Cultural Variability in the Manifestation of Expressed Emotion

STEVEN R. LÓPEZ, PH.D.*
JORGE I. RAMÍREZ GARCÍA, PH.D.†
JODIE B. ULLMAN, PH.D.‡
ALEX KOPELOWICZ, M.D.§
JANIS JENKINS, PH.D.¶
NICHOLAS J. K. BREITBORDE, PH.D.¶¶
PERLA PLACENCIA, M.S.W.**

We examined the distribution of expressed emotion (EE) and its indices in a sample of 224 family caregivers of individuals with schizophrenia pooled from 5 studies, 3 reflecting a contemporary sample of Mexican Americans (MA 2000, N = 126), 1 of an earlier study of Mexican Americans (MA 1980, N = 44), and the other of an earlier study of Anglo Americans (AA, N = 54). Chi-square and path analyses revealed no significant differences between the 2 MA samples in rates of high EE, critical comments, hostility, and emotional over-involvement (EOI). Only caregiver warmth differed for the 2 MA samples; MA 1980 had higher warmth than MA 2000. Significant differences were consistently found between the combined MA samples and the AA sample; AAs had higher rates of high EE, more critical comments, less warmth, less EOI, and a high EE profile comprised more of criticism/hostility. We also examined the relationships of proxy measures of acculturation among the MA 2000 sample. The findings support and extend Jenkins’ earlier observations regarding the cultural variability of EE for Mexican Americans. Implications are discussed regarding the cross-cultural measurement of EE and the focus of family interventions.

*Department of Psychology, University of Southern California, Los Angeles, CA
†Department of Psychology, University of Illinois, Urbana-Champaign, IL
‡Department of Psychology, California State University, San Bernardino, CA
§Department of Psychiatry and Biobehavioral Sciences, David Geffen School of Medicine at UCLA, Los Angeles, CA
¶University of California, San Diego, CA
¶¶Department of Psychiatry, Yale University, New Haven, CT
**Center for Immigrant Families, New York, NY

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Correspondence concerning this article should be addressed to Steven R. López, USC-Psychology Department, 3620 S. McClintock, Los Angeles, CA 90089-1061. E-mail: lopesa@usc.edu

The study of family factors as they relate to the course of schizophrenia has found that individuals with schizophrenia who return to families high in criticism, hostility, or emotional over-involvement (EOI) are more likely to relapse than those who return to families low in these characteristics (Hooley, 2007). A growing number of studies point out that ethnicity and nationality can play an important role in the expression of these family attitudes and emotional reactions (Bhugra & McKenzie, 2003). Jenkins and Karno (1992) argue that significant differences in expressed emotion (EE) across national and ethnic groups indicate that culture shapes how families respond to schizophrenia. Moreover, Jenkins (1991, 1992) identifies nuanced ways in which culture can shape the expression of criticism and EOI.

Much of the evidence of cross-ethnic and cross-national differences in EE is based on one-sample studies of a particular ethnic or national group that is different from the original British studies carried out in the late 1960s and early 1970s (e.g., Brown, Birley, & Wing, 1972). Typically an investigator applies the Camberwell Family Interview and finds that the distribution of the global measure of EE or one of its indices varies from the original studies. The authors then interpret the observed EE differences as due to culture. It is argued that the different "cultural" group tends to be more critical or more involved because of their cultural background. The consideration of culture is welcomed addition to the EE literature because it challenges universalistic assumptions about families and psychopathology (Jenkins & Karno, 1992). However, there are a number of factors that limit the contribution of this line of research.

THE MEANING OF CROSS-ETHNIC AND CROSS-NATIONAL DIFFERENCES IN EE

First of all, it is not clear what the meaning is of cross-ethnic and cross-national differences. Any observed difference is likely to reflect some degree of cultural influence on how families relate to their ill relative and some degree of measurement variance given the new context (translation limitations and response style differences). Most investigators recognize both factors; however, some focus more on the presumed cultural differences in family processes. Those who focus on cultural differences assume that the Camberwell Family Interview and its rating scales function in a similar manner across cultural contexts, and in turn, measure EE sufficiently well in the new setting. Accordingly, any observed difference in EE ratings is primarily thought to be a function of the phenomena under study. Okasha, El Akabawi, Snyder Wilson, et al. (1994), for example, found that Egyptians expressed more critical comments toward their ill relatives with affective disorders than previous studies and argued that "criticism seems to be an accepted component of interpersonal relations in our culture ..." (p. 1004).

Other investigators are less inclined to assume that the Camberwell Family Interview and its ratings scales have the same meaning across cultural contexts. Jenkins (1992) argued that it is important to adapt the measures because "analytic norms
derived elsewhere (i.e., England) could not be expected to be of direct cultural relevance or meaning among a Mexican-descent population" (p. 208). From this perspective, observing cross-ethnic and cross-national differences may not necessarily reflect "cultural" differences in EE, but instead may reflect, at least in part, an artifact of applying an instrument that inadequately measures the given construct in a new cultural context. For example, Jenkins related an incident in which a family caregiver brought home-cooked food daily to her ill relative at the hospital. Jenkins argued that in England this might be judged as overly devoted behavior and thus indicative of EOI, but for some Mexican Americans, particularly those who are recent immigrants and unfamiliar with the institutional context, this would not be an indicator of EOI. From this perspective, failing to adapt the measures to the specific cultural context would likely result in the over-identification of EE. What is considered a normative degree of family involvement may be judged as over-involvement. Thus, the observed cross-ethnic or cross-national differences may not necessarily reflect actual group differences in the rates of EE but instead reflect the incongruities of the nonadapted measure when applied in a new cultural context.

To avoid the category fallacy (Kleinman, 1988), that is, assuming that a given construct or category applies cross-culturally, some investigators have suggested that the original EE indices and their ratings require some adaptation (e.g., Jenkins, 1992; Phillips & Xiong, 1995). It should be noted that all investigators make at least some modifications given a new cultural context, particularly those who translate the Camberwell Family Interview into a language other than English. However, there are potential limitations in adapting the original rating scale, particularly early on in the research. Most importantly, modifying the metric makes it difficult to compare the findings with other studies that make little or no adjustments. For example, returning to Jenkins' earlier example of EOI, if adjustments were made to the ratings of EOI it is possible that they could serve to attenuate or obscure actual group differences, the very differences that would support the need for adjustment. To date the literature is not clear about when and how cultural adjustments should be made.

POSSIBLE DIFFERENCES IN PROFILES OF HIGH EE ACROSS ETHNIC GROUPS

Another limitation of cross-ethnic or cross-national comparative studies is that they refer to group differences in either the percentage of caregivers who are high EE, or in the mean number of critical comments or the mean rating of EOI (Mino, Tanaka, Inoue, Tsuda et al., 1995). These two approaches consider the entire sample of caregivers, both high and low EE caregivers. Another way to identify group differences is to examine the subtypes or profiles of only the high EE caregivers, in other words whether high EE is due to criticism/hostility or to EOI. This approach is worth considering because two samples could have virtually the same rates of high EE, yet the type of high EE represented could be markedly different. One group could primarily reflect the dimension of criticism/hostility whereas another group could primarily reflect the dimension of EOI. To date, group differences in high EE profiles or subtypes have received little attention. A more complete assessment of cross-cultural differences would do best to examine high EE profiles as well as examine the distributions of specific EE ratings across the entire sample.

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EVIDENCE FOR THE INTRACULTURAL VARIABILITY OF EE

Proxy measures of culture such as place of birth (foreign born vs. native born), language dominance (Spanish or English), and acculturation level could also serve to buttress cultural interpretations of cross-ethnic or cross-national findings. Consider the cultural hypothesis that criticism is not well accepted by some Mexican immigrant families, as suggested by the previously observed Mexican American-Anglo American difference in critical comments (Jenkins, 1991). If this is indeed the case, then the proxy cultural measures would demonstrate that critical comments are lower for caregivers who were born in Mexico, who speak Spanish, or who are lower on an acculturation index than those caregivers who were born in the United States, who speak English, or who are higher on the acculturation index. The lack of association between the proxy measures of culture and the EE indices would suggest that cultural processes may not be as relevant in explaining the cross-national and cross-ethnic group differences. Tests of the relationship between EE and proxy cultural measures could help further assess the cultural basis of EE.

OVERVIEW

The overall objective of the current study was to advance our understanding of the cultural nature of the manifestation of EE and its indices, primarily with a contemporary sample of Mexican American family caregivers recruited from 1999 to 2004. To obtain this sample, we pooled the data from three related projects of Mexican Americans (Dorian, Ramírez García, López, & Hernández, 2008; Kopelowicz, López, Zarate, O’Brien et al., 2006; López, Kopelowicz, Breitborde, Aguilera, & Cervantes, 2008). We refer to this sample as Mexican American (MA) 2000, as most of the recruitment was carried out in the early part of 2000. Although the principal investigators and teams of interviewers differed, the same team of raters coded the Camberwell Family Interviews. We then compared the global construct of EE and its specific indices for this sample with two earlier samples: (a) Mexican Americans recruited from 1980 to 1984, which we refer to as MA 1980 (Karno, Jenkins, de la Selva, Santana et al., 1987); and (b) Anglo Americans recruited from the late 1970s through the early 1980s, which we refer to as AA (Vaughn, Snyder, Jones, Freeman et al., 1984).

The first specific aim was to test the replicability of the two-decade-old findings of Mexican American family caregivers regarding their level of global EE (high vs. low) and their specific EE indices. To accomplish this, we tested whether there were differences between the MA 1980 and MA 2000 samples.

The second specific aim was to assess the cultural nature of EE and its indices for the entire sample. To accomplish this, we tested for cross-ethnic differences in global EE and specific EE indices by comparing both MA 1980 and MA 2000 with AA. Based on prior research pointing out ethnic differences in EE, criticism (Jenkins, 1991), and warmth (as related to relapse; López, Hipke, Polo, Jenkins et al., 2004), we expected Mexican Americans to have lower global EE, lower critical comments, and lower hostility, as well as higher warmth than Anglo Americans. Based on Mexican American caregivers’ high tendency to live with their ill relatives (Ramírez García, Wood, Hoesch, & Meyer, 2004; Snowden, 2007), we expected greater EOI for the MA samples than the AA sample. We also tested for ethnic differences in the high EE
profiles. Consistent with the previously identified ethnic differences in specific EE indices, we expected that Mexican American caregivers would have less critical profiles and more EOI profiles than Anglo American caregivers.

As a second approach to assess the cultural basis of EE, we tested the hypothesis that acculturation among Mexican Americans would be related to EE. Specifically, we expected that lower acculturation would be associated with lower rates of high EE, less criticism, less hostility, more EOI, and more warmth.

**METHOD**

**Participants**

We summarize in Table 1 the key study characteristics of each of the original five studies that were pooled together to comprise the sample for this study. Participants were 224 key relatives and 224 patients with schizophrenia or schizoaffective disorder (one relative for each patient). The MA 2000 sample of 126 Mexican Americans was comprised of three recent studies of EE: Santa Fe Springs/Granada Hills (n = 60, López et al., 2008), El Paso (n = 44, Dorian et al., 2008), and Granada Hills (n = 22, Kopelowicz et al., 2006). The MA 1980 sample of 44 Mexican American caregiver-patient dyads was obtained from the Karno et al. (1987) study and the AA sample of 54 Anglo American caregiver-patient dyads was obtained from the first replication study in the United States (Vaughn et al., 1984).

Key relatives were defined as adult family members living with or having regular contact with the ill relative. They included parents (70%), siblings (13%), spouses/partners (12%), or other relatives (5%). All patients met the following selection criteria: (a) 17–60 years of age; (b) of Mexican American or Anglo American descent; (c) living with or in regular contact with a close relative; and (d) diagnosed as having schizophrenia or schizoaffective disorder based on the Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbon, & Williams, 2002) or the Present State Examination (Wing, Cooper, & Sartorius, 1974).

<table>
<thead>
<tr>
<th>Study Period</th>
<th>Sample Size</th>
<th>Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexican Americans 2000s</td>
<td>22</td>
<td>Outpatient, Granada Hills, CA</td>
</tr>
<tr>
<td>Kopelowicz et al. (2006)</td>
<td>22</td>
<td>Outpatient, El Paso, TX</td>
</tr>
<tr>
<td>Dorian et al. (2008)</td>
<td>44</td>
<td>Outpatient, Santa Fe Springs and Granada Hills, CA</td>
</tr>
<tr>
<td>López et al. (2008)</td>
<td>60</td>
<td>Outpatient, Granada Hills, CA</td>
</tr>
<tr>
<td>Mexican Americans 1980s</td>
<td>44</td>
<td>Inpatient, Southern California</td>
</tr>
<tr>
<td>Anglo Americans 1970–80s</td>
<td>54</td>
<td>Inpatient, Southern California</td>
</tr>
<tr>
<td>Total</td>
<td>224</td>
<td></td>
</tr>
</tbody>
</table>

*Fam. Proc., Vol. 48, June, 2009*
Measures

EE

An abbreviated form of the Camberwell Family Interview was used to classify the key relatives as high or low EE. The Camberwell Family Interview is a 1–2 hour semistructured interview administered to family members to assess the circumstances in the home 3 months before the patient’s admission to the hospital (Leff & Vaughn, 1985) or 3 months before the day of the interview for outpatients who were not recently hospitalized (e.g., Kopolowicz et al., 2006). All interviews were audiotaped for later analysis. For the MA 2000 studies, the Spanish language Camberwell Family Interview translated by Jenkins, Karna, de la Selva, and Santana (1986) and the English language Camberwell Family Interview used by Vaughn et al. (1984) served as the templates for the interviews.

The original Camberwell Family Interview criteria (Leff & Vaughn, 1985) for scoring the key relatives’ criticism, hostility, EOI, and warmth were used. We do not report the results for positive remarks as very few studies have found an association between positive remarks and clinical outcome. Six or more critical comments, a score of 1–3 on the 4-point hostility scale, or a score of 4–5 on a 6-point scale for EOI results in a high EE rating (Leff & Vaughn, 1985).

For the MA 1980 and AA studies, we were given permission to use the original data from the investigators. The reliabilities of the Camberwell Family Interview and specific rating scales were reported as adequate. For the MA 2000 studies, a separate team of seven coders rated the interviews. The initial team of four coders was trained by Karen Snyder, one of the key investigators of the AA study. Our training tapes were taken largely from the earlier Anglo American study. The range of the reliabilities (intraclass correlation coefficients) for this team was: criticism (0.73–0.97), hostility (0.74–1.0), EOI (0.69–0.95), and warmth (0.73–0.94).

The raters for the MA 1980 and AA studies had no knowledge that their Camberwell Family Interview ratings would be compared with one another. Therefore they were blind to the hypotheses. The raters for the MA 2000 studies varied with regard to their knowledge of the culture and EE literature. Some were aware of and some were unaware of the ethnic differences in EE. However, the main purpose of coding was to relate EE to relapse, not to compare EE ratings with other studies and other ethnic groups. In fact, the current analyses were conceptualized after the Camberwell Family Interview ratings were completed. As a result, it seems unlikely that even the raters with knowledge of the EE literature could have biased their ratings in favor of the hypotheses and swayed their peers, who were not knowledgeable of the EE literature.

Proxy Measures of Acculturation

For the MA samples, place of birth was primarily asked during the direct inquiry of sociodemographic background. Primary language of the participants was determined largely by the language they preferred in carrying out their assessments. To assess U.S. acculturation, the 12 items that assess English language use and media preferences of the Bidimensional Acculturation Scale (Marín & Gamba, 1996) were used in the Santa Fe Springs/Granada Hills study and the El Paso study. The responses to these 12 items were summed and divided by 12 to generate a U.S. acculturation score. This measure possessed excellent reliability for our sample (Cronbach’s α = .96).

www.FamilyProcess.org
Procedures

For the MA 2000 sample, individuals were recruited through outpatient clinics whereas for the MA 1980 and the AA samples, individuals were recruited from recent admissions to inpatient facilities. In the MA 1980 and AA samples, as well as the Granada Hills subsample of the MA 2000 sample, there were occasions when more than one family member (e.g., two parents) was interviewed for a given patient. In those cases, the higher of the two relatives’ scores was used to determine the EE classification of the household. In the Santa Fe Springs/Granada Hills and the El Paso sample only one Camberwell Family Interview was administered for each patient. Efforts were made to identify the caregiver who had the greatest contact with the ill relative.

RESULTS

We first present the findings from chi-square analyses and *t* tests regarding the sociodemographic and clinical background of the MA 2000, MA 1980, and AA samples. Second, we carried out chi-square analyses to assess whether there were differences across the three samples regarding global EE. Third, a series of path analysis models were conducted to test the ethnic and acculturation hypotheses of the indices of EE. Fourth, we conducted chi-square analyses to assess whether the profiles of high EE caregivers differ across the samples.

Sociodemographic and Clinical Background

Across the three samples of the MA 2000, the MA 1980, and the AA studies, the caregivers were primarily women (range: 70–83%) and primarily parents (range: 62–89%). (See Table 2 for the background characteristics by sample.) The gender distribution did not differ between the three samples, *χ*²(2) = 3.89, *p* = .14; however, there were significant differences across the samples in the proportion of parental

<table>
<thead>
<tr>
<th></th>
<th>Mexican Americans</th>
<th>Mexican Americans</th>
<th>Anglo Americans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000s</td>
<td>1980s</td>
<td>1970–80s</td>
</tr>
<tr>
<td>Caregivers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>122 52.74 14.74</td>
<td>44 47.89 12.71</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>126 83%</td>
<td>44 80%</td>
<td>54 70%</td>
</tr>
<tr>
<td>Parents</td>
<td>125 62%</td>
<td>44 71%</td>
<td>54 89%</td>
</tr>
<tr>
<td>Born in Mexico</td>
<td>100 72%</td>
<td>44 68%</td>
<td></td>
</tr>
<tr>
<td>Mainly Spanish</td>
<td>126 60%</td>
<td>44 68%</td>
<td></td>
</tr>
<tr>
<td>Patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>126 37.67 11.03</td>
<td>44 25.50 6.96</td>
<td>54 26.06 7.16</td>
</tr>
<tr>
<td>Years Ill</td>
<td>117 14.99 10.96</td>
<td>44 4.21 3.40</td>
<td>54 4.59 4.24</td>
</tr>
<tr>
<td>Hospitalizations</td>
<td>121 3.02 1.96</td>
<td>44 3.16 2.80</td>
<td>51 2.98 2.12</td>
</tr>
<tr>
<td>Men</td>
<td>126 66%</td>
<td>44 57%</td>
<td>54 76%</td>
</tr>
<tr>
<td>Born in Mexico</td>
<td>121 56%</td>
<td>44 59%</td>
<td></td>
</tr>
<tr>
<td>Mainly Spanish</td>
<td>126 42%</td>
<td>44 39%</td>
<td></td>
</tr>
</tbody>
</table>

*Fam. Proc.*, Vol. 48, June, 2009
caregivers, $\chi^2 (2) = 12.70, p = .002$. This difference is due to the two Mexican American samples (MA 2000 = 62.4%; MA 1980 = 70.5%) having a lower proportion of parental caregivers than the Anglo American sample, 88.9%, MA 2000-AA: $\chi^2 (1) = 12.69, p < .0001$; MA 1980-AA $\chi^2 (1) = 5.27, p = .02$. There were no differences in the proportion of parental caregivers between the two Mexican American samples, $\chi^2 (1) = 0.94, p = .33$. Caregiver age was only available for the two Mexican American samples. The MA 2000 sample tended to be older ($M = 52.74$) than the MA 1980 sample ($M = 47.89$, $t (164) = 1.94, p = .05$). After implementing a Bonferroni correction to maintain an $\alpha$ of .05 ($\alpha/6 = .008$), the difference in the proportion of parental caregivers across the three samples of caregivers and between the MA 2000 and AA samples remained significant.

An examination of patient characteristics indicates that the MA 2000 patients were significantly older than the other two samples of patients—12 years older than the MA 1980 sample, $t (119.73) = 8.46, p < .0001$, and nearly 12 years older than the AA sample, $t (149.93) = 8.39, p < .0001$. The patients’ ages for the earlier studies were nearly identical, MA 1980 $M = 25.50$ years; AA $M = 26.06$ years. Given the older patient age of the MA 2000 sample, they also report a significantly longer time period of having been ill than their counterparts, MA 2000 $M = 14.99$ years, MA 1980 $M = 4.21$ years, and AA $M = 4.59$ years; MA 2000-MA 1980, $t (155.49) = 9.50, p < .0001$, and MA 2000-AA, $t (165.42) = 8.92, p < .0001$. The reported number of hospitalizations ($M_s = 3.02, 3.16$, and 2.98), however, did not differ for the three patient groups $F (2, 213) = 0.09, p = .92$. The patient’s gender was also not significantly different across the three samples, $\chi^2 (2) = 4.01, p = .13$, though the AA sample had the greatest proportion of men (76%) and the MA 1980 had the lowest proportion of men (57%). The observed background differences in the patients' age and the years of illness remain significant even with a Bonferroni correction ($\alpha/6 = .008$).

Chi-square analyses of the two Mexican American caregiver and patient samples revealed no differences with regard to place of birth and primary language ($ps = 0.35–0.74$). Over two thirds of both caregiver samples were born in Mexico and at least 60% reported speaking primarily Spanish. Over half of the two patient samples were born in Mexico and about 40% spoke primarily Spanish.

**Ethnic Comparisons of Global EE**

A set of chi-squares were performed to examine whether the distribution of the global measure of EE varied across samples. A significant difference was observed in the distributions of high and low EE by sample, $\chi^2 (2) = 14.63, p = .001, \Phi = .26$. The two Mexican American samples were nearly identical with regard to the proportion of high EE caregivers (MA 2000 = 36.5%, MA 1980 = 38.6%), whereas the Anglo American sample contained a much larger proportion of caregivers designated as high EE (66.7%). Follow-up chi-square tests indicated no differences between the Mexican American samples, $\chi^2 (1) = 0.06, p = .80$, and significant differences between each of the Mexican American samples and the Anglo American sample, MA 2000 $\chi^2 (1) = 13.86, p < .0001, \Phi = .28$; MA 1980 $\chi^2 (1) = 7.67, p = .006, \Phi = .28$. The observed differences remained significant with Bonferroni corrections ($\alpha/4 = .0125$).
Ethnic Comparisons of EE Indices

A series of path analysis models were estimated to test whether differences in the indices of EE can be accounted for by sample and demographic characteristics (caregiver relationship, patient age, and duration of illness). In these models the samples were coded by creating two new dummy variables with contrast coding (Keppel & Wickens, 2004). One variable compared the two MA samples and the other variable compared the MA samples combined vs. the AA sample. For each hypothesis, a model was first estimated with only the two variables that were coded to represent type of sample as predictors of the indices of EE (criticism, hostility, EOI, and warmth). Significant path coefficients for these paths indicate that the samples differ. This model was then compared with a model that contained both the primary hypothesized paths as well as the three demographic characteristics (nonparental or parental caregiver, patient’s age, years ill). These models were compared using a chi-square difference test. There was evidence to support the statistical assumptions underlying path analysis (Ullman, 2007). Twelve cases contained missing data. There was evidence that these data were missing at random and therefore missing data were estimated using ML techniques in EQS (Bentler, 2007). The models were estimated with ML estimation and evaluated for fit using the chi-square test statistic as well as with the confirmatory fit index (CFI).

A path analysis model was estimated that predicted criticism, hostility, EOI, and warmth from the three samples of MA 1980, MA 2000, and AA. This grouping variable was divided into two predictors: MA 1980 vs. MA 2000, and MA samples combined vs. AA. There was evidence that the model fit the data, $\chi^2 (N = 225, 13) = 21.67, \ p = .06$, $\text{CFI} = .98$. MA 1980 was higher in warmth than MA 2000. There was no difference between the MA groups in terms of criticism, hostility, or EOI. The combined MA samples were less critical, less hostile, and had greater EOI and greater warmth than the AA sample (see Table 3 for the means of the EE indices).

A second model was tested that predicted criticism, hostility, EOI, and warmth from type of sample (MA 1980, MA 2000, AA) and added three additional prediction paths from relationship of caregiver to patient (nonparental or parental), patient’s age, and number of years the patient was ill. The model did not significantly improve with the addition of these variables, $\chi^2_{\text{difference}} (N = 225, 12) = 18.90, \ p > .05$. This model also fit the data well, $\chi^2 (N = 225, 1) = 2.77, \ p = .09$, $\text{CFI} = .99$.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Expressed Emotion Indices by Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>MA 2000</strong></td>
</tr>
<tr>
<td></td>
<td><strong>$N = 126$</strong></td>
</tr>
<tr>
<td>EE Index</td>
<td><strong>$M$</strong></td>
</tr>
<tr>
<td>Criticism</td>
<td>3.10</td>
</tr>
<tr>
<td>EOI</td>
<td>2.29</td>
</tr>
<tr>
<td>Warmth</td>
<td>2.78</td>
</tr>
</tbody>
</table>

*Note.* MA = Mexican Americans; AA = Anglo Americans; EE = Expressed Emotion; EOI = emotional over-involvement.

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After the inclusion of relationship of caregiver to patient (nonparent or parent), patient’s age, and number of years the patient was ill, the MA 1980 group was still higher in warmth than MA 2000 and there continued to be no difference between the MA groups in terms of criticism, hostility, or EOI. MAs continued to be less critical, less hostile, and had greater EOI and greater warmth than the AA sample. The relationship of the caregiver to the patient predicted differences in the outcome variables. Relative to parental caregivers, nonparental caregivers were more critical and hostile and less emotionally over-involved and warm. Age of the patient and the number of years the patient had been ill did not predict any of the outcome variables.

A final model was estimated in which the nonsignificant paths were dropped. This model fit the data $\chi^2 (N = 225, 12) = 13.21, p = .35$, CFI = .99. Deletion of the nonsignificant paths did not significantly degrade the model, $\chi^2_{\text{difference}} (N = 225, 10) = 10.43, p > .05$. See Figure 1 for the final model for which squares represent measured variables and lines connecting the variables represent hypothesis. The arrow points to the dependent variable. Also, although residuals were estimated and all the predictors were allowed to covary, these paths are not included in the figure for ease of interpretability.

**Mexican American Families’ Acculturation Levels and EE Indices**

A second set of models was estimated to test the hypothesis that, for Mexican Americans, EE indices (criticism, hostility, EOI, and warmth) can be predicted by level of caregiver acculturation. Level of acculturation was measured by caregiver’s place of birth (United States or Mexico), caregiver’s primary language (Spanish or English), and the acculturation index. Additionally it was hypothesized that these predictive relationships would be maintained even after the inclusion of the relationship of the caregiver to the patient (nonparent or parent), age of the patient, and number of years the patient had been ill. The acculturation data were not normally distributed, Yuan, Lambert, and Fouladi’s (2004) normalized coefficient $= 6.46,$
p < .001. Therefore, these models were estimated with Yuan-Bentler Scaled Chi-Square. The first model included only the three acculturation predictors. This model fit the data, Yuan-Bentler, $\chi^2 (N = 127, 14) = 22.34, p = .07$, CFI = .97. The set of acculturation predictors explained 4.8% of the variance in criticism. Lower acculturation as measured by the acculturation index predicted less criticism, unstandardized coefficient for acculturation = .97, $p < .05$. Birthplace and language were not significant predictors of the EE components.

A second model was tested that added regression paths predicting the EE components from the acculturation indicators as well as the caregiver and patient characteristics (relationship of the caregiver to the patient, age of the patient, and number of years the patient had been ill). This model also fit the data well, Yuan-Bentler, $\chi^2 (N = 127, 2) = 8.82, p = .01$, CFI = .98. This model was not a significant improvement over the model without the family/patient characteristics perhaps due to the significant correlation, $r(125) = .23, p < .05$, between familial status of caregiver (nonparental vs. parental caregiver) and the acculturation index. When both are included as predictors, acculturation no longer predicts criticism. Within the context of this model parental caregivers have more EOI and more warmth (unstandardized coefficient for EOI = −.58, $p < .05$, unstandardized coefficient for warmth = −.63, $p < .05$). The patient characteristics of age and illness duration proved not to be significant predictors of the expressed emotion indices.

**Ethnicity and High EE Profiles**

The prior analyses examined the predictors and distribution of EE and its indices across all caregivers regardless of EE designation. To examine whether high EE (excluding low EE) manifested itself differently for the two ethnic groups, we tested for ethnic differences in the distribution of the three high EE profiles (a) high criticism, hostility, or both (CH), (b) high EOI, and (c) mixed (high in criticism or hostility and high in EOI). We included criticism and hostility within the same group because they are highly correlated ($r = .51$ in our sample). We combined the two Mexican American samples as the prior analyses identified no significant within-group differences in the

![Figure 2. High Expressed Emotion Profiles by Ethnicity.](image)

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three main EE indices. The 2 (ethnicity) × 3 (profile types) chi-square analysis was significant, \( \chi^2 (2) = 11.37, p = .003, \Phi = .34 \). An examination of the distribution of high EE profiles (see Figure 2) shows that there are clear ethnic differences in the high EE profiles of criticism/hostility (MAs = 44%; AAs = 72%) and EOI (MAs = 40%; AAs = 8%), but no ethnic differences for the mixed subtype (MAs = 16%; AAs = 19%). The two high EE profiles are evenly distributed among Mexican American caregivers whereas the high EE-criticism/hostility profile is dominant among Anglo American caregivers.

DISCUSSION

We found considerable similarity in the distribution of EE and its indices across the two Mexican American samples. The percentage of high EE caregivers was nearly identical for the earlier sample and the contemporary sample (38.6% and 36.5%). We also found no Mexican American group differences in the specific indices of criticism, hostility, EOI, but did find differences in warmth. The MA 1980 sample was rated significantly higher in warmth than the MA 2000 sample. Other than the warmth difference, the overall similarity is remarkable when considering the significant differences between both samples: (a) independent teams of Camberwell Family Interview interviewers and coders, (b) the patient sample was recruited from inpatient facilities for the earlier study and outpatient clinics for the contemporary study, (c) the patients differed in the number of years they had been ill, and (c) over 20 years had lapsed between the data collection for the two studies. Replicating the previous pattern of findings points out the robust nature of how EE is manifested for these Mexican American caregivers. Given that both groups of caregivers were largely Spanish-speaking immigrants this pattern of EE likely reflects the groups’ similar local social worlds (Kleinman, 1995) of leaving one’s home community and adapting to a foreign home. Family connections are invaluable in surviving in a new and sometimes hostile environment. Note that we are not arguing that the EE pattern reflects something about a presumed monolithic Mexican American culture.

In addition to the considerable similarity of EE for the two Mexican American samples, we observed ethnic differences between the Mexican American and Anglo American samples on each of the EE indices. The two Mexican American samples expressed a significantly lower number of critical comments, less hostility, more EOI, and more warmth than did the Anglo American sample. This is very much in line with Jenkins et al.’s (1986) observations that Mexican American caregivers tend not to view their ill relatives in a judgmental manner but rather express considerable empathy for their condition, as suggested by greater references to feeling sad (see also Weisman, Lopez, Karno, & Jenkins, 1993). These findings are also consistent with other findings that Mexican American family caregivers are more involved in the lives of their ill relatives than Anglo American family caregivers (Ramírez García et al., 2004; Snowden, 2007).

In addition, an examination of only the high EE caregiver profiles reflects significant ethnic differences. What is most striking is that among Anglo American caregivers nearly three-fourths (72%) were high EE due to criticism and hostility and only 8% were high EE due to EOI. This is consistent with earlier studies in which criticism/hostility has been the dominant mode of EE (e.g., Brown et al., 1972). Among Mexican Americans, however, the high EE profile is more evenly distributed among the criti-

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cism/hostility (44%) and EOI (40%) dimensions. Although the predominance of the criticism/hostility profile for Anglo Americans is most striking, the significant percentage of high emotionally over-involved Mexican American families is a novel finding.

Similar to previous research, the identification of cross-ethnic differences suggests that culture plays an important role in the expression of these family attitudes and emotional reactions. Our study extends this research in important ways. First, it helps to rule out rival methodological explanations. One such explanation is that the previously observed MA 1980–AA differences in global EE and criticism is a function of methodological differences between the two studies, particularly in the administration and coding of the Camberwell Family Interview. Changes in the administration and coding of the semi-structured interview can go undetected from one study to the next, especially if the interviews are carried out in a language other than English. The fact that we found similar ethnic differences for both the global EE index and the four specific indices across two largely independent research teams argues against the rival hypothesis of administration and coding differences. A second alternative hypothesis is that the earlier ethnic difference reflects something about the time period under study, such as mental health services received by the two ethnic groups. Observing the same ethnic differences when using a sample obtained in the 1980s and a sample obtained in the 2000s suggests that the findings are independent of the time period under study. Our findings also rule out key sample characteristics as plausible explanations for the ethnic differences, specifically the parental status of caregivers, the patient’s age, and their years of illness.

In addition to ruling out competing methodological explanations, we also assessed the relationship between proxy cultural measures (acculturation) and the EE indices among the Mexican American 2000 sample. We found additional evidence for the cultural nature of criticism. Specifically, caregivers’ lower acculturation level, as measured by an acculturation index, was associated with less critical comments. This is consistent with the observed ethnic difference of less critical comments among Mexican Americans than Anglo Americans. However, in the context of other caregiver and patient characteristics such as the caregiver’s relationship to the ill relative (nonparent vs. parent), age of patient, and length of illness, acculturation was no longer associated with criticism. The caregiver’s parental status appears to account for the acculturation-criticism association as nonparental caregivers were more acculturated and more critical than parental caregivers. It should be noted that the acculturation measure predicted only criticism, not any of the other EE indices. Moreover, neither of the other two proxy measures of culture, the caregiver’s place of birth and preferred language, predicted components of EE. Overall, the within-group proxy measures of culture tended not to be significant predictors of the EE indices.

**Implications**

Our findings add to the growing support of the cultural nature of EE (Bhugra & McKenzie, 2003). The results are also consistent with prior research that highlighted important cultural differences regarding criticism (Jenkins, 1991). In addition, the current findings of ethnic differences in the degree of warmth complement past research that found family warmth predicted relapse for Mexican Americans with schizophrenia (López et al., 2004). In that study we did not examine ethnic group
differences in the EE indices. The consistent ethnic difference regarding EOI is probably the most significant finding. Both sets of findings using EOI as a continuous measure and as a profile of high EE indicate that EOI is a more salient indicator of EE for Mexican Americans than Anglo Americans. These findings suggest that greater attention be given to the study of EOI, at least among primarily immigrant Mexican Americans and other groups that promote high involvement with ill relatives.

The robust ethnic differences support cultural explanations of such differences. Nevertheless, questions regarding the meaning of the measures are still likely to be raised. Some may even argue that the observed ethnic differences call for adjustments to be made in the rating of Mexican Americans and other ethnic or national groups in which findings deviate from those of the seminal studies. From our view, the observation of group differences in global EE or in the specific indices tells us little about the meaning of EE and whether adjustments in the measures are needed. The relationship of the indices to relapse is much more telling about the meaning of EE. Until further evidence is provided that a given index is not related to the course of illness, we think it is best not to adjust such ratings. However, if adjustments are made it would be wise to document specifically how such modifications were carried out and to test whether the culturally adjusted EE domain measures have incremental predictive validity compared with the unadjusted measure.

A final implication concerns family treatment. The current evidence-based family interventions largely emphasize reduction in family negativity through psychoeducation, problem solving, communication training, or some combination of these components (e.g., McFarlane, 2002). Our current and previous research suggests that greater attention be given to EOI in family interventions. Not only is EOI high among Mexican Americans as demonstrated here but in a previous analysis of the MA 1980 sample, we found a curvilinear relationship between EOI and relapse. When compared with existing levels of relapse across EE studies, a moderate degree of involvement is associated with less relapse whereas a high degree of involvement is associated with more relapse (Breitborde, López, Wickens, Jenkins, & Karno, 2007). In addition, recent behavioral interaction studies shed light on the important role of EOI. Kopelowicz et al. (2006) found that porous boundaries and enmeshed family involvement between caregivers and their ill relatives predicted a greater risk for relapse. Furthermore, Dorian et al. (2008) found that Mexican American caregivers who engaged in problem solving with ill relatives from a balanced vantage point (neither withdrawing nor overtly blaming) had lower levels of EOI. Taken together these findings suggest that a caregiving approach that manages close ties without becoming overly involved deserves close attention in family interventions with largely immigrant Mexican American caregivers and other caregivers with close family ties.

Limitations

Although the results advance the view that EE and its indices are influenced by cultural processes, there are weaknesses in this interpretation. First of all, there may be differences between the groups in variables not accounted for in our analyses that may largely or partly account for ethnic differences in EE and its indices. For example, the Mexican origin participants were from the lower socioeconomic strata whereas the Anglo American sample included participants from both middle and lower socioeconomic backgrounds. The lack of comparable measures across the three main samples
limited our ability to examine the role of socioeconomic status. Another consideration is not having a contemporary sample of Anglo Americans. Consistent findings of the earlier Anglo American sample with a more contemporary sample would have strengthened the cultural interpretations.

Another limitation is the use of the proxy measures of culture. The acculturation index was based largely on language use, which overlapped with the dichotomous variable of primary language. Both of these measures, along with birthplace, are at best distal measures of culture. Future research that examines the local social worlds of caregivers and their ill relatives will advance our understanding of culture and EE beyond the distal indicators of acculturation.

CONCLUSIONS

Our findings add to the growing support for the role of culture in the manifestation of EE. Our consideration of within ethnic group comparisons across time and between ethnic group comparisons together point out the relative stability of cultural variations in EE among Mexican Americans who are primarily immigrants. Steps to test culture and to rule out alternative hypotheses will serve to strengthen the empirical base of the study of culture, EE, and the course of schizophrenia.

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