Educational Attainment as a Predictor of Attributions and Expressed Emotion in a Tri-ethnic Sample of Relatives of Patients with Schizophrenia

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Abstract

Strong evidence indicates that, following a relapse, patients with schizophrenia who return home to live with relatives who are rated as critical, hostile, or emotionally over-involved, known as high expressed emotion or high-EE, suffer elevated future relapse rates compared to those whose relatives are rated as low-EE. Evidence further suggests that high-EE relatives tend to make more blaming attributions for the patient's illness than do low-EE relatives. Few studies, however, have examined other important variables that predict family members' EE and attributions. Using a tri-ethnic sample of 57 relatives of patients with schizophrenia, this study finds that greater educational attainment in family members predicts less blameworthy attributions towards patients. Specifically, for Whites and Hispanics, greater educational attainment predicts less blameworthy self-reported causal attributions. For Blacks, education does not relate to attributions. A content analysis of relatives' causal attributions further reveals that, regardless of ethnicity or education, biological factors are most often cited as having caused relatives' schizophrenia. Study implications are discussed.

Keywords: Education; ethnicity; attributions; family; schizophrenia.

Logro Educacional como Vaticinador de Atribuciones y Emoción Expresada en una Muestra Tri-Étnica de Familiares de Pacientes con Esquizofrenia

Compendio

Investigación robusta indica que, después de una recaída, pacientes con esquizofrenia quienes retornan a hogares con familiares altos en crítica, hostilidad, o relación excesivo—familiares conocidos como altos en emoción expresada o EE— sufren recaídas futuras más frecuentes que aquellos cuyos familiares son bajos en EE. Investigación también sugiere que familiares altos en EE tienden a exhibir atribuciones más culpables hacia el paciente que familiares bajos en EE. Sin embargo, pocos estudios han examinado otros factores importantes que pudieran predecir los niveles de EE y las atribuciones causales de los familiares. Examinando una muestra tri-étnica de 57 familiares de pacientes con esquizofrenia, esta investigación encuentra que más educación formal predice atribuciones menos culpables hacia los pacientes, en particular para latinos y angloamericanos. Entre los afro-americanos, la educación formal no se relaciona con las atribuciones ni los niveles de EE de los familiares. Un análisis de contenido de las atribuciones causales de los familiares indica que, no obstante la etnicidad ni la educación, biología es la supuesta causa de la esquizofrenia de sus familiares citada con más frecuencia. Las implicaciones de este estudio se discuten.

Palabras clave: Educación; etnicidad; atribuciones; familia; esquizofrenia.

Research on patients with schizophrenia and their families has demonstrated that the likelihood that a patient will relapse and be rehospitalized following an acute episode of illness is strongly predicted by the family environment that the patient returns to after a hospitalization (Butzlaff & Hooley, 1998; Hooley, 1987; Hooley, Orley, & Teasdale, 1986; Vaughn & Leff, 1976). More specifically, studies show that patients who, after a hospitalization, return to live with family members who are rated as high in expressed emotion (high-EE; critical, hostile, or emotionally over-involved) are twice as likely to relapse within nine months than are patients who return to live with relatives who are rated as low-EE (Kavanagh, 1992). Understanding factors associated with risk for relapse is important for identifying high-risk patients and families and could potentially lead to early intervention and relapse prevention.

One factor that has been linked to family member EE is causal attributions (Brewin, MacCarthy, Duda, & Vaughn, 1991; Weisman, Nuechterlein, Goldstein, & Snyder, 2000; Weisman, Nuechterlein, Goldstein, & Snyder, 1998). Research on patients with schizophrenia has shown that relatives who are rated as high-EE tend to blame the patient for the onset of the disorder and its associated symptoms, while low-EE relatives more often attribute the disease and its symptoms to factors beyond the patient's control (Weisman, Nuechterlein, & Goldstein, 1993).

Causal attributions have been implicated as important predictors of affect and behavior towards several other populations, including patients with Alzheimer's disease (Tarrier et al., 2002), victims of child abuse (Graham et al., 2001), homosexual individuals (Hegarty, 2002; Weisman, & Armesto, 2001), and the physically handicapped (Weiner et al., 1988). These findings support the application of an attributional model in predicting family members' expressed emotion.

Many studies have also examined patient variables — such as positive versus negative symptom behaviors — that are associated with differential attributions. For instance, studies have shown that negative symptom behaviors such as lack of motivation and poverty of speech tend to be seen as more controllable and intentional by the patient and elicit more criticism and hostility than positive symptom behaviors such as hallucinations and delusions (Weisman et al., 1998). However, several studies also reveal that, within the same family, relatives of the same patient may have different emotional reactions (high- versus low-EE) and hold discrepant causal attributions (Weisman et al., 2000). This finding indicates that characteristics of the family members are as important, if not more so, than characteristics of the patient in explaining relatives' attributions.

Nonetheless, few studies have investigated characteristics of family members that predict the types of causal attributions they make about their mentally ill relatives. One study by Srinivasan and Thara (2001) in an Indian sample suggests that educational attainment may predict relatives' attributions. The authors analyzed the possible causes that were identified and the factors related to attributions made by key relatives living with chronic schizophrenia patients in the urban area of the city of Chennai. In this study, the authors found that family members who had been educated to at least the level of university more often attributed their relative's illness to heredity or multiple causes, and those with less education more often named forces such as demons, sorcery, and evil spirits as potential causes. The authors suggest that the naming of heredity or multiple causes for the illness by relatives with a university education could be due to their better exposure to information. This finding suggests that differential causal attributions may be predicted by relatives' levels of educational attainment.

While no known studies have examined the link between education and expressed emotion (EE) among family members, Van Humbeeck, Van Audenhove, Pieters, De Hert, Storms, Vertommen, Peuskens, and Heyrman (2002) also found that education predicted EE in a Belgian sample of professional caregivers. The authors sampled the professional caregivers of 56 schizophrenia patients in supported-living group homes in Flanders and found that less educated caregivers were more often rated as high-EE and made more critical comments than did more educated caregivers.

While Srinivasan and Thara's (2001) study showed a connection between relatives' education and their causal beliefs in India, no studies that we are aware of have examined

these relationships in the United States. This issue is important because several studies have demonstrated that relatives from individualistic and collectivistic societies tend to exhibit divergent attributional styles. For instance, in a study comparing attributions for schizophrenia in two different nations (the U.S. and Mexico), Weisman and López (1997) found that causal attributions vary as a function of ethnicity (Weisman and López, 1997). More specifically, their results indicated that Anglo-American relatives living in the U.S. are more likely to attribute the symptoms of schizophrenia to factors within the control of the patient than are Mexican relatives living in Mexico.

Rates of expressed emotion have also been shown to vary cross-culturally. One recent study showed that Anglo-Americans are three to five (depending on method of assessment) times as likely as Latinos to be rated as high in expressed emotion (Weisman de Mamani, Kymalainen, Rosales, & Armesto, 2006). These studies indicate that, overall, family members from more collectivistic cultures may hold less blameworthy causal attributions and express fewer critical and hostile (high-EE) attitudes towards their mentally ill relatives when compared to family members from more individualistic cultures. Thus, this research underscores the importance of considering ethnicity when examining relatives' attributions as it appears to be related to educational attainment. No studies conducted in the U.S. that we are aware of have yet examined the association of educational attainment to EE. The present study examines the association of educational attainment to both attributions and EE, with special attention to ethnicity as a possible moderator of such associations.

Statement of the Problem and Outline of Study Hypotheses: The literature to date reveals that relatives' causal attributions about schizophrenia predict EE and also directly predict the patient's likelihood of suffering a relapse of symptoms. Based on these findings, it appears that family interventions aimed at modifying family members' EE attitudes and their attributions towards individuals with schizophrenia may be effective in decreasing patients' vulnerability to relapse. However, despite the fact that family psychoeducational interventions for schizophrenia have consistently been shown to reduce relapse rates (Dixon et al., 2001; Lehman & Steinwachs, 1998; Mueser et al., 2003), most mental health facilities still lack family treatments of any type (Lefley, cited McFarlane, 2002). This gap is likely due to the costs and other practical difficulties associated with implementing these approaches.

Because family treatments are not routinely given in most psychiatric settings as a general standard of care, and because cost prohibits providing them to all patients, identifying individuals most likely to benefit from family treatment is critical. From the research reviewed above it is clear that attributions underlie EE and prognosis for schizophrenia, although we know little about other, more easily identifiable demographic factors that might predict

which relatives are likely to be high-EE and make more blameworthy attributions. Doing so would allow clinicians and researchers to more expediently identify patients and their relatives who may benefit most from family interventions that target attributions and EE.

One variable that is easy to evaluate and that may serve as a useful predictor for both EE and attributions is educational attainment. As discussed earlier, Srinivasan and Thara (2001) found an association between educational attainment and causal beliefs about schizophrenia in an Indian sample. Van Humbeeck et al. (2002) also found that caregiver education explained differences in levels of EE and criticism in a Flemish sample. To date, no studies that we are aware of have tested these relationships in a U.S. sample.

In the present study, five sets of hypotheses are examined. 1) Based on Srinivasan and Thara's findings in an Indian sample, it is hypothesized that greater educational attainment is associated with less blameworthy attributions in a US sample, as rated from two separate instruments (the modified Russell's Causal Dimension Scale and the Five Minute Speech Sample). 2) Similarly, based on Van Humbeeck et al.'s (2002) findings, and given the strong link between attributions and EE, it is also hypothesized that greater educational attainment is associated with lower rates of high EE. 3) On an exploratory basis, this study also provides a content analysis of relatives' causal beliefs about schizophrenia and examines how causal attributions in a U.S. sample compare to those of an Indian sample. 4) Finally, this study evaluates whether a self-report method of assessing attributions, using the Russell Causal Dimension Scale, predicts relatives' expressed emotion, a known marker for poor course of illness, better than a non-self-report, non-face valid, interview method of assessing attributions from the Five Minute Speech Sample (FMSS). Because education, EE and attributions have been found to vary as a function of ethnicity (e.g., Weisman & López, 1997; Weisman, 2005), we also examine how ethnicity interacts with our major variables of interest.

Method

Design and Procedure

Patients who exhibited symptoms of schizophrenia or had received a prior diagnosis of schizophrenia were contacted along with their relatives by their social worker or mental health worker and informed of the study. Those who expressed interest in participating were contacted by phone, and a brief screening interview was conducted with the patient. Patients were each asked a series of questions guided by the DSM-IV to confirm their symptoms and diagnosis. Families whose ill relatives received a prior diagnosis of schizophrenia or schizoaffective disorder by a qualified mental health practitioner (e.g., licensed psychiatrist, psychologist) and appeared to clearly meet DSM-IV criteria for the illness based on self-report of symptoms during the

phone interview were invited to participate in the study. Those families whose ill relative appeared to meet criteria and who were willing to participate were scheduled for an assessment. Assessments usually occurred in the home of the families, but occasionally at an alternative site, including the University of Massachusetts or at the patient's mental health agency, whichever site was most convenient for the family. Due to concerns about variations in reading ability, all measures were administered in interview format. Interviewers were given standard instructions on how to introduce each scale. When participants appeared to have difficulty grasping a scale or scale item, interviewers were coached to provide further explanations and examples. However, interviewers were instructed never to steer participants towards any particular response.

Language and Translation of Measures

Four interviewers conducted the assessments, of which three spoke Spanish fluently. Hispanic relatives were given a choice of completing the assessments in either English or Spanish, of which 17 chose Spanish. All measures were translated into Spanish using an editorial board approach, which is considered a more effective alternative to translation back translation (Geisinger, 1994) and accounts for the fact that there are often within-group language variations (Geisinger, 1995). All measures were first translated into Spanish by a native Spanish speaker of Cuban descent, after which an editorial board carefully and privately reviewed the Spanish translations and compared them against the English versions. The editorial board consisted of a native Spanish speaker of Honduran descent, a native speaker of Mexican descent, and a non-native Spanish speaker with extended work and personal experience in Spanish speaking countries (e.g., Cuba, Spain, Mexico) and cities in the U.S. where Spanish is widely spoken (L.A., New York, Miami). Once the board members independently reviewed the translations, a group meeting consisting of the editorial board and original translator was held to discuss discrepancies and reconcile all differences and concerns with the translation. At the end of the meeting, final versions of all translations were agreed upon so as to have the most generic Spanish versions of all measures. That is, board members unanimously agreed that Spanish versions of all measures used language that was clear and understandable and tapped the intended constructs for members of all Spanish-speaking ethnic groups.

Participants

Participants consisted of 57 relatives of patients with schizophrenia or schizoaffective disorder who participated in a larger study evaluating the impact of mental illness on the family (see Weisman, Rosales, Kymalainen, and Armesto, 2005, for study details). Relatives spent a minimum of 1 hour per week in face to face contact with their mentally ill family member. Family members consisted of 17 (30%) males and 40

Table 1.
Frequency and Percentages of Family Members' Educational Attainment

Level of Educational Attainment	n	%
Advanced degree	1	2
College	7	12
Some college	16	28
HS graduate	16	28
Some HS after grade 8	8	14
Up to grade 8	3	5
Below grade 8	6	11

Table 2
Frequency and Percentages of Patients' Educational Attainment

Level of Educational Attainment	n	%
Advanced degree	0	0
College	1	2
Some college	9	19
HS graduate	21	45
Some HS after grade 8	9	19
Up to grade 8	2	4
Below grade 8	5	11

(70%) females who ranged in ages from 21 to 86 years ($M = 54.3$, $SD = 14.4$). Relatives' ethnic backgrounds were determined by self-report and were distributed as follows: White = 20 (35%), Hispanic = 21 (37%), and Black = 16 (28%). Family members' levels of educational attainment were also assessed by self-report. See Table 1 for a description of family members' educational backgrounds.

Participants' mentally ill relatives consisted of 47 patients with schizophrenia or schizoaffective disorder. They comprised 23 (49%) males and 24 (51%) females who ranged in age from 19 to 63 years ($M = 39.1$, $SD = 11.3$). Patients' ethnic backgrounds were determined by self-report and were distributed as follows: White = 16 (34%), Hispanic = 17 (36%), and Black = 14 (30%). Patients' levels of educational attainment were also assessed by self-report. (See Table 2 for a description of patients' educational backgrounds.)

An attempt was made to interview the relative most involved in the patients' care (e.g., generally a parent or spouse). In a few cases, this person was unavailable or unwilling to be interviewed, in which case another relative (who also met the criteria for at least one hour/week contact with the patient) was substituted. Relatives included the following: 36 parents, 10 siblings, 4 children, 4 spouses, 1 uncle, and 2 family equivalents (1 long-term significant other and 1 roommate/lifelong friend).

Measures

Attributions: Attributions were rated using a variation of Russell's Causal Dimension Scale (RCDS; Russell, 1982; see Appendix A). The RCDS assesses the attributions individuals make about the causes of a particular event or situation. In this study, the scale was modified to focus on the patient's illness and the associated symptoms as the specified event/situation. To assess family members' attributions of the cause of the illness, participants were asked to rate the cause(s) in terms of three factors: controllability (i.e., how much control they believed the patient has over the cause of his/her illness); intentionality (i.e., the degree to which relatives perceive the patient as having volitionally caused the illness); and responsibility (i.e., how much responsibility they felt the patient has in causing the illness). Relatives responded using a Likert rating scale ranging from 1 (not controllable/intentional/responsible) to 9 (controllable/intentional/responsible). Participants were then asked to identify two of the most salient symptoms that stood out, and these symptoms were each rated for perceived controllability, intentionality, and responsibility using the same 9-point rating scale.

In the current study, global attributions of the cause were derived by summing scores across the 3 dimensions (controllability, intentionality, and responsibility). Similarly, global attributions for the associated symptoms were derived by summing scores across the same three items. Global attribution scores ranged from 3 (the view that the cause and symptoms are almost entirely uncontrollable by the relative) to 27 (the view that the cause and symptoms are entirely controllable by the patient). Higher scores indicate a greater tendency to perceive the cause of the disorder as more internal to the patient. Cronbach's alpha for this scale was .77, indicating adequate reliability.

As a convergent source of assessing attributions towards illness, relatives' spontaneous controllability

attributions were identified from verbatim transcripts of the Five Minute Speech Sample using a variation of a method developed earlier by Weisman and colleagues (1993). This method was originally developed for rating attribution statements from the Camberwell Family Interview (CFI) and consists of extracting all statements that imply perceptions of the patient's ability to control the onset of his/her disorder and the associated symptoms. Coders then evaluated these statements altogether and assigned a global rating of perceived controllability on a 5-point scale (1 = no perceived control, 5 = complete perceived control). Amy Weisman de Mamani, the developer of this rating method, served as the trainer. At the end of the training, the raters each rated 12 practice tapes. Each coder demonstrated an intra-class reliability coefficient of .83 or above with Amy Weisman de Mamani and similar reliability (.82) with one another.

Expressed Emotion: In order to assess levels of expressed emotion, the Five Minute Speech Sample (FMSS; Magaña et al., 1986) was used, in which the relatives were simply asked to "talk for 5 minutes about the patient, telling us what kind of person he/she is and how the two of you get along together." Audiotapes of the FMSS interviews were previously coded by trained raters for an earlier study (Weisman de Mamani, Kymalainen, Rosales and Armesto, 2006). In this coding system, relatives were classified as high-EE if the initial statement in the FMSS was negative, if they made one or more criticisms (e.g., "I resent his disrespectful attitude"), or if there was a negative relationship rating. High-EE emotional over-involvement (EOI) was rated based on any of the following criteria: an emotional display during the interview; reports of self-sacrificing/ overprotective behaviors; or a combination of two of any of the following: a) excessive detail about the past; b) a statement of extreme positive attitude; c) excessive praise, defined as five or more positive remarks. In this sample 17 relatives were rated as high EE and 38 were rated as low EE. All EE coders in this study demonstrated an intra-class reliability coefficient between .89 and 1.00 with an experienced EE trainer (Martha Tompson, Boston University) on all three dimensions of EE across 5 practice tapes (Weisman de Mamani, Kymalainen, Rosales and Armesto, 2007).

Education: A demographics questionnaire was used to assess relatives' levels of educational attainment, as well as other demographic characteristics such as gender, age, ethnicity, and primary language. To assess educational attainment, relatives were each asked to choose the best response from seven possible levels of educational attainment ranging from "1 = Below grade 8" to "7 = Advanced degree — M.A., M.D., Ph.D." Based on these designations, scores were coded as a continuous variable ranging from 1 to 7 (see Table 1 for educational range among participants).

Results

Preliminary Analyses.

Preliminary analyses were conducted with our primary variables (education and causal attributions) to asses for gender and ethnic patterns. Results reveal no gender differences on level of educational attainment, $t(55) = -.52$, $p > .05$, nor on the degree of blame for attributions about the

Table 3

Pearson Correlations among Education, Attributions, and Expressed Emotion for the Full Sample

	Educational Attainment	Self-reported Causal Attributions	Spontaneous Causal Attributions	Expressed Emotion
	1.00			
Self-reported Causal Attributions	F = -0.16	1.00		
	W = -0.36			
	H = -0.57**			
	B = 0.33			
Spontaneous Causal Attributions	F = -0.14	F = 0.29*	1.00	
	W = -0.12	W = 0.26		
	H = 0.07	H = 0.33		
	B = -0.24	B = 0.34		
Expressed Emotion	F = 0.03	F = 0.11	F = 0.23	1.00
	W = -0.03	W = -0.07	W = 0.00	
	H = -0.07	H = 0.31	H = 0.31	
	B = -0.26	B = 0.10	B = 0.67**	

F = Full sample   W = Whites only   H = Hispanics only   B = Blacks only
Note: *Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

cause of the illness reported on the RCDS, $t(51) = -.98$, $p > .05$, or the FMSS, $t(55) = -1.50$, $p > .05$. However, an ANOVA indicates that there are educational differences among ethnic groups, $F(2, 54) = 4.46$, $p < .05$. Subsequent post-hoc analyses using Tukey HSD reveal that Whites ($M = 4.65$; $SD = 1.18$) have significantly higher levels of education than Hispanics ($M = 3.33$; $SD = 1.59$), $p < .05$. No differences are found between Whites and Blacks ($M = 4.12$; $SD = 1.45$), $p > .05$, nor between Blacks and Hispanics, $p > .05$.

Causal attributions as rated from the RCDS also differ based on ethnicity, $F(2, 52) = 4.30$, $p < .05$. Blacks ($M = 11.26$; $SD = 7.50$) make more blameworthy causal attributions than do Whites ($M = 5.94$; $SD = 4.15$). No differences are found between Whites and Hispanics ($M = 7.09$; $SD = 4.74$), $p > .05$, nor between Hispanics and Blacks, $p > .05$. No ethnic differences are found in causal attributions rated from the FMSS, $F(2, 54) = 1.42$, $p > .05$.

Principle Analyses.

Pearson correlations were conducted to evaluate the hypothesis that greater family member educational attainment would be related to less blameworthy attributions about the cause of the illness. (See Table 3 for correlations among educational attainment and attributions for the full sample.) Although not significant, there is a trend in the expected direction when causal attributions are self-reported on the RCDS. Because prior research (e.g., Weisman & López, 1997) suggests that attributions towards illness vary by ethnicity, we also evaluated our first hypothesis separately for each ethnic group. Consistent with expectations, results indicate lower education significantly and strongly predicts more blameworthy self-reported causal attributions for Hispanic family members. There is also a non-significant trend linking lower education to more blameworthy self-reported causal attributions for Whites. The effect size for this relationship, according to Cohen (1992), indicates a medium association between these variables. Because Whites and Hispanics display similar trends, the association between education and attributions was examined for these two groups together and yields a highly significant correlation in the expected direction ($r = -.49$, $p = .001$).

Interestingly, for Blacks, there is a trend in the opposite direction. In other words, though not significant, according to Cohen's (1992) criteria, there is a moderately strong trend in Blacks for greater education to predict more blameworthy attributions about the cause of the illness. This pattern is surprising in that it is the reverse of the pattern for Whites and Hispanics.

We also examine the interactions among ethnicity and education in predicting causal attributions. For this analysis, education was dichotomized through a median split such that relatives with some college education or greater comprised the "high education" group, while participants with a high school degree or less comprised the "low education" group. A 3 (ethnicity: White, Black, or Latino) by 2 (high versus low education) ANOVA was conducted and revealed neither main effects for education nor the interaction of education with ethnicity. However, results indicated a main effect for ethnicity ($F(2, 55) = 4.638$, $p < .05$), and post-hoc analyses confirmed the results of preliminary analyses indicating that Blacks make more blameworthy causal attributions than do Whites.

We also evaluate the hypothesis that greater education is associated with less blameworthy attributions using spontaneously emitted causal attributions made during the FMSS. (See Table 3 for correlations among educational attainment and spontaneous attributions for the full sample.) With the FMSS, there is a non-significant association between lower education and more internal, blameworthy attributions, similar to findings using the RCDS. Similar to findings with the RCDS, for Whites, there is a non-significant trend for lower education to be associated with more internal and blameworthy spontaneously emitted causal attributions. Interestingly, the significant association between lower education and more blameworthy attributions found with Hispanics using the RCDS self-report measure is not replicated using the FMSS. Also contrary to findings on self-reported attributions, Blacks' spontaneously emitted attributions show a non-significant association between lower education and greater blameworthiness of attributions.

In this study, we also evaluate the concordance between a self-report (RCDS) and a non-face valid (FMSS) method of assessing attributions. Results reveal an association between these two methods of assessing causal attributions. That is, causal attributions rated from the FMSS are significantly (though not strongly) related to causal attributions rated from the RCDS.

Our second hypothesis is that greater educational attainment would be associated with lower rates of high-EE. This hypothesis is not supported such that high ($M = 3.94$, $SD = 1.52$) and low ($M = 4.03$, $SD = 1.55$) EE relatives are equally educated, $t(53) = .19$, $p > .05$. Finally, a content analysis is conducted to identify educational and ethnic patterns in relatives' qualitative responses to the question, "What caused your relative's schizophrenia?" Of the 57 relatives, 22 cite biological factors (genetics/hereditary/chemical imbalance) as a cause. Next, alcohol/drug problems are named by 6 relatives, followed by family problems, which is cited by 4 family members.

When responses are analyzed separately for each ethnic group, the modal response remains biological factors across all three groups. However, the groups differ in the second and third most cited responses. That is, besides biological factors, Whites believe their relatives' schizophrenia is most likely caused by alcohol/drug problems or some other mental disorder. However, the second and third most common causal attributions by Hispanics are family problems and prenatal insult. Interestingly, Blacks' second most common

response, like Whites', is also alcohol/drug problem. The third most popular response, however, is stress/anxiety. Responses are also examined for ethnic patterns in blameworthiness of attributions. Results reveal that Blacks (25%) cite causes indicating perceived control (i.e., personality problem, alcohol/drug problems, attention seeking, or stopped taking medication) more often than Whites (10%) and Hispanics (2%).

Relatives' causal attributions are also analyzed according to level of education. A median split is performed on the sample so that relatives with a high school degree or less comprise the "lower education" group ($n = 33$), while relatives with some college or greater make up the "higher education" group ($n = 24$). Once again, biological factors remain the most common response for both lower and higher educated relatives. Alcohol/drug problems are tied for second place for both groups as well. However, this response is tied with family problems in the higher education group but with prenatal insult in the lower education group.

Discussion

The aim of this study is to examine the associations of family members' ethnicity and educational attainment with their attributions and reactions to a loved one's schizophrenia. With respect to attributions, our results indicate, as hypothesized, that lower educational attainment is associated with more self-reported, internal and blameworthy causal attributions for White and Hispanic family members but not for Black family members. It is possible that for Whites and Hispanics greater education translates into better resources for learning about life's difficulties and presenting problems. In other words, when presented with mental illness in a family member, Whites and Hispanics may extend their educational skills to obtaining greater knowledge and familiarity with mental illness. Thus, they may be better able to recognize that the symptoms are legitimate side effects of a disease. In other words, armed with this knowledge, more educated Whites and Hispanics may be more understanding of the patient's inability to control the onset of schizophrenia and, hence, be less blaming of them for having the illness.

For Blacks, however, the pattern reported above does not hold. Interestingly, there is even a strong trend in the opposite direction. That is, for Blacks, greater educational attainment is related to more self-reported internal and blameworthy attributions. One reason for this finding may be that educational attainment holds unique significance for Blacks.

Brown, Donahoo, and Bertrand (2001) note that higher education in the U.S. has historically been characterized by limited access for Blacks. O'Conner (2002) further indicates that, for those Blacks that have nonetheless succeeded in earning a higher education, such educational resilience has been associated with having parents who were warm and caring but established high academic expectations, promoted self-motivation, and firmly controlled and monitored the student's social interactions and academic behavior. In other words, research suggests that Blacks who have attained greater education relative to their ethnic and family counterparts have generally been raised by parents who inculcated strict and high standards in their children. Such successful Blacks, therefore, may internalize and, subsequently, hold their relatives (even those who are mentally ill) to such high standards. Thus, educated Blacks may have less sympathy for other low-functioning members of their family and ethnic group.

In this study, while education does appear to be related to self-reported attributions on the RCDS, it is important to point out that we do not find an association between education and spontaneously expressed attributions during the FMSS. That is, when attributions are assessed unobtrusively, using a non-face-valid interview method, there is no significant relationship between attributions and education, regardless of ethnicity. One possible explanation for these discrepant findings may relate to social desirability response patterns. That is, because the RCDS is a face-valid measure, Hispanics and Whites with greater education may be better equipped to monitor and adjust their attributions in a more socially desirable fashion that appears less blaming of their loved one. On the other hand, because it is less apparent that attributions are being monitored during the FMSS, regardless of their education level, participants may be less guarded and more disclosing of their actual attitudes and beliefs about their family member's role in bringing on and managing the illness.

This study also evaluates the concordance between a novel, non-face-valid method of assessing attributions from the FMSS with a widely used, well-validated, face-valid measure of measuring attributions. While not strongly related, we do find a moderate association between the two measures.

One interesting and perplexing pattern also emerges. While the FMSS and RCDS methods of assessing attributions are related, greater education, for Blacks, is found to be associated with more blameworthy self-reported attributions on the RCDS, but less blameworthy attributions on the FMSS. One possible explanation for this finding is that educated Black relatives, on a rational level, may hold patients responsible for the illness (as expressed on the RCDS). Again, they may feel that, since they overcame norms by becoming educated, their relative should also be able to overcome their adversities. On a personal and emotional level, however, educated Blacks may feel compassion and show understanding towards the patient (as evident in the FMSS). In other words, when forced to take a definite position on the cause of the illness, educated Blacks may endorse believing that the patient has greater control and

should be held responsible. However, when left to their own devices (such as during a Five Minute Speech Sample) to talk about their relative, they may be less likely to focus on the cause of the illness and to blame their relative.

We also examine the hypothesis that greater levels of education predict lower rates of high expressed emotion towards a mentally ill relative. While our hypothesis is not supported and results show that high and low EE family members are comparably educated, this finding is consistent with previous research indicating that family member education is not associated with levels of criticism/hostility or emotional over-involvement, components of EE (Karanci & Inandilar, 2002).

In this study, we also perform a content analysis of relatives' causal attributions as reported on the RCDS in order to compare those of our U.S. sample with responses from Srinivasan and Thara's (2001) Indian sample. Our results reveal that, regardless of level of education and ethnicity, family members in a U.S. sample most often believe that genetics, heredity, or a chemical imbalance was the cause of their own relative's schizophrenia. This finding is encouraging because it suggests greater awareness among relatives of all groups of the biological — and, thus, uncontrollable — roots of schizophrenia, which in turn reflects greater education about the illness.

Our findings are divergent from Srinivasan and Thara's (2001), who found that the most common cause cited by Indian relatives was psychosocial stress, followed by personality defect. Heredity and brain dysfunction, unlike in our sample, were the third and fourth most common responses in the Indian sample, respectively. Relatives in their sample also cited religious and/or spiritual factors as potential causes four times as often as members of our sample. Thus, to some degree, culture and nationality appear to influence one's causal perceptions of mental illness.

Also unlike the Srinivasan and Thara (2001) study, the content of relatives' causal attributions in this study does not appear to differ significantly between relatives with lower and higher educational attainment. Both groups cite biological factors and alcohol/drug problems as the most common causes of their relatives' illness, respectively. However, we find that alcohol/drug problems are ranked equally with family problems among highly educated relatives but with prenatal insult among low educated relatives. It is possible that this finding reflects more actual prenatal insult occurring in less educated families. That is, lower educated relatives may be less likely to have adequate prenatal care and education and, thus, more likely to experience such incidents.

Despite the recognition of the causal role of biological factors across ethnic groups, Blacks more often cite causes on the RCDS indicating greater perceived control than do Whites and Hispanics. These results are consistent with

our preliminary finding that Blacks, compared to Whites and Hispanics, also endorse greater internal and blameworthy attributions about the cause of their relative's schizophrenia. In future research, it will be important to examine what about Black, White, and Hispanic cultures might account for differences in their causal views of schizophrenia.

In summary, our results our consistent with previous findings in an Indian sample (Srinivasan & Thara, 2001) such that educational attainment predicts family members' causal attributions about relatives' schizophrenia, but only for Whites and Hispanics. That is, White and Hispanic relatives that achieve higher levels of education appear to make more external and less blameworthy attributions about the cause of their relatives' illness. However, more educated Blacks seem to make greater self-reported internal and blameworthy causal attributions. Future research is needed to clarify discrepancies in ethnic patterns regarding the role that formal education plays in shaping causal attributions about schizophrenia.

One limitation of this study is our small sample size. This limitation specifically affects the test of the association between education and attributions for Blacks. Results of a power analysis indicate that, given such a small sample of Blacks ($n = 16$), we could expect to find a significant relationship between our two variables less than half the time ($p = .48$). Thus, future replications of this study should recruit larger samples to determine if the link between higher education and more blameworthy self-reported attributions reaches the level of significance.

A second limitation is that, while we assess formal education, we do not assess family members' actual knowledge about schizophrenia per se. Thus, while we speculated earlier that greater formal education may translate into better resources for learning about life's difficulties and presenting problems, such as mental illness in a family member, future studies are needed that actually examine the association between formal scholastic education and specific education about schizophrenia.

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Appendix A

Revised Causal Dimension Scale – English
(A. Weisman)

What do you think caused your relative's illness?
Based on this cause, answer the following:

On question 1, for example, circling 9 or 8 means that you believe your relative has much control over his illness. Circling 1 or 2 means you believe your relative has little control over his illness. Remember to circle only one number for each question.

1) The cause(s) is
controllable 9 8 7 6 5 4 3 2 1 uncontrollable
by my relative   by my relative

2) The cause(s) is
intentional 9 8 7 6 5 4 3 2 1   unintentional
by my relative   by my relative

3) The cause(s) is something
for which my relative 9 8 7 6 5 4 3 2 1 for which my relative
should be held responsible   should not be held responsible

Total Score: _____

Which of your relative's behaviors most stands out? _____

Behavior A

1) The behavior is
controllable 9 8 7 6 5 4 3 2 1 uncontrollable
by my relative   by my relative

2) The behavior is
intentional 9 8 7 6 5 4 3 2 1   unintentional
by my relative   by my relative

3) The behavior is something
for which my relative 9 8 7 6 5 4 3 2 1 for which my relative
should be held responsible   should not be held responsible

Total Score: _____

Behavior B

1) The behavior is
controllable 9 8 7 6 5 4 3 2 1 uncontrollable
by my relative   by my relative

2) The behavior is
intentional 9 8 7 6 5 4 3 2 1   unintentional
by my relative   by my relative

3) The behavior is something
for which my relative 9 8 7 6 5 4 3 2 1 for which my relative
should be held responsible   should not be held responsible
Total Score: _____