Ethnicity, Expressed Emotion, Attributions, and Course of Schizophrenia: Family Warmth Matters

Steven Regeser López
University of California, Los Angeles

Antonio J. Polo
University of California, Los Angeles

Marvin Karno
University of California, Los Angeles

Kathleen Nelson Hipke
Wisconsin Psychiatric Institute and Clinics

Janis H. Jenkins
Case Western Reserve University

Christine Vaughn
Institute of Psychiatry

Karen S. Snyder
University of California, Los Angeles

The authors examined the role of family factors and the course of schizophrenia by carrying out additional assessments and analyses in 2 previously published studies of Mexican American and Anglo American patients and families. The authors found partial support for an attributional model of relapse for families who are low in emotional overinvolvement. Attributions of control, criticism, and warmth together marginally predicted relapse. The data also indicated that for Mexican Americans, family warmth is a significant protective factor, whereas for Anglo Americans, family criticism is a significant risk factor. These findings suggest that the sociocultural context shapes the pathways by which family processes are related to the course of illness. Moreover, the warmth findings suggest that families may contribute to preventing relapse.

Family factors are related to the course of schizophrenia. After discharge, patients who return to families characterized by high levels of criticism, hostility, or emotional overinvolvement are more likely to relapse than those patients who return to families characterized by low levels of the same negative emotional/attitudinal attributes (Butzlaff & Hooley, 1998). This line of research, which is referred to as the study of families’ expressed emotion (EE), is important for at least two reasons. First, it points out that social factors are related to the course of schizophrenia—a disorder with strong biological underpinnings. Second, this research has significantly influenced the development of family interventions for schizophrenia. Family treatments based on psychoeducation, communication, and problem-solving skills training have been developed largely to reduce some families’ negatively charged emotional climate (e.g., McFarlane et al., 1995). Despite these important contributions, the study of families’ expressed emotion has significant limitations. Its conceptual foundation is underdeveloped, and it has largely overlooked the role of prosocial family functioning and culture.

Conceptual Processes—An Attributional Perspective

To examine one set of conceptual processes underlying EE, a small group of investigators has proposed and tested the applicability of attribution theory (e.g., Brewin, MacCarthy, Duda, & Vaughn, 1991; López & Wolkenstein, 1990). Hooley (1987) was the first to suggest that family members’ attributions of the patient’s illness and behavior may be particularly important in understanding the household’s emotional climate. In her initial formulation, she focused on the family’s perception of the patient’s controllability of the symptoms. She stated, “High-EE attitudes are hypothesized to develop when symptoms are perceived by family members as being to some degree controllable by patients” (Hooley, 1987, p. 191). Hooley and other investigators have since drawn on attribution theory, which, in its most current rendition,
focuses on the closely related construct of attributions of responsibility (Weiner, 1993, 1995). Specifically, relatives’ perceptions that patients are either responsible or not responsible for their illness-related behavior are central to the relatives’ affective stance. Attribution theory proposes that those who judge the patient as responsible will tend to feel negative affect (anger, bother, annoyance), whereas those who judge the patient as not responsible will tend to feel positive or supportive affect (sympathy, compassion, concern).¹

The available studies provide some support for attribution theory, but they are not conclusive. There is strong evidence that EE is related to attributions. Family members who are designated as high in EE judge their ill relatives as having more volitional control (responsibility) over their behavior than do family members who are designated as low in EE (e.g., Hooley & Campbell, 2002; Weisman, Nuechterlein, Goldstein, & Snyder, 1998). These findings are consistent with the attribution–negative affect linkage, given that most of the high-EE family members were so designated because their views of their ill relative were found to be high in criticism or hostility, both reflecting negative affect. Studies that more directly tested this attribution–affect linkage by examining the correlation of families’ attributions of control and specific indices of criticism and hostility, rather than the more global notion of EE, also support this linkage (e.g., López, Nelson, Snyder, & Mintz, 1999; Weisman, López, Karno, & Jenkins, 1993). Thus, available evidence supports one linkage of attribution theory, namely, family members’ attributions are associated with their negative affect, specifically criticism and hostility.

Much less attention has been given to the other linkages of attribution theory, in particular the relationship between families’ attributions and positive affect, and the interrelation of attributions, affect—both positive and negative—and clinical outcome. On the basis of data from a treatment study, Barrowclough, Johnston, and Tarrier (1994) found that attributions of controllability reliably predicted relapse; more attributions of control were associated with a greater likelihood of relapse. In addition, they found that attributions were related to family members’ warmth toward the patient. The more family members judged patients’ behaviors to be within their control, the less warmth family members expressed. These investigators, however, did not test whether warmth was associated with clinical outcome. López et al. (1999) also found that attributions were related to both negative and positive affect in the expected direction. However, only negative affect, in conjunction with attributions, was a significant predictor of relapse. Although positive affect (warmth) was related to families’ attributions of control, it did not contribute to the prediction of relapse. Hooley and Campbell (2002) also found that attributions were related to both negative and positive affect. Unlike the other two attribution–outcome studies, Hooley and Campbell did not find a significant association between attributions of control and outcome. However, they did find that ratings of the key relatives’ controlling behaviors were associated with an exacerbation of symptoms; more behavioral control was associated with poor clinical outcomes. These investigators did not report the relationship between negative or positive affect and poor outcomes. Given the limited efforts to examine the attribution–affect (negative and positive) outcome model, further study of this more complete attribution model is needed.

It is important to note that an attributional model of relapse primarily applies to those family members who are low in emotional overinvolvement. Prior research has indicated that the attributional processes underlying emotionally overinvolved (EOI) key relatives may be different than that for other high EE families (Barrowclough et al., 1994; Brewin et al., 1991; López et al., 1999). Specifically, EOI family members may tend to perceive their ill relatives as not responsible for their own behavior. A recent measurement study further confirmed the significant difference between emotional overinvolvement and criticism (Chambliss, Bryan, Aiken, Steketee, & Hooley, 1999). Therefore, consideration of families’ emotional overinvolvement is likely to be important in attributional studies of relapse.

Families’ Prosocial Functioning

The study of EE has evolved over the years to focus largely on negative family factors, in other words, what family members do “wrong” that is associated with a negative outcome. Early on, Brown and colleagues (e.g., Brown & Rutter, 1966) included family warmth and positive remarks in their initial assessment of EE. In subsequent published studies, however, family warmth and positive remarks received little attention. For example, with regard to favorable emotions, Brown, Birley, and Wing (1972) reported no findings for positive remarks and gave limited attention to warmth.

Warmth, which was formerly considered to be a component of EE, is now seen to be a complex variable. A high rating of warmth is often accompanied by a high rating on emotional over-involvement, while a low rating in warmth usually implies a high level of critical comments. Patients whose relatives showed marked warmth without also expressing criticism or over-involvement had a significantly better outcome. Warmth was consequently not included in the index of expressed emotion. “Expressed emotion,” therefore, has a mainly negative connotation. (Brown, Birley & Wing, 1972, p. 253)

Thus, warmth was thought to be too complex and, as a result, dropped from the definition of EE. From 1972 to the present, the study of EE has focused primarily on risk factors, largely overlooking protective factors against relapse. Many studies of EE failed to report any data regarding the role of positive family factors, despite applying the Camberwell Family Interview (CFI; Brown & Rutter, 1966; Vaughn & Leff, 1976b), for which warmth and positive remarks can be assessed. It may be that analyses of positive remarks and warmth were carried out but not reported because they were found to be unrelated to the course of illness. Whatever the reasons, as Leff (1989) lamented some years later, “It is a shame that the study of family factors has been associated with negative family functioning” (p. 135).

A close examination of the available EE data reveals that there is evidence that researchers should at least give equal attention to what families are doing that might reduce relapse rates. In an aggregate analysis of raw data from 25 studies of EE conducted prior to 1993, Bebbington and Kuipers (1994) reported the rela-

¹ Our use of attributions of controllability include perceptions that the cause of the behavior is controllable or uncontrollable (causal controllability), as well as the view that the behavior is controllable or not controllable (behavioral controllability; López & Wolfenstein, 1990). Together these perceptions are closely linked to judgments of responsibility (Weiner, 1995). Thus, we use the terms attributions of controllability and judgments of responsibility interchangeably.
tionship of family EE to patient relapse. Their data revealed that high EE is not the best predictor of outcome. Fifty percent or 353 of the 705 patients who returned to high-EE families relapsed. In contrast, 21% or 135 of the 641 patients who returned to low-EE families relapsed. (A similar distribution was reported in Butzlaff & Hooley, 1998.) Thus, we can predict with greater certainty that a patient whose family is designated as low EE will not relapse than we can predict that a patient whose family is designated as high EE will relapse. Moreover, two empirical studies have found that patients were less likely to relapse when they returned to households high in warmth than when they returned to households low in warmth (Bertrand et al., 1992; Ivanović, Vuletić, & Bebbington, 1994). Whereas past investigators have examined what families do that is related to relapse, these findings suggest that it is at least equally important to examine how prosocial family functioning may serve to buffer relapse.

Culture

In addition to overlooking families’ prosocial behavior, researchers have largely ignored the role of culture. Jenkins and Karno (1992) have provided a comprehensive overview of the many ways that culture plays a role in how families and the course of schizophrenia interrelate. First, families’ level of EE varies cross-culturally. For example, as many as 67% of Anglo American families from a study conducted in Southern California were designated as high EE (46 of 69 families; Vaughn, Snyder, Jones, Freeman, & Falloon, 1984). Similarly, a primarily Caucasian sample from the Montreal area was found to have a large proportion of high-EE families (61%, 42 of 69 families; King & Dixon, 1999). In contrast, as few as 23% of East Indian families were designated as high EE (16 of 70 families; Leff et al., 1987). The degree of high EE among Mexican American families (41%, 29 of 70 families; Karno et al., 1987) and British families (45%, 57 of 128 families; Vaughn & Leff, 1976a) falls between that of the Anglo American and East Indian families. Another cultural factor concerns families’ conceptualizations of schizophrenia. Jenkins (1988) has provided evidence that Mexican American families largely conceive of schizophrenia as a condition of nervios, a mental and physical condition for which the patient is not considered blameworthy. In contrast, Anglo American families largely conceive of schizophrenia as a mental illness for which the patient’s personal character oftentimes is implicated. Thus, culture can shape the ways in which families construe schizophrenia, which, in turn, may relate to how families cope with the illness (see, also, Guarnaccia, Parra, Deschamps, Milstein, & Argiles, 1992).

Although Jenkins and Karno (1992) have made a compelling argument for the role of culture in how families respond to serious mental illness, particularly by contrasting Mexican American and Anglo American families, a close examination of the available outcome data points out the complexity in trying to understand the role of ethnicity and culture. As noted earlier, Anglo Americans are more likely designated as high EE families than are Mexican Americans (Karno et al., 1987; Vaughn et al., 1984). One would therefore expect a higher relapse rate for Anglo American patients. Moreover, the cultural differences in the two ethnic groups’ conceptualizations of the disorder might also be thought to contribute to relatively higher rates of relapse for Anglo Americans than for Mexican Americans. However, there is virtually no difference in the relapse rates of the two ethnic groups (Anglo Americans: 43% or 23 of 54 patients; Mexican Americans: 39% or 17 of 44 patients).

Study Overview and Hypotheses

For the current research, we examined the original data from the previously mentioned Anglo American study (Vaughn et al., 1984) and from the Mexican American study (Karno et al., 1987) and carried out additional assessments and analyses. Our first objective was to test a more complete model of attribution theory than has been tested in past research. Specifically, we examined the interrelations of families’ attributions of control, families’ negative and positive affect, and patients’ relapse. We expected that attributions of control would be associated with increased negative affect (criticism) and decreased positive affect (warmth). In addition, we expected both attributions and affect (negative and positive) to be directly related to outcome, such that greater attributions of control and negative affect would be associated with more relapse, and lower attribution of control and greater positive affect would be associated with less relapse. These interrelations were tested with and without families who were high in emotional overinvolvement. By testing a more complete model of attribution theory, we also addressed a second objective, which was to assess the role of families’ prosocial functioning. Specifically, we tested the hypothesis that patients who returned to households characterized as high in family warmth would be less likely to relapse. Finally, we explored the role of ethnicity in these interrelations with the aim of shedding light on the lack of Mexican American and Anglo American differences in patients’ relapse despite ethnic group differences in EE and illness conceptualizations.

Method

Participants

Participants were 98 key relatives and 98 patients with schizophrenia, with 1 relative per patient. Key relatives were defined as adult family members living with the ill relative for at least 1 of the 3 months prior to admission to a psychiatric hospital. They included parents (80%), spouses (9%), siblings (8%), or other relatives (3%). Patients were selected from several inpatient facilities in Southern California and met the following selection criteria: They had to have been (a) between 17 and 50 years of age, (b) of Anglo American or Mexican American descent, and (c) living with a close relative for at least 1 of the 3 months prior to admission.

A total of 54 Anglo American key relative dyads were obtained from the Vaughn et al. (1984) study, and 44 Mexican American key relative dyads were obtained from the Karno et al. (1987) study. To derive this number, we excluded patients with unchanging, persisting symptoms because it would have been difficult to ascertain at a later time whether there was a change in clinical status. Among the Anglo American key relatives, 18 were designated as low EE and 36 were designated as high EE.

---

2 The Anglo American sample from Jenkins’s (1988) study of the conceptions of illness is a different sample from that which the outcome data were reported.

3 Euro-American might be a more appropriate term than Anglo American. However, to maintain consistency with prior reports and with terminology used in Southern California we chose to stay with the term Anglo American.
EE (26 of the designations were made on the basis of high criticism, 3 on the basis of high emotional overinvolvement, and 7 on the bases of both high criticism and high emotional overinvolvement). Among the Mexican American key relatives, 27 were designated as low EE and 17 were designated as high EE (9 designations were made on the basis of high criticism, 5 on the basis of high emotional overinvolvement, and 3 on the bases of high criticism and high emotional overinvolvement).

As a group, the Mexican American family members (M = 1.86, SD = 0.85) and patients (M = 2.43, SD = 0.95) fell within the lower range of acculturation on a 5-point scale ranging from 1 (low acculturation) to 5 (high acculturation; Cueilar, Harris, & Jasso, 1980). The key relatives, however, were significantly less acculturated than were the ill relatives, t(43) = 4.92, p < .01, two-tailed. Most of the patients (59%) and key relatives (68%) were born in Mexico. Over two thirds (68%) of the key relatives were monolingual or mostly Spanish speaking, whereas over one third (39%) of the patients were monolingual or mostly Spanish speaking.

Procedure

Efforts were made to obtain as many of the original audiotapes of the CFI that were used to assess EE in both the Vaughn et al. (1984) and the Karno et al. (1987) studies. Tapes for 80 patients were secured (43 of 54 Anglo American patients and 37 of 44 Mexican American patients). Five of the taped interviews, however, were inaudible (3 of the Anglo American interviews and 2 of the Mexican American interviews), which reduced the number of available tapes to 75 (40 Anglo American interviews and 35 Mexican American interviews).

Three bilingual undergraduate students were hired to code statements of controllability from the audiotaped interviews. Training consisted of 6 weeks of instruction and extensive practice with 20 CFI interviews not included in the sample. All coders were unaware of the hypotheses, the EE status of the family members interviewed, and the ill relatives’ clinical outcomes. Coding procedures for controllability (responsibility) 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. The tapes were placed in a random order for coding purposes resulting in an intermixing of Anglo American and Mexican American tapes. Coders adhered to this random order, except when a given interview was in use. In that case, coders were instructed to first rate the following tape and then return to the previously unavailable interview.

Family Measures

EE. An abbreviated form of the CFI was used to classify the key relatives as high or low EE. The CFI is a 1- to 2-hr semistructured 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 (Leff & Vaughn, 1985; Vaughn & Leff, 1976b). All interviews were audiorecorded for later analysis.

The original CFI ratings of key relatives’ criticism, emotional overinvolvement (EOI), and warmth were used. Six or more critical comments, a score of 4–5 on a 6-point scale for EOI ranging from 0 (no EOI) to 5 (high EOI), or both critical comments and EOI resulted in high-EE classification (Leff & Vaughn, 1985; Vaughn & Leff, 1976b). The reliabilities of the CFI and specific rating scales were reported as adequate in the original reports. It should be noted that the primary CFI interviewers for the Mexican American study were trained by the primary investigators of the Anglo American study.

In the case in which more than one family member (e.g., two parents) was interviewed for a given patient, the higher of the two relatives’ scores was used to determine the EE classification of the household. When interviews of two key relatives of the same EE status were available for a given patient, one of the two was randomly selected. An exception occurred with high-EE relatives designated as high EOI. In the few cases in which two high-EE parents were available for a given patient, one as a result of high EOI and one as a result of high levels of criticism, the high EOI relative was selected. Because high EOI family members comprise such a small percentage of the high-EE population, oversampling of these relatives ensured their inclusion within the present sample and their availability for future analyses. In addition, when both high EOI and high criticism were present in one family member, those individuals were designated as high-EOI relatives.

Controllability. The three coders listened to audiotapes of the CFI, and entered into word processing files the verbatim statements that implicated the patients’ level of control over their behavior, symptoms, disorder, or the respective cause of each. For example, statements coded as low perceived controllability were “He’d say these things when he was ill,” and “I feel that it’s stress and overwork, and...a lot of responsibility put on a young person who didn’t know his limits.” Examples of statements coded as high perceived controllability included “That girl can fool you. Somehow, I don’t know how, she’s got a button or something that she presses and she can go and be as normal as you and I.” and “Jim is not really sick. He just acts that way to avoid being given any responsibilities.” Each statement was rated on a 5-point scale ranging 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 ranging from 1 (no perceived control) to 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.

No distinction was made between statements referring to past beliefs about the disorder and present attitudes. Statements were coded regardless of whether they implied 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 they felt at the time of the interview (e.g., “Now I know that she’s sick and can’t help her behavior”). Although the rating of more current feelings and beliefs would likely lead to a more sensitive measure than including both past and present views, with the latter approach, the raters did not have to judge, oftentimes with little information, when the families held the specific attitudes. Furthermore, only perceptions of patient control over the behavior itself and over the causes of the behavior/disorder were considered as indicating personal control. Statements implicating relatives, doctors, or other parties as responsible for the disorder or related symptoms/behaviors were not coded for controllability. To assess the reliability of the coding, Pearson correlations were computed between each pair of coder’s ratings for the entire sample. The correlations were .71, .75, and .76, respectively. The composite or effective reliability of the three coders was .89 as computed by the Spearman–Brown formula (Rosenthal & Rosnow, 1991). The mean rating of the three coders was used as the unit of analysis. (See López et al., 1999 for a more complete description of the controllability ratings.)

CFI affect ratings. The number of critical comments originally identified in the CFI for EE classification was used to measure family members’ negative affect toward the patient. A range of 0–24 critical comments were identified on the bases of content and negative tone. The CFI measure of warmth was also included. The rating of warmth reflects a global rating ranging from 0 (low) to 5 (high) on the bases of positive tone of voice, spontaneous expression of positive regard, and expression of concern, understanding, and interest in the person.

4 Family members were never rated high in expressed emotion on the basis of hostility alone, only in conjunction with criticism. As a result, we make no further reference to hostility.

5 In the original studies, family warmth was not coded for four key relatives. To complete the data for these cases, we obtained ratings of warmth from three reliable CFI interviewers/raters. The raters were unaware of the key relatives’ other CFI ratings and the patients’ outcomes.
Clinical Measures of Patients

The Present State Examination (PSE; Wing, Cooper, & Sartorius, 1974) was the primary clinical interview schedule used to identify persons with schizophrenia. The PSE is a clinician-administered semistructured interview that has a long-standing empirical tradition in psychiatric diagnosis in Great Britain, the United States, and throughout the world. Acceptable to high levels of interobserver reliability have been found at the item level (e.g., Kendell, Everett, Cooper, Sartorius, & David, 1968), at the syndrome level (Wing, Birley, Cooper, Graham, & Isaccs, 1967), and at the diagnostic level (Cooper et al., 1972). For the Anglo American sample, the diagnosis of schizophrenia was based on the computerized algorithm associated with the PSE. For the Mexican American sample, the PSE was used to elicit symptomatology for which criteria from the Diagnostic and Statistical Manual of Mental Disorders (3rd ed.; DSM-III; American Psychiatric Association, 1980) were applied. The PSE was used to maintain comparability with prior research.

The instruments used to assess relapse were the PSE, the Psychiatric Assessment Scale (PAS; Krawiecka, Goldberg, & Vaughan, 1977), and the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962; Mexican American sample only). The PSE was used to identify the presence or absence of symptomatology. The PAS and BPRS were included because they provide a continuous measure of key psychotic symptomatology. Clinical interviewers and raters met interrater reliability criteria of at least .80 with established criteria interviews/ratings at the item and diagnostic levels.

For the Anglo American sample, a clinical rater was located on the hospital grounds, which facilitated the assessment of the patient’s clinical status at admission, discharge, and at the time of follow-up (either at 9 months or earlier if there was evidence of relapse). For the Mexican American sample, clinical raters were not located on the hospital grounds. Therefore the initial clinical status was assessed after admission—sometimes immediately after admission, other times well into the hospital stay and even on a few occasions after discharge. Because the initial clinical assessments were carried out at different times for the two ethnic groups, analyses of the actual clinical status of both samples at the time of admission or discharge were not carried out.

To assess the patients’ clinical status during the follow-up period, we 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, we conducted an evaluation to determine whether the patient had relapsed. All patients who had not experienced a relapse by 9 months were assessed at that time or shortly thereafter. Two independent raters used the PSE, PAS, BPRS (for Mexican Americans only), monthly telephone logs, and in some cases copies of patient records to classify the patients’ clinical course into three categories: no relapse (0), relapse (1), or persisting symptoms during the follow-up period (2). As discussed above, patients in the latter category were not included in the present study. Raters were blind to the EE status of the patients’ families and their ratings reached high levels of interrater agreement (Anglo Americans: 92%; Mexican Americans: 88%).

Other Patient and Family Measures

Prior EE 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 PCP or “angel dust.” Use of marijuana was excluded by the prior investigators, and thus excluded in the current study. 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) or regular (1). Patients with less than 35 hr of contact per week with their key 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).

The patients’ marital status and the families’ socioeconomic status (SES) and ethnicity were derived from the patient’s chart and from patient or family interviews. The patient’s marital status was designated as not married (0) or married (1). The educational and occupational backgrounds of the head(s) of household were used to derive Hollingshead and Redlich’s (1958) index of SES that ranges from 1 (high) to 5 (low). For the purpose of this study, low SES is referred to as those households from Levels 4 and 5. Mexican Americans were those who reported being of Mexican origin, either by birth or by ancestry. Anglo Americans reflected a range of White non-Latino ethnic groups. Because the families’ ethnicity was not the focus of the Vaughn et al. (1984) study, the specific ethnic origin of the Anglo American families was not assessed.

Results

Overview

Three distinct sets of analyses were carried out. The first set of analyses tested the attributional model of relapse, including the role of family warmth. Descriptive statistics, correlations, and logistic regressions were carried out with a subsample for which attributions were available (n = 75). Because our initial goal was to test a general model, we did not include ethnicity in these analyses. A second set of correlational analyses and logistic regressions was then conducted with the same subsample to explore the role of ethnicity. Finally, a third set of logistic regressions was carried out to examine whether the main findings from the analysis of ethnicity extended to the full sample of 98 cases. These latter analyses did not include attribution ratings.

Correlations and Descriptive Statistics

Given that prior research has indicated that the attributional processes underlying EOI key relatives may be different than that for other high-EE families, we first compared the intercorrelations of attributions, criticism, warmth, and outcome for families designated as high EOI (n = 15) and families designated as low EOI (n = 60). A different pattern of correlations was observed for the two groups of families. For high EOI families, attributions of control were related to criticism as expected (r = .37, p = .17), but the observed associations with warmth (r = .10, p = .73) and outcome (r = -.18, p = .52) were contrary to hypotheses. Perceptions of control were associated with more criticism, more warmth, and less relapse. In contrast, for the low EOI families, attributions of control were related to more criticism (r = .52, p < .001), less warmth (r = -.49, p < .001), and more relapse (r = .23, p = .08). Tests for differences between correlations indicate that the attribution–warmth association was significantly different for the two groups (Z = 2.01, p = .046, two-tailed), but not the attribution–criticism (Z = 0.59, p = .56, two-tailed) or the attribution–outcome associations (Z = 1.31, p = .19, two-tailed). Given past research and the different overall pattern of correlations for EOI and non-EOI relatives, it appears that an attributional model of relapse does not apply to households characterized as EOI. For that reason, the data for the EOI families were dropped from subsequent analyses in testing the attributional model.

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. Given that a number of studies have used the same measures, it is possible to compare the means of this data set with data sets from other investigations. The mean rating of attributions of controllability (\(M = 2.38\)) is lower than the mean rating of an independent study of Anglo Americans (Weisman et al., 1998: \(M = 2.75\)) and of another sample of family members for whom ethnicity was not specified (Hooley & Campbell, 2002: \(M = 2.84\); see Footnote 6). The mean rating of warmth is similar (\(M = 2.82\)) to other reported ratings of family warmth in the study of schizophrenia (King & Dixon, 1999: \(M = 2.80\); see Footnote 6) and anxiety disorders (Chambless et al., 1999: \(M = 2.66\)). The mean number of critical comments (\(M = 5.32\)) falls within the lower range of the mean number of critical comments reported in other studies of schizophrenia (see Footnote 6; King & Dixon, 1999: \(M = 5.23\); Brown et al., 1972: \(M = 7.86\); Vaughn & Leff, 1976a: \(M = 8.22\)) and anxiety disorders (Chambless et al., 1999: \(M = 6.75\)). The standard deviations of the noted variables in Table 1 suggest that an ample range of attributions and affective reactions was sampled.

An adequate range of potential outcome correlates was obtained as well. The correlates with the most restricted range were relapse rate (30%) and gender (32%, women). Relapse rate and high level of contact (53%) were comparable to the previous studies of schizophrenia (King & Dixon, 1999: \(M = 5.23\); Brown et al., 1972: \(M = 7.86\); Vaughn & Leff, 1976a: \(M = 8.22\)) and anxiety disorders (Chambless et al., 1999: \(M = 6.75\)). The mean rating of warmth is similar to another study of Anglo Americans (Weisman et al., 1998: \(M = 7.86\); Vaughn & Leff, 1976a: \(M = 8.22\)), and of another sample of family members (\(M = 2.84\); see Footnote 6). The mean rating of warmth is similar to other studies of schizophrenia (King & Dixon, 1999: \(M = 2.80\); see Footnote 6) and anxiety disorders (Chambless et al., 1999: \(M = 2.66\)). The mean number of critical comments (\(M = 5.32\)) falls within the lower range of the mean number of critical comments reported in other studies of schizophrenia (see Footnote 6; King & Dixon, 1999: \(M = 5.23\); Brown et al., 1972: \(M = 7.86\); Vaughn & Leff, 1976a: \(M = 8.22\)) and anxiety disorders (Chambless et al., 1999: \(M = 6.75\)). The standard deviations of the noted variables in Table 1 suggest that an ample range of attributions and affective reactions was sampled.

An examination of the correlations reveals support for an attributional model of relapse for low EOI families. As predicted, families’ attributions of controllability were positively related to families’ level of criticism (\(r = .52\)) and negatively related to families’ level of warmth (\(r = -.49\)). The more those family members perceived their ill relatives as responsible for their behavior, the more the family members expressed critical comments and the less they expressed warmth. Furthermore, families’ criticism (\(r = .33\)) and warmth (\(r = -.26\)) were significantly related to relapse in the predicted manner. Attractions of control (\(r = .23, p = .08\)) turned out to be marginally related to outcome. Attractions and affect were not the only variables associated with relapse, however. Other correlates of outcome included patient street drug use, medication compliance, and family contact. Patients who were identified as using street drugs (\(r = .26\)), who did not comply with their medication regimen (\(r = -.39\)), and who had little contact with their family (\(r = -.34\)), were more likely to relapse than their counterparts. Gender was not significantly related to course of illness (\(r = -.13\)).

Testing an Attributional Model of Relapse With Families Low in Emotional Overinvolvement

To assess the differential contribution of attributions, criticism, and warmth to outcome, we carried out a logistic regression analysis. Together, families’ attributions of controllability, criticism, and warmth were associated with patient outcome; however, this attributional model falls just short of reliably distinguishing between those patients who relapsed and those who did not relapse, \(\chi^2(3, N = 60) = 7.09, p = .07\). Moreover, attributions of control (\(p = .71\)), criticism (\(p = .15\)), and warmth (\(p = .45\)) proved not to be independent predictors of relapse. The available evidence provides marginal support for an attributional model of relapse for nonemotionally involved families.

To assess the contribution of the attribution model in predicting relapse relative to correlates of street drug use, medication compliance, and family contact, we carried out a second logistic regression. These three correlates were first entered as a block in the regression analysis and then attributions, criticism, and warmth were entered as a second block. We found that the combined correlates significantly predicted relapse, \(\chi^2(3, N = 59) = 16.92, p = .001\). Family contact (odds ratio [OR] = 4.72, Wald statistic = 4.72, \(p = .03\)) and medication compliance (OR = 7.49, Wald statistic = 5.59, \(p = .02\)) also proved to be significant independent predictors of relapse. After entering in the block of correlates, attributions of control, warmth, and criticism no longer approached significance in predicting relapse, \(\chi^2(3, N = 59) = 3.28, p = .35\). When considering together both the noted correlates and the attribution–affect variables, medication compliance proved to be the only independent predictor of relapse (OR = 8.08, Wald statistic = 5.34, \(p = .02\)), indicating that in testing this model, adherence to medication is the single most important predictor of relapse. Family contact was a marginally significant independent predictor of relapse (OR = 3.73, Wald statistic = 3.16, \(p = .08\)).

---

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>(M)</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Control</td>
<td>2.38</td>
<td>1.04</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2. Warmth</td>
<td>2.82</td>
<td>1.40</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>3. Criticism</td>
<td>5.32</td>
<td>4.89</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>4. Relapse</td>
<td>0.30</td>
<td>0.46</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>5. Street drug use</td>
<td>0.42</td>
<td>0.50</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>6. Gender</td>
<td>0.32</td>
<td>0.47</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>7. Regular medication</td>
<td>0.42</td>
<td>0.50</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>8. Family contact</td>
<td>0.53</td>
<td>0.50</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Note. \(n = 60\) except for medication compliance, \(n = 59\).

\* \(p \leq .05\), \** \(p \leq .01\), \*** \(p \leq .001\).

---

6 Extrapolated from data reported by the researchers.
No other predictor was found to be associated with relapse after controlling for the covariates.

Ethnicity and Relapse in Families Low in Emotional Involvement

To explore the role of ethnicity, we first assessed whether there were any ethnic differences in the patients’ clinical and social background. A series of t tests and Pearson chi-squares were conducted. Mexican Americans and Anglo Americans did not differ on any of the clinical variables, specifically relapse rate, regular medication use, number of admissions, and years since onset. Regular medication use was the only clinical variable that approached significance, \( \chi^2(1, N = 59) = 3.54, p = .06 \); more Mexican Americans (56%) followed their medication regimen than did Anglo Americans (31%). In terms of social background variables, the ethnic groups differed \((p < .05)\) with regard to degree of family contact, gender, and socioeconomic status. The Mexican American patient sample reported more family contact (71% vs. 38%), was comprised of more women (46% vs. 19%), and was more likely to be from a lower SES (93% vs. 42%) than the Anglo American patient sample. There were no significant ethnic differences in patients’ street drug use, marital status, or age.

Correlational analyses were carried out as a preliminary step to examine whether the relationship between family factors and patient outcome varied by ethnicity. These findings are summarized in Table 2. The correlations for Anglo Americans lie above the diagonal in Table 2, whereas the correlations for Mexican Americans lie below the diagonal. Attributions of control \((r = .37)\), criticism \((r = .45)\), street drug use \((r = .38)\), gender \((r = .35)\), and regular medication use \((r = .35)\) were significantly related to Anglo American patient outcome. Patients were more likely to relapse if they returned to families who perceived illness-related behavior as controllable and who were critical. In addition, those patients who used street drugs, who were men, and who irregularly used their medication had an increased chance of relapse. Warmth and contact with family members were not significant correlates of outcome. A largely different pattern appeared for Mexican Americans. Attributions of control \((r = .03)\), criticism \((r = .05)\), street drug use \((r = .09)\), and gender \((r = .12)\), all but one of the variables associated with relapse for Anglo Americans, were not significantly related to relapse for Mexican Americans. The significant correlates of patient outcome were family warmth \((r = .42)\), medication compliance \((r = .42)\), and family contact \((r = .55)\). Those Mexican American patients who returned to low-warmth households, who did not comply with their medication regimen, and who had low levels of contact with their families were more likely to relapse. Regular medication use was the only significant correlate of patient outcome for both Anglo Americans and Mexican Americans.

To test whether these different patterns of associations for the two ethnic groups reflect significant differences in how family attributions and affect relate to clinical outcome, we carried out a series of logistic regressions. The attribution–affect model of outcome was first tested as it interacted with ethnicity. Specifically, the three interactions of Attributions, Criticism, and Warmth, respectively, \( \times \) Ethnicity were entered as well as the lower order terms of attributions, criticism, warmth, and ethnicity. To interpret significant interactions, we followed Jaccard’s (2001) guidelines and carried out these analyses first with Anglo Americans as the reference group (Mexican Americans were coded as “0” and Anglo Americans were coded as “1”) and then with Mexican Americans as the reference group (Anglo Americans were coded as “0” and Mexican Americans were coded as “1”). With these two analyses, the interaction terms remained the same, however, the coefficients for the lower order terms may have changed depending on the relationship of ethnicity to the predictor variables. These patterns of findings help discern the nature of the observed interaction. In fact, for these analyses what usually is considered a main effect is actually a simple effect. In other words, if warmth, for example, was found to be a significant independent predictor, it is likely to be only a significant predictor for one of the two ethnic groups. It is these simple effects that can be uncovered when running the analysis first with one reference group and then the other. To further help with the interpretation of the interaction terms, we centered the continuous variables (Aiken & West, 1991).

Overall, the Attributions–Warmth \( \times \) Ethnicity model significantly predicted relapse, \( \chi^2(7, N = 60) = 15.91, p = .03 \), and the interaction of Warmth \( \times \) Ethnicity (OR \( = 5.04 \), Wald statistic \( = 5.66, p = .02 \)) was a significant independent predictor of relapse. The significant Warmth \( \times \) Ethnicity interaction indicates that the association of warmth and relapse was significantly different for the two ethnic groups. In particular, the odds of relapse for Mexican Americans for every one unit of warmth are five times the

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Control</td>
<td>–</td>
<td>–4*</td>
<td>–50***</td>
<td>.37*</td>
<td>.46**</td>
<td>–.30</td>
<td>–.16</td>
<td>–.20</td>
</tr>
<tr>
<td>2. Warmth</td>
<td>–.33</td>
<td>–</td>
<td>–56***</td>
<td>–.10</td>
<td>–.08</td>
<td>–.13</td>
<td>.04</td>
<td>.17</td>
</tr>
<tr>
<td>3. Criticism</td>
<td>.03</td>
<td>–16</td>
<td>–</td>
<td>–45**</td>
<td>.35*</td>
<td>–.20</td>
<td>–.20</td>
<td>–.25</td>
</tr>
<tr>
<td>4. Relapse</td>
<td>–.03</td>
<td>–.42*</td>
<td>–.05</td>
<td>–</td>
<td>–.38*</td>
<td>–.35*</td>
<td>–.35*</td>
<td>–.15</td>
</tr>
<tr>
<td>5. Street drug use</td>
<td>.34</td>
<td>–25</td>
<td>–10</td>
<td>.09</td>
<td>–</td>
<td>–.29</td>
<td>–.23</td>
<td>–.34</td>
</tr>
<tr>
<td>6. Gender</td>
<td>–.16</td>
<td>–19</td>
<td>.04</td>
<td>.12</td>
<td>.05</td>
<td>–</td>
<td>.54***</td>
<td>–.21</td>
</tr>
<tr>
<td>7. Regular medication*</td>
<td>–.18</td>
<td>.18</td>
<td>.14</td>
<td>–.42*</td>
<td>–.16</td>
<td>–.40*</td>
<td>–</td>
<td>–.10</td>
</tr>
<tr>
<td>8. Family contact</td>
<td>–.21</td>
<td>.42*</td>
<td>.01</td>
<td>–55**</td>
<td>–.02</td>
<td>–.20</td>
<td>.40*</td>
<td>–</td>
</tr>
</tbody>
</table>

Note. Correlations for Anglo Americans \((n = 32)\) are above the diagonal, and correlations for Mexican Americans \((n = 28)\) are below the diagonal.

* For Mexican Americans, \(n = 27\).
* * * \(p \leq .05\). ** * * * \(p \leq .01\). **** = *** \(p \leq .001\).
odds of relapse for Anglo Americans for every one unit of warmth. An examination of the lower order effects points out that for Mexican Americans warmth was a significant predictor of clinical outcome when controlling for the other predictors (OR = 0.34, Wald statistic = 4.52, p = .03), whereas for Anglo Americans this was not the case (OR = 1.70, Wald statistic = 1.41, p = .24). The significant OR for Mexican Americans indicates that as warmth increases by a unit, the odds of relapse decrease by almost one third. In other words, increasing degrees of warmth is associated with significantly lower odds of relapse.

No other interaction (Controllability × Ethnicity and Criticism × Ethnicity) or lower order terms (controllability, criticism, and ethnicity) proved to be significant (p < .05) independent predictors of relapse. Family criticism for Anglo Americans was the only marginally significant independent predictor (OR = 1.26, Wald statistic = 3.30, p = .07) indicating that for Anglo Americans the odds of relapse tend to increase with each criticism.

Overall, the tests of interactions indicate that for low EOI family ethnicity is a significant moderator of the relationship between family warmth and clinical outcome. For Mexican Americans, warmth is related to a significant decrease in the likelihood that a patient relapses. For Anglo Americans, warmth is not associated with relapse. Moreover, the significant Ethnicity × Warmth interaction indicates that the association between warmth and relapse is significantly different for the two ethnic groups.

With regard to criticism a different pattern emerged. For Anglo Americans, family criticism tended to be associated with an increased likelihood of relapse, whereas for Mexican Americans, family criticism and relapse were not related. Unlike the relationship between warmth and relapse, the relationship between criticism and relapse was not significantly different for the two ethnic groups; ethnicity was not a significant moderator of the relationship between criticism and relapse.

**Ethnicity and Relapse: Total Sample**

The analyses that we have carried out thus far are limited to low EOI families and those families for whom tapes were available to code attributions. Both steps were taken to test an attributional model of relapse. To assess whether the differential pattern of ethnicity and affect pertain to all families regardless of their level of emotional overinvolvement and of the availability of attribution ratings, we carried out analyses with the total sample (Anglo Americans, n = 54; Mexican Americans, n = 44). Accordingly, we reran the prior logistic regression analyses without considering the families’ level of emotional overinvolvement and without including attributions as a predictor. Thus, we tested for two interactions (Ethnicity × Warmth; Ethnicity × Criticism) and the lower order components of ethnicity, warmth, and criticism. As before, to discern the specific pattern of interactions, we carried out this analysis first with Anglo Americans as the reference group and then with Mexican Americans as the reference group.

The pattern of findings was nearly identical to the prior analyses. The overall model significantly predicted relapse, χ²(5, N = 97) = 12.79, p = .03. Also, the interaction of ethnicity and warmth proved to be reliable (OR = 2.90, Wald statistic = 6.45, p = .01) indicating that the association of warmth and relapse was significantly different for the two ethnic groups. More specifically, for

Mexican Americans the odds of relapse for every one unit of warmth were nearly three times the odds of relapse for Anglo Americans. Finding that family warmth is a reliable independent predictor of relapse for Mexican Americans (OR = 0.54, Wald statistic = 4.21, p = .04) but not for Anglo Americans (OR = 1.58, Wald statistic = 2.36, p = .12) further clarifies the nature of the interaction. Together these findings are depicted in Figure 1. The y-axis represents the predicted probability of relapse and the x-axis represents the continuum of warmth, ranging from 0 (no warmth) to 5 (warmth). As can be seen in the curves, for Mexican Americans, as family warmth increases the predicted probability of relapse decreases, whereas for Anglo Americans, as family warmth increases the predicted probability of relapse increases. For the low-warmth rating of 1 the predicted probability of relapse for Mexican Americans is high (.73), whereas it is low (.24) for Anglo Americans. The opposite is the case for the high-warmth rating of 5; the probability of relapse is low for Mexican Americans (.19) and high for Anglo Americans (.66).

The interaction of Ethnicity × Criticism did not prove to be reliable (OR = 0.86, Wald statistic = 1.29, p = .26). However, family criticism was found to be a significant independent predictor of relapse for Anglo Americans (OR = 1.19, Wald statistic = 5.65, p = .02), but not for Mexican Americans (OR = 1.02, Wald statistic = 0.05, p = .83). These findings are depicted in Figure 2 where the x-axis represents the number of critical comments. Although the number of criticisms extends to 24, we have depicted only the range of 0 to 10 criticisms because there are relatively few cases that go beyond 10 criticisms. The significant criticism–relapse relationship is evident in the Anglo American curve where the predicted probability from 0 to 10 critical comments increased from .15 to .51. In contrast, the lack of an association for Mexican Americans is noted by the nearly flat curve where the predicted probabilities for the same range of critical comments increased negligibly from .37 to .43. Ethnicity was not a significant independent predictor of relapse (p = .57) in these analyses.

To examine whether key patient and family correlates explain these observed relationships, additional logistic regression analyses were carried out controlling for medication compliance, street
Although SES differed for the two ethnic groups, it was not related to outcome for Anglo Americans, $\chi^2(1, N = 51) = 0.20, p = .66$, or both ethnic groups combined, $\chi^2(1, N = 95) = 0.05, p = .82$. The relationship between SES and outcome for Mexican Americans could not be reliably assessed because nearly all of the families (44 of 47) were from a low-SES background.

**Discussion**

The role of the family in the context of schizophrenia differs for Mexican American and Anglo American families. For Mexican Americans, family warmth is most related to the course of illness. Patients who return to households identified as high in family warmth are least likely to suffer posthospitalization psychotic exacerbations. Family warmth serves as a protective factor to the course of illness for Mexican Americans. Conversely, for Anglo American families, family warmth is not associated with the course of illness. Consistent with prior EE research, family criticism predicts relapse for Anglo American patients. Those who return to households identified as high in criticism are more likely to have a worse outcome than those who return to households identified as low in criticism. Family criticism, on the other hand, is not associated with the course of illness for Mexican Americans. In general, these findings are robust. They hold up in most cases when controlling for significant correlates of outcome, they apply to samples with and without EOI families, and the association of warmth and relapse differs significantly for the two ethnic groups.

**Sociocultural Processes**

A sociocultural perspective may help explain the interrelations of family affect, clinical outcome, and ethnicity (Fabrega, 1989; Jenkins & Karno, 1992). If one lives in a family in which ties are highly valued, then the lack of warmth may be a significant stressor to the ill relative that can in turn increase the likelihood of relapse. On the other hand, if what matters is that ill family members establish their own autonomy or that they demonstrate that they can function independently, then verbal attacks of the individual (criticism) may be particularly stressful and lead to relapse. The evidence to support this cultural interpretation goes beyond the families’ ethnicity and extends to the family contact data as well. Of the 44 Mexican American families, 73% reported having 35 or more hours of weekly contact with their ill relative. Fewer Anglo American families reported this high level of weekly contact (22 families or 42%). Moreover, family contact is associated with less relapse for Mexican Americans (high contact: 11 of 22, 50%; low contact: 67% relapse) but family contact is not related to relapse for Mexican Americans (high contact: 28% relapse; low contact: 67% relapse) but family contact is not related to relapse for Anglo Americans (high contact: 11 of 22, 50%; low contact: 12 of 31, 39%). Although family contact proved not to be an independent predictor of relapse when controlling for the theoretically informed processes and correlates, these more general findings are consistent with the explanation that family ties are important in understanding the observed pattern of results.

It is important to consider the specific social context of the Mexican origin sample. Over 90% are from the lowest socioeco-
nomic backgrounds and most of them are immigrants. Maintaining family ties may not simply be part of a presumed cognitive set of family-oriented beliefs associated with “the Mexican culture” or a collectivist culture (López & Guarnaccia, 2000; Zavella, 1996). Close family connections may be crucial to the survival of low-income immigrants living in a foreign and at times hostile environment (Vélez-Ibáñez & Greenberg, 1992). Thus, the social and cultural context likely influences what matters for families in their daily lives (Kleinman, 1995), which, in turn, may suggest what specific family interaction patterns are most stressful or most helpful.

The fact that family warmth is differentially related to clinical outcomes among Mexican Americans and Anglo Americans also suggests at least a partial explanation for the apparent paradox of ethnic differences in EE and no ethnic differences in relapse rates. EE, as typically classified, with its emphasis on negative family factors does not capture the family processes most associated with clinical outcome for Mexican Americans. On the other hand, criticism is the best predictor of relapse for Anglo Americans. In fact, this pattern of findings is consistent with a recent study in which criticism and hostility predicted relapse for Anglo Americans but not for Mexican Americans (Kopelowicz et al., 2002). Together these findings and the findings from the current study suggest that there is not likely to be a one-to-one correspondence between EE and relapse for the two ethnic groups. Warmth plays a significant role for Mexican Americans, whereas it is not as relevant for Anglo Americans. Criticism plays a significant role for Anglo Americans and it may be less relevant for Mexican Americans. However, in addition to the different processes, there is also evidence of similar processes given that the traditional definition of EE as assessed with the CFI predicted relapse for Mexican Americans in the Karno et al. (1987) study. It may be that emotional overinvolvement shoulders more of the relapse variance for Mexican Americans than for Anglo Americans. Another possible explanation is that the stressors of living in a foreign country for this largely immigrant sample may have contributed to the higher than expected relapse rates for Mexican Americans. Future research that examines stressors associated with the daily lives of U.S. immigrants or that examines family factors and relapse in Mexico has the potential to shed further light on the sociocultural basis of key family processes.

In considering culture and ethnicity, we want to emphasize that there is within-ethnic group variability on the key family measures. Some Anglo American families were high in family warmth and their ill relatives did not relapse, whereas some Mexican American families were high in criticism and their ill relatives did relapse. Moreover, the ethnic variability among Anglo Americans may be great as they are likely to be from diverse White, non-Latino ethnic groups. Thus, we do not mean to imply that all Mexican Americans and Anglo Americans adhere to a given cultural set.

**Prosocial Family Processes**

The findings that families can serve as buffers to the relapse of Mexican Americans corroborate the findings of two other studies in Italy and Yugoslavia (Bertrand et al., 1992; Ivanović et al., 1994). Together, these results have important research and clinical implications. First, they raise questions about classifying families as simply high or low in EE, as traditionally defined. Consistent with the Chambless et al. (1999) findings that positivity, criticism, and emotional overinvolvement are independent constructs of EE, we encourage researchers to include analyses of warmth. To date, studies that report warmth are the exception (e.g., Hooley & Campbell, 2002). A second implication is that, in contrast to past family research that has identified what families do that predicts relapse, the warmth findings suggest that families may also be helpful to their ill relatives. Identifying family behaviors associated with warmth may contribute to identifying family strengths. The focus on prosocial family functioning has the potential not only to advance the science but also the politics of the science. There is some concern that EE research portrays families in a negative light, blaming family members for their ill relatives’ relapses (e.g., Lefley, 1992). The present study demonstrates that EE research is capable of identifying the positive side of families coping with schizophrenia.

The findings also have implications for the treatment of schizophrenia. At one time, family treatment recommendations included reducing the amount of contact between patients and family members. Perhaps this makes sense if contact with key family members is negative. The data reported here suggest just the opposite pattern for many Mexican American families; family therapists should look to increase family contact where appropriate. The important point is that recommendations of increasing or decreasing contact should be made on the basis of the families’ sociocultural context.

In addition, should the results prove to be reliable, they would suggest that intervention modules be developed to enhance positive family affective ties. Doing so would complement the emphasis of current family interventions aimed largely at reducing family conflict through psychoeducation, communication training, and problem solving (e.g., Falloon, Boyd, & McGill, 1984). It may be that interventions directed at strengthening positive affective ties are particularly effective for families that value close family relations. McFarlane and colleagues’ (1995) multifamily group treatment has taken a step in that direction by attempting to establish and strengthen social networks to enhance interfamilial and intrafamilial relations (see, also, López, Kopelowicz, & Cañive, 2002).

A final implication of the prosocial findings in this study, as well in the studies in Italy and Yugoslavia, is that the samples in which family warmth matters were drawn from countries or backgrounds in which the Roman Catholic Church is prominent. The role of particular religious or spiritual factors as they relate to the relationship of warmth and relapse is unclear. Prior studies of Latinos, however, point out that family members tend to implicate God in making sense of how their loved ones developed this illness (Guarnaccia et al., 1992; Weisman, Gomes, & López, 2003). By implicating God, key relatives may be less apt to blame their ill relative for his or her problem behaviors and be more likely to exhibit prosocial behavior and affect than those who do not implicate religious or spiritual themes. The relationship between spirituality/religiosity and prosocial family factors is worthy of future study.

**Attribution Theory**

The findings provide partial support for attribution theory in understanding the relapse of patients from families with low EOI. Across both ethnic groups, family members’ attributions are related to their affective reactions in the expected direction. More attributions of controllability are associated with more criticism
and less warmth. In turn, criticism is associated with a greater chance of relapse, and warmth is inversely related to relapse. Attributions and the attributional model (attributions, criticism, and warmth together), however, are only marginally associated with clinical outcomes. When considering factors such as medication compliance and street drug use, family attributions and their affective reactions are no longer related to relapse.

There are now four studies that have tested an attributional model of schizophrenic relapse. Barrowclough et al. (1994) found a direct association between attributions and relapse. López et al. (1999) found that family attributions together with criticism predict relapse. Hooley and Campbell (2002) and this study with Mexican Americans did not find a significant attribution–outcome association, however, they both found that attributions were related to the main predictors of relapse—family affect. It is important to note that a direct attribution–outcome linkage is not necessary to support an attributional model. Attributions and affective reactions are conceived as influencing helping behavior (López & Wolkenstein, 1990). Attributions oftentimes are the distal predictors of help giving, whereas affective reactions are the more proximal predictors (Rudolph, Roesch, Greitemeyer, & Weiner, in press). Thus, the available evidence supports an attribution model, although not all the elements of the attributional model have been tested with each study. Particularly for low EOI families, attributions have been shown consistently to be related to families’ affective reactions in the predicted direction and families’ affective reactions have been shown to be related to outcome.

Limitations

One limitation of this research is that the family attribution and affect measures were taken from the same family interview. Thus, common method variance may have contributed to the associations between attributions and affective reactions. The different pattern of associations between attributions, affect, and outcome by ethnicity, suggests, however, that common method variance may not have been as significant a factor. Another limitation is that the attribution ratings were based on past as well as current beliefs regarding the controllability of the patient’s behavior. Thus, the findings regarding attributions of control may be more conservative than what might be the case if only current attributions were coded. An element missing from this and most attributional studies is the examination of how attributions and affective reactions relate to families’ behavior. Assessing the role of families’ behavior will likely enhance our current understanding of how families can serve as risk factors and as protective factors in the course of schizophrenia (see Chavira, López, Blacher, & Shapiro, 2002, for a related study of families and developmental disabilities). Another limitation is that the cultural interpretation was inferred from available data—family contact, ethnicity, and the pattern of family affect–outcome findings. Future research would do well to tie specific cultural processes (e.g., notions of family/kin, explanatory models, and aspects of families’ social world) to family affective reactions and course of illness (Betancourt & López, 1993). Finally, the sample size was small to test the number of relationships, particularly given the importance of the interactions with ethnicity.

Conclusion

The current findings suggest that the relationship between families and the course of schizophrenia is more diverse than prior research has indicated. Family warmth can be just as significant to the course of illness as family criticism, depending on the families’ sociocultural context. The possibility that family warmth can serve as a buffer for at least some families points out the need to examine further what families might do to prevent relapse. Focusing on prosocial family factors has the potential to not only balance the emphasis of past research on negative family functioning, but also to suggest interventions that build on family strengths.

References

ETHNICITY, EXPRESSED EMOTION, AND SCHIZOPHRENIA


Received January 2, 2003
Revision received November 22, 2003
Accepted December 3, 2003
