001$). Finally, criticism ($r = .40, p = .01$), but not warmth ($r = -.03, p = .85$), was associated with relapse. Similar associations were found with the two symptom indexes as well.

One possible reason for the relatively lower magnitude of the attributions–clinical outcome relationship is that relatives designated as emotionally overinvolved may have attenuated this relationship. Past research indicates that relatives characterized as emotionally overinvolved perceive the cause of patients’ symptoms and behavior as outside their control (Barrowclough et al., 1994; Brewin et al., 1991). Given that EOI is associated with a significant degree of relapse, prior research suggests that there may be little relationship between the attributions of EOI family members and the patients’ clinical outcome. To test this possibility, we carried out correlations of attributions of control and relapse for relatives designated as emotionally overinvolved and not emotionally overinvolved. The hypothesized relationship between attributions and relapse was supported for the non-EOI households ($n = 33$) but not for the EOI households ($n = 7$). In fact, the attribution–relapse relationships for the two groups were in opposite directions (non-EOI households: $r = .40, p = .02$; EOI households: $r = -.33, p = .47$). For the non-EOI families, the more family members judged the patient as responsible for his or her symptoms and behavior, the more likely the ill relative was to relapse. For the EOI families, the opposite relationship was found, but it was nonsignificant. Because of the very small subsample of the EOI households, this correlation must be interpreted cautiously. Furthermore, it should be noted that the attribution–relapse correlations for the two groups did not differ significantly, $z = 1.45, p = .15$, two-tailed. Nevertheless, the pattern of correlations together with the past research of Barrowclough et al. and Brewin et al. suggest that an attributional model of relapse may not apply to households characterized as emotionally overinvolved. Accordingly, patients only from non-EOI families were examined in subsequent analyses.

Means and standard deviations for all family and clinical variables from the non-EOI families, as well as their intercorrelations, are shown in Table 1. As a whole, the ratings of the family members fell within the middle range in terms of attributions of control and warmth, and within the high range of criticism. Their mean number of critical comments ($M = 7.18, SD = 5.53$) was clearly above the usual cutoff score of 6. The standard deviations suggest that an ample range of these perceptions and affective responses was sampled. In terms of outcome, 12 of 33 (36%) patients relapsed, and patients as a whole exhibited little symptomatology at follow-up. In fact, 10 patients were rated as having no significant schizophrenic symptomatology, 13 as having none of the noted positive symptoms, and 17 as having none of the noted negative symptoms. Variables that have been identified in prior research as correlates of outcome (e.g., medication compliance and gender) are considered later.

An examination of the correlations for the non-EOI sample provides some support for the hypothesized attribution–emotion model of relapse. As predicted, family members’ attributions of

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2 Because of missing data, $n = 37$ for analyses of warmth.
control correlated positively with patient outcome measures and families' level of criticism and correlated negatively with families' degree of warmth. All these relations were significant ($p < .05$), except for that regarding negative symptom ratings ($p = .49$). In terms of affective ratings, family warmth and criticism were related to patient outcome measures in the expected directions; however, only the criticism–outcome association proved to be reliable. Given that relatives' warmth was not related to the patient outcome measures, further tests of the attribution–emotion model focused only on criticism. Furthermore, given the inconsistent results regarding negative symptoms, they too were excluded from additional analyses.

### Predicting Clinical Outcome From Family Members' Attitudes and Affective Reactions

The correlational data provide support for three of the four conditions necessary to establish an attribution–emotion (criticism)–outcome mediational model: (a) Attributions are related to emotion, (b) attributions are related to outcome, and (c) emotion is related to outcome. A series of direct logistic and linear regression analyses was conducted to test the fourth condition of this mediational model; that is, when outcome was regressed on attributions and emotions, the association between attributions and outcome was no longer significant, and the association between emotions and outcome remained significant. The findings of these analyses provide partial support of this model. In a logistic regression, attributions were no longer a significant predictor of relapse, with the number of critical comments in the model, odds ratio $= 1.78$, $df = 1$, $p = .29$. Criticism remained related to relapse with attributions in the model; however, this relationship fell short of conventional standards of significance, odds ratio $= 1.17$, $df = 1$, $p = .13$. The same pattern of findings was obtained for the two symptom indexes.

Although the available evidence provides only partial support for the proposed mediational model, the evidence is consistent with an attribution–emotion model of relapse, one in which attributions and emotion (criticism) jointly predict clinical outcome. In regression analyses where attributions and criticism were entered as predictors of clinical outcome, together they reliably distinguished between those patients with a relatively stable clinical course and those with a relatively unstable clinical course—relapse: $\chi^2(2, N = 33) = 8.38, p < .02$; schizophrenic symptoms: $R^2 = .19, F(2, 30) = 3.55, p = .04$; positive symptoms: $R^2 = .20, F(2, 30) = 3.67, p = .04$.

### Possible Patient Correlates of Clinical Outcome

It is important to assess whether previously identified patient variables contribute to explaining the identified attribution–criticism and outcome association. For example, it may be that family members perceive ill relatives who do not comply with their medication regimen as more responsible for their symptoms and behavior than family members perceive ill relatives who do comply, which in turn could be related to clinical outcome. To examine the role of patient variables in the attribution–criticism–outcome relationship, we first assessed their relations with the clinical outcome measures. As noted in Table 1, there was a significant positive association between street drug use and clinical outcome and a significant negative association between gender and clinical outcome. Patients who were known to use illicit drugs were more likely to relapse and to present with more schizophrenic symptomatology than those who did not use drugs. In addition, male patients were judged to have a worse clinical outcome than their female counterparts. Medication compliance proved not to be related significantly to outcome measures ($ps = .07$ [relapse], .23 [schizophrenic symptomatology], and .40 [positive symptoms]. The compliance–outcome associations, however, were all in the expected direction—those who complied with their medication regimen were less likely to relapse and less likely to report significant symptomatology. Patients' degree of contact with the family was not significantly related to clinical outcome measures ($ps = .60$ [relapse], .81 [positive symptoms], and .87 [schizophrenic symptomatology]). Thus, street drug use and gender are potential patient covariates in understanding the relation between attributions–criticism and clinical outcome.
To explore further the role of street drug use and gender, we examined their relations with controllability and criticism (n = 33). Patients' use of illicit drugs was positively related to family members' attributions of control (r = .48, p = .005) and level of criticism (r = .36, p = .04). There were no significant differences in relatives' attitudes and reactions toward male and female patients. Trends in the data, however, suggested that family members might be more likely to implicate male patients than female patients as being responsible for their actions (r = -.31, p = .08) and that family members might be more critical of the actions of male patients than female patients (r = -.21, p = .24). Thus, the significant associations with illicit drug use suggest that it could serve to explain the clinical outcome variance accounted for by families' attributions and criticism.

We conducted simultaneous logistic and linear regression analyses to assess the independent contribution of illicit drug use, attitudes, and criticism to clinical outcome. Across the different measures of clinical outcome (relapse, schizophrenic symptomatology, and positive symptoms), street drug use, attributions, and criticism together predicted a significant proportion of the outcome variance. This was most pronounced with relapse as the dependent measure, \( \chi^2(3, N = 33) = 10.04, p = .018 \). No one variable, however, accounted for a significant proportion of the variance when controlling for the other set of variables, as reflected in the p values of each predictor for relapse: street drug use (.20), attributions (.59), and criticism (.17). It should be noted that when attributions and criticism were entered together as a set of predictors, after controlling for street drugs, they fell just short of contributing a significant proportion of relapse variance, \( \chi^2(2, N = 33) = 4.55, p = .10 \). The findings regarding the prediction of schizophrenic symptomatology and positive symptoms generally reflected a similar pattern. These findings suggest that illicit drug use is interrelated with families' attributions and criticism in predicting clinical outcome.

Discussion

At the time of hospitalization, families' perceptions that an ill relative's behaviors and symptoms are under the patient's control, in conjunction with families' level of criticism, predict relapse and symptomatology within a 9-month follow-up period. In other words, the more that family members believe that their ill relatives' behaviors and symptoms are under the patient's control, the more family members might be more critical of the actions of male patients than female patients (r = -.21, p = .24). Thus, the significant associations with illicit drug use suggest that it could serve to explain the clinical outcome variance accounted for by families' attributions and criticism.

The current investigation extends prior research by indicating that attributions of controllability (and criticism) are directly related to outcome. This is consistent with Barrowclough et al.'s (1994) findings based on a treatment study that attributions of controllability reliably predict relapse. There is a difference, however, in the findings of the two studies. Barrowclough et al. found evidence for a direct attribution-relapse pathway, whereas the current study indicated that attributions and criticism jointly predict clinical outcome. Despite the differences in the way attributions may relate to relapse, both studies point to the importance of family members' attributions of control in understanding the course of schizophrenia.

In addition to examining the relationship of attributions to outcome, the second aim of this study was to assess whether attributions and positive affect contributed to the prediction of patient relapse. Like Barrowclough et al. (1994), attributions were found to be related to family members' positive affect—in this case, warmth. The more patients' behaviors and symptoms were judged as outside of the patients' control, the more family members demonstrated warmth toward their ill relatives. Although attributions were found to predict both outcome and warmth, warmth was not found to be related to clinical outcome. (Barrowclough et al. did not report testing the warmth–clinical-outcome association.) The current study then raises some question about the importance of families' prosocial responses, at least their degree of warmth, in understanding the relationship between family factors and relapse among patients with schizophrenia.

Because few investigators of expressed emotion have reported analyses of warmth or other positive family factors and clinical outcome, we do not know whether the relationship between relapse and positive affect has not been assessed or whether it has been assessed and not found to contribute to predicting course. (See the following exceptions in which warmth was found to be associated with less relapse: Bertrando et al., 1992, and Ivanović, Vuletic, & Bebbington, 1994.) Perhaps as a result of the considerable influence of the conclusions of Brown et al. (1972) that warmth is too “complex” of a variable, few investigators have reported the relationship between warmth or positive remarks and the course of illness. Although no evidence was found in the current study that family warmth is related to the course of schizophrenia, to advance a more balanced approach to the study of families, we encourage further investigation of families' prosocial processes in the clinical course of schizophrenia.

Family members' attributions and affective reactions are part of a complex interplay between family factors and clinical outcome. The data presented here do not apply to relatives who are designated as emotionally overinvolved. It may be that the attributions and affective reactions of emotionally overinvolved family members are less important than other factors, such as how family members interact with those who are ill (see Hooley and Licht, 1997). Thus, an examination of behavioral interactions (Bellack, Haas, & Tierney, 1996; Goldstein, 1995) may be particularly warranted for emotionally overinvolved relatives and, together with attributions and affect, may contribute to a better understanding of the relation of family factors and clinical course. In addition, patients' behavior, such as their use of street drugs, may contribute to the interplay of family factors and the course of illness. The
finding concerning street drug use points out the need for attributional studies to examine further the role of patients' behavior.

It is also important to note that the current study is limited by its correlational nature and its small sample size. The former does not allow for any causal inferences to be drawn, and there is the possibility that some unmeasured variable accounts for the identified relationships. The sample size limits the statistical power. Important associations may go undetected. Despite these limitations, the findings are generally consistent with past attributional studies of expressed emotion (e.g., Brewin et al., 1991) and of relapse (Barrowclough et al., 1994), as well as past research that has tested the basic tenets of attribution theory (for a review, see Weiner, 1995).

The main implication of this study is that it provides support for the continued examination of the role family members’ attributions of controllability (responsibility) play in the course of schizophrenia. Consistent support for the role of attributions would contribute to providing a much needed explanation as to how expressed emotion and course of the illness are related. In addition, together with past attributional studies, this investigation suggests that families face a challenging role in living with a relative with schizophrenia; that is, judging whether their relative has control over any given behavior. Most family members believe that their relative suffers from a serious mental illness and that he or she is not responsible for his or her behavior, at least that behavior that is the result of the disorder. However, how much of the patient’s behavior is the result of the disorder and how much is not? And even if the behavior is caused by the disorder, can patients still have some control over their actions?

To address this bind, attribution theory would suggest that families learn all they can about the illness and, in consultation with their care providers and support networks, take the appropriate attributional perspective given the specific context. Patients may have control over some of their behaviors and symptoms (e.g., illicit drug use). Therefore, it may be important for family members to recognize this as a problem and, with the minimum level of criticism possible, take steps for their ill relative to address the problem. On the other hand, some patient behaviors and symptoms, such as attention difficulties, may at times be outside the patient’s control. Families might do best to view the problem accordingly, lest they risk developing a critical stance. Future research can help determine whether this flexible attributional stance, one that can be adjusted over time and across situations, is useful in addressing the ongoing challenges that families face in living with relatives with schizophrenia.

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