Migration and Mental Health: An Empirical Test of Depression Risk Factors Among Immigrant Mexican Women¹

William A. Vega University of Miami

Bohdan Kolody and Juan Ramon Valle San Diego State University

> Empirical research in the field of migration and mental health is rare and its recent appearance follows decades of inconsistent reports in the research literature about the risks posed by numerous precipitating and predisposing factors. This article has two goals: to summarize critically selected issues and methodological problems regarding mental health implications of migration-adaptation, and, to test empirically hypotheses derived from the Fabrega Migration Adaptation Model to determine whether they have predictive value for depressive symptomatology in a cross sectional sample of immigrant Mexican women in San Diego County. Findings from bivariate analyses indicate most Model factors were significantly related to depressive symptoms. Multivariate analyses identified demographic factors (educationincome), perceived economic opportunity, perceived distance between the two centers involved in the migration, and loss of interpersonal ties in Mexico as the most parsimonious subset of depression predictors within the Model. Implications are discussed.

This research explores the relationship of factors associated with the migration-adaptation process among Mexican immigrant women with specific attention to their individual and combined effects on depression. The factors included in our analytical model are taken directly from the seminal work of Horatio Fabrega (1969), and his articulation of features affecting behavioral responses to migration.

It has been conjectured (Presidents Commission on Mental Health 1978) that many of the objective features associated with Mexican migration to the United States would predispose toward poor mental health. The rupture of

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emotional support systems and arduous life circumstances in the United States are seen as "risk factors" for psychopathology. However, these risk factors have never been empirically evaluated. Therefore, the wider migration-mental health research literature is used to identify issues salient to this research. Briefly, we are concerned with how depression is associated with four factors that impinge universally on the migration experience and which are encompassed by the Fabrega Migration Model. These include: 1) those factors attributable to leaving a country of origin; 2) those factors attributable to the difficulties of passage; 3) those factors attributable to the adaptation process in the host (or receiving) society, and; 4) those factors attributable to expectations of social and economic attainment resulting from migration.

As Fabrega observes (1969), there are many problems of classification as well as conceptual ambiguity in this arena. For example, the longstanding failure to use common definitions for broad substantive areas of research such as migration has diminished the comparability of these studies. Moreover, theory and methods covering migration research derive from quite different disciplinary approaches. Furthermore, identifying a model of migration stress that has predictive value for psychopathology has not ocurred, hence, there is a lack of common agreement as to what it is about the migration process that is really stressful. Therefore, much of the literature rests on anecdotal information or clinical reports. Perhaps the most notable contribution to empirical research is the recent work on Southeast Asian refugees (*See*, Rumbaut, 1985, for a good review of this research).

DIFFERENTIAL RATES OF PSYCHOPATHOLOGY AMONG MIGRANTS

Scholars from various nations studying the question of differential rates for mental illness among natives compared to migrants have come to quite different conclusions. For example, starting with Odegaarde's classic study (1945), we find indications that migrants were more likely than natives of Oslo, Norway, to require psychiatric treatment, while on the other hand, migrants had lower rates than natives in rural areas of Norway. Similarly, such reports vary widely across nations (Murphy, 1965). Aviram and Levav (1975), in summarizing Israeli community studies, conclude that there is "a higher prevalence rate of emotional disorder among immigrants than among other native born" (p. 306). However, previous studies (Murphy, 1965) of hospital admissions in that country were more equivocal. Murphy (1965) notes that, whereas the United States reports higher hospitalization rates for immigrants, Canadian admissions for immigrants were lower than for natives.

Specific to Mexican migrants, there is no evidence that they are at greater risk for psychiatric disorders than native born Mexican Americans. In a



recent epidemiological survey (Burnam, et al., 1987) conducted in Los Angeles, California, native born Mexican Americans were found to have higher rates for most major psychiatric disorders when compared with Mexican immigrants residing in the same residential areas. Other studies have also failed to find that either migrant status (Vega, et al., 1984) or minimal acculturation (Burnam, et al., 1987) were related to higher rates of depression when the data are controlled for socioeconomic status. It would appear, then, that epidemiological evidence from recent community studies would not support a view that Mexican migrants are necessarily at higher risk for psychiatric symptoms and disorders.

Since data from these and many other studies (Burvill, 1984) are not strictly comparable on methodological grounds, and were collected during quite different periods of time, few summary conclusions can be drawn from this body of information (Malzberg and Lee, 1956). In fact, opposite conclusions could be reached as a result of methodological artifact or measurement criteria (hospital admission versus community prevalence rates, methods of diagnostic classification, use of standardized versus unstandardized rates, *etc.*). Moreover, the specific migrant-ethnic groups being compared could also experience different morbidity. Therefore, one implication from the epidemiological literature is that we must carefully investigate intragroup factors in the relationship between migration experiences and mental illness.

THE MIGRANT EXPERIENCE AND POSSIBLE STRESSORS

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The popular and scientific literatures have often portrayed the sacrifices and hardships of migrants. The migration-adaptation process covers four natural domains, and each could be considered an integral component for conceptualization and measurement. First, the disruption of family and other supportive ties and the break with a familiar sociocultural system. Second, the circumstances surrounding the decision to migrate and the passage itself, which may be quite variable in terms of time, distance, and hardship. Third, the reestablishment of social roles in the receiving environment, including supportive relationships and economic viability. Fourth, the satisfaction with economic and social conditions encountered in the receiving society. Each domain of life change involves "intrapsychic and interpersonal elements" (Brody, 1969, p.21).

Factors in Country of Origin

The decision to leave a familiar cultural setting implies a series of interpersonal contingencies. There may be a severing of ties with family and friends, which may provoke feelings of fear, loss and apprehension. As

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noted by Shuval (1982), these feelings may be mediated, in the case of immigrants, by the degree of freedom of exit from the sending society, and the policies concerning admissions at the point of destination. In certain circumstances, as in the case of Jewish emigrants leaving the Soviet Union, the separation could represent a long or even permanent break (Shuval, 1982), and gaining permission to leave could place the individual and his or her family at peril. Mexican migrants are more likely to be confronted with the difficulty of entry into the United States without documentation, which also restrains visiting their families once they leave Mexico. Frequently, friends and family pool scarce resources to support lengthy journeys and clandestine border crossings, which often include the necessity of substantial cash "payoffs" to Mexican police and smugglers.

Factors Related to Migratory Passage

The migratory passage can vary from being relatively uneventful to a traumatic life experience (Rumbaut, 1985). Much of this difference depends on the affluence and other resources of the migrant, the time required to complete the migration, the extent of physical jeopardy involved, and the legal status of the individual. For example, for impoverished Mexican illegal aliens entering the United States, the passage can be filled with physical dangers that include gross deprivation, rape and murder, or it can be relatively simple and uneventful (Vega, Hough, and Miranda, 1985). Some migrants experience what Melander (1986) calls a "legal vacuum in which it is possible for states to shift the responsibility for asylum to another state, thereby creating 'refugees-in-orbit' – refugees without a country of asylum" (p. 221).

Obviously, the possibility or actual occurrence of traumatic life events could have serious psychiatric repercussions. However, Mezey (1960) in reviewing cases of hospitalized Hungarian refugees at Maudsley Hospital in London, concluded that immigration stress was most clearly implicated in cases of affective disorders, and preexisting conditions were likely etiologic factors in other types of psychiatric disorders.

Adaptation Factors

Arrival in the host society imposes several basic requirements, which, if not met expeditiously, can become serious stressors. The need to find shelter and employment, or some other method of economic sustenance is primary. The cost of residential instability is also seen in the absence of personal support that could assist in the transition and provide linkage to resources and possible employment opportunities. Residential instability and migration have been linked to mental illness (Tietze, Lemkau and Cooper, 1942; Kantor, 1965). Since so many Mexican migrants have family members in the



United States, these extended family networks act as a resource base that facilitates reestablishing normal social roles and emotional support (Vega, Hough, and Romero, 1983). However, for migrants who lack such supportive ties, their absence could have a direct effect on mental health status. As discussed by Shannon and Morgan (1966), an important research issue is the identification of individual characteristics and group identities, both of which may be subject to social definitions, that determine the levels of economic and social "absorption" into a new society. Moreover, these characteristics may well be linked to social disorganization and personal pathology when the ghetto functions to contain ethnic groups, thereby institutionalizing inferior life chances. Mexican migrants are often segregated, destitute, minimally educated, and are often seeking employment under marginal circumstances, such as entry into the United States without documentation appropriate for gaining employment, that render them highly exploitable. This description would accurately characterize a large proportion of our study sample.

Frustrated Expectations as a Stress Factor

The fact that so many migrants have traditionally left their homeland in the hope of realizing a higher standard of material well being elsewhere has led some students of migration and mental health to the belief that unfilled expectations might be a stressor linked to negative mental health outcomes. Perhaps the most important theoretical model was postulated by Robert Merton (1957). Briefly, he stated that social structures precipitate deviant behavior and personal pathologies when culturally valued goals of material success are universally propagated but where the institutional means of attaining these success goals are markedly reduced or completely unavailable for many people. For those whose ambitions are frustrated, personal pathology ("retreatism") is one possible outcome.

Since migrants are often blocked by lack of necessary resources or *de facto* barriers from attaining goals, they may be more likely than natives to have unfulfilled aspirations resulting in stressful outcomes such as mental illness. On the other hand, Parker, Kleiner and Needelman (1969) suggest that immigrants have a lower degree of goal striving success than natives, so the effect on stress-mental health relationships could be negligible. Ultimately, it may be neither the structure of opportunity nor level of goal striving which is primary but, rather, the subjective evaluation of the individual migrant about their material well being and quality of life in a new land.

METHODS

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Selection and Operationalization of Hypotheses

The Fabrega Migration Model was selected for this research because it is succinct and organizes the substantive research found in literature. Our

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research hypotheses are taken directly from the Migration Features designated by Fabrega (1969) as affecting behavioral adaptation. These Features are listed below with a summary of outcomes anticipated on the basis of our literature review.

1. Sociodemographic Features of Individuals Undertaking the Change: It is well established in the mental health literature that certain demographic factors (especially low education, low income, unemployment and disrupted marital status) are positively related to mental illness (Dohrenwend, 1975). Additionally, we will also test the variable "time in country" and hypothesize that recent migration will be related to depression.

2. Reasons for the Migration (Voluntary or Imposed):

It is anticipated that involuntary migration will be associated with depression.

3. Extent of Preparation and Anticipation Preceding Change: Inadequate preparation and unexpected migration should have a direct effect on depression.

4. Occupational and/or Economic Opportunities in Recipient Nation: Poor occupational and economic opportunity should be associated with depression.

5. Cultural Characteristics of Both Nations or Units Involved in the Migrations and Compatibility Between These Characteristics:

Minimal compatibility across cultures should be linked to depression.

6. Does the Individual Have Relatives or Friends in the New Environment? Having inadequate interpersonal support in the new environment should indicate depression.

7. Is There Motivation to Achieve Assimilation?

Disinterest in achieving assimilation should be associated with depression.

8. Geographic Distance Between the Two Centers Involved in the Migration: The greater the distance or difficulty of visitation the more likely the manifestation of depressive mood.

9. Number and Type of Relatives Left Behind and Nature of the Relationship that the Individual has to These Relatives:

The higher number and quality of interpersonal ties that are severed in country of origin, the greater the possibility of depression.

Table 1 allows a comparison of Model features with the survey items with response categories actually used to test the features as hypothetical predictors of depressive symptoms. Two items were used to test hypotheses 4,6,8, and 9. To our knowledge, the Fabrega Model has never been empirically evaluated and, indeed, in its original format it would be difficult to operationalize in a cross sectional community study. Therefore, we have proceeded with certain modifications to facilitate empirical testing. First, we have operationalized the features from the Model so that they reflect the self-report, or subjective,



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(N=661)
Depression
with
Indicators
and
Hypotheses
Model
Migration

Hypotheses/Indicators	(1) Anova Categories	(2) Category Percent	(3) CES-D X Anova p*	(4) r(x: ces-d) P*	(5) Standard Slope	Partial (6)	
 Sociodemographic Characteristics Annual family income (0 to 23, 999: in 12 categories of eoual width). 	\$ 0- 7909	27.3	13.7°	.,180	-150	-,15°	In
-	8000-11999	26.2	11.3		(16)°		TE
	12000-15999	25.4	1.11				RNA
	16000-23999	21.1	7.3				.T10
b. Years education completed (continuous)	0-3	24.8	12.20	-,13°	09°	-,092	NAL
	4 - 6	46.5	12.1		(10)*		M
	7 - 11	21.8	8.2				IGR
	12+	6.8	8.5				АТИ
c. Years in U.S. (continuous)	1-7	17.0	13.82	-,10°	10*	(03)	on f
	8 - 15	42.6	10.6		+(80,-)		ČEV
	16 - 20	22.4	11.2				TEW
	21+	18.0	9.4				P)
d. Marital status (0, 1 coding)	Married	70.6	10.6	-,065	REF	I	
	Div. Sep. Wid.	22.7	11.6	.03	01		
	Never Mar.	6.7	13.8	\$20.	:03		
e. Age (continous)	35 - 39	30.3	10.0	.04	90.		
	40 - 44	32.7	11.6				
	45 - 50	37.0	11.4				
f. Employed (full or part time = 1, else = 0)	yes	29.0	10.3	H0**	-,02	ŝ	

Hypotheses/Indicators	(1) Anova Categories	(2) Category Percent	(3) CES-D X Anova p*	(4) r(x: ces-d) p*	(5) Standard Slope	(6) Partial e p*
Reasons for Migration (voluntary or imposed)	:					
Q. Did you move from Mexico because you wanted to or because you felt you had to?	Wanted to	45.7	10.3	067	06	
R. (1) I wanted to (0) I had to	Had to	54.3	11.6			
Extent of Preparation and Anticipation Preceding Change:						
Q. Was your move to the U.S.?						
R. (1) carefully planned(2) somewhat planned	Planned	34.6	10.6	.02	.02	
(3) poorly planned (4) not planned at all	Unplanned	65.4	11.3			
. Occupational and/or Economic Opportunities in Recipient Nation:						
A. Q. What king of opportunity have you and your family had to succeed in the U.S.?	Fair	76.7	10.2°	130	.101	083
R. (1) fair (2) not very fair (3) very unfair	Not fair	23.3	13.8			
3. Q. If I had it to do over again I would stay in Mexico	Agree, DK	25.3	13.11	.092	077	
 R. (5) strongly agree (4) agree (3) DK (2) disagree (1) strongly disagree 	Disagree	74.7	10.4			

 TABLE 1 (Continued)

Migration Model Hypotheses and Indicators with Depression (N=661)

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520 (9) 1 (5) Standard Partial Slope p. -.076 Migration Model Hypotheses and Indicators with Depression (N=661) (4) r(x: ces-d) 160 °. (3) CES-D X Anova p* TABLE 1 (Continued) (2) Category Percent (1) Anova Categories 5. Cultural Characteristics of Both Nations or Units in the Migrations and Compatibility Q. I feel that the Mexican and American Between these Characteristics: Hypotheses/Indicators

-8 90 8 18 1017 18 11.65 12.75 10.85 11.71 9.6 13.7 10.5 73.2 77.2 22.8 90.6 25.3 74.7 5 Disagree, DK Disagree, DK Agree Agree Yes No Yes No 7. Is There Motivation to Achieve Assimilation²: 6. Does the Individual have Relatives or Friends Q. Would you like to have more relatives Q. Would like to have more friends in this Q. I prefer learning American customs to R. (5) strongly agree (4) agree (3) DK (2) disagree (1) strongly disagree R. (5) strongly agree (4) agree (3) DK (2) disagree (1) strongly disagree cultures are compatible in New Environment: in this country? R. (1) yes (0) no (1) yes (0) no Mexican ones: country? Ň n

INTERNATIONAL MIGRATION REVIEW

Hypotheses/Indicators		(1) Anova Categories	(2) Category Percent	(3) CES-D X Anova p*	(4) r(x: ces-d) p•	(5) Standard Partial Slope p•						
8. Geogra Involv	raphic Distance Between 2 Centers ved in Migration:											
A. Q.	Do you feel a great distance between your present home and your original place of residence in Mexico? (1) yes (2) no	Yes No	34.9 65.1	13.8° 9.5	19°	.13°	12°					
3. Q.	How difficult is it to visit friends and relatives in Mexico?	Impossible	8.7	17.7°	20°	13°	.12°					
R.	(1) impossible (2) difficult (3) easy	Difficult Easy	50.6 40.7	11.8 8.9								
). Numb Left B Relati	per and Types of Relatives and Friends Behind and the Nature of the ionship to these Relatives:											
4. Q.	Comparing your relatives in Mexico and the U.S., do you feel closer to your relatives in?	Mexico	33.0	11.6	.04	01						
R.	. (1) Mexico (2) in both countries, no difference (3) United States	No Difference U.S.	25.0 42.0	10.6 10.8								
3. Q.	Comparing your friends in Mexico and the U.S., do you feel closer to friends in?	Mexico	19.2	12.3	092	085	084					
R.	. (1) Mexico (2) in both countries, no difference (3) United States	No Difference U.S.	23.2 57.6	11.4 10.1								

TABLE 1 (Continued)Migration Model Hypotheses and Indicators with Depression (N=661)

Probability Superscript: 0 = p c.001, 1: c.01, 2: c.02 Code: 3: c.03. .ptc. 9 = p c.09 521

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assessment of the respondent. In other words, we have solicited the perceptions of our respondents about each Model feature, (and no external "objective" (or behavioral) indicator is available for comparison). Second, we have measured primarily those features included in the first half of the Model ("Migration") because we found it difficult to operationalize "Acculturation" features which were predominantly structural in nature, multidimensional, and too abstract for transforming into simple or parsimonious questions of opinion. In some cases, we had to take liberties with interpretations of Model features to make them comprehensible to respondents, and for these reasons, we do not consider this a literal test of the Model, but rather an exploration of factors consistent with it and the social psychiatric literature from which it derives.

Description of Sample

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The data for this research were gathered as part of a community-based study of low income Mexican American women in San Diego County, California. The parent study is a randomized trial which is testing the efficacy of natural-network and social support interventions in preventing onset of depressive symptoms in this population (Vega, et al., 1987). Only Mexicandescent women between 35 and 50 years of age were eligible for the project. The first stage of enumeration required screening 40,000 residences within all block groups in the County with a density higher than 20 percent Mexican descent in the 1980 U.S. Census. The characteristics of the sample derived from the enumeration, and the patterns of depressive symptoms found, are reported elsewhere in the literature (Vega, et al., 1986). Briefly, however, about 92.5 percent of the sample were immigrant women, and of these, approximately 41 percent met case criteria for depression using the Center for Epidemiological Studies - Depression (CES-D) measure (Radloff, 1977). The usual case rate found in general U.S. populations varies from 16 to 18 percent; therefore, this is obviously a cohort of women at high risk for depression. The data for the present analysis are taken from the baseline interview collected in 1986, which followed the enumeration phase and was used to evaluate thoroughly the sample before randomization into experimental and control groups.

To evaluate the effects of the model variables on depressive symptoms, we limit these analyses to those women who immigrated to the United States as adults (age 18 or older). This restriction was judged to be necessitated by inclusion of model variables pertaining to conditions and motivations which could not be appropriately addressed to individuals who migrated as children. Among the 785 women in this phase of the parent study, 84.2 percent qualified for these analyses by virtue of having immigrated at age 18 or older, while 8.3 percent migrated at an age younger than 18. Parenthetically, an additional 7.5 percent were born in the U.S. and were excluded for this

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reason. These three subgroups show strikingly similar depression means of 11.04, 11.32, and 11.25, respectively.

Measure of Depression

The CES-D is a widely used measure in U.S. health research and was used, for example, to assess levels of depressive symptoms among major hispanic ethnic groups in the National Hispanic Health and Nutrition Examination Survey which included 7,462 Mexican Americans, 2,846 Puerto Ricans, and 1,364 Cuban Americans. The CES-D is a 20-item inventory which includes a range of symptoms covering mood, feelings, and perceptions-including vegetative motor indicators associated with depression, and measures the duration and severity of symptoms within the last week. The scoring range is 0-60, with higher scores indicating greater symptomatology. The CES-D is a non-diagnostic screening measure which has been validated with patient populations and has a concordance of approximately 85 percent for current major depression using a well known diagnostic protocol – the Diagnostic Interview Schedule (Hough, 1983).

RESULTS

To evaluate the effects of the Migration Model variables on depressive symptoms, as measured by the CES-D, both bivariate and multivariate analyses are used. The first analyses are simple one-way analysis-of-variance of symptoms against the indicator(s) for each hypothesis. Continuous and multi-category variables are collapsed as under Column 1 in Table 1 for only these ANOVA analyses. Percentage of respondents in each category is reported under Column 2 and symptom means followed by the ANOVA F-ratio probability coded superscript (p < .001 = 0; < .01 = 1; < .02 = 2, < .03 = 3; *etc.*) are reported under Column 3. Bivariate correlation coefficients between symptoms and each variable are reported with probability values for the P=0 test under Column 4. The full bivariate correlation matrix for all model variables appears in Appendix 1. These correlations and subsequent regression analyses employ continuous or uncollapsed variable values as coded in item responses.

The ANOVA and bivariate correlation analysis may be interpreted as separate tests of each of the nine model hypotheses. These are followed by multiple regression analyses which test each of hypotheses 2 through 9 against the demographic variables of hypotheses 1 (H.1). In our final multivariate analyses we examine the simultaneous effects on depressive symptoms of all nine hypotheses (*i.e.*, Fabrega Migration Model variables).

Under the sociodemographic characteristics hypothesis (H.1) we find income, education, and years in the United States to be inversely associated with level of depressive symptoms. The married are lowest while the never



married have the highest symptoms. Employment status and age show virtually no association with depressive symptoms. Of the other eight hypotheses statistically non-zero associations obtain for hypotheses 4 through 9. Only a very weak negative association between symptoms and voluntary migration is found for H.2; while whether or not the migration was planned under H.3 shows no association. The indicators of H.4 suggest that perceived fairness of opportunity and satisfaction with the decision to migrate are related to lower depression as is the perception of cultural compatibility under H.5.

The desire for more friends and relatives in the U.S. (H.6), perhaps an indicator of the inadequacy of interpersonal relationships or social network, is directly related to depression. Under H.7 we see that our indicator of motivation to assimilation is inversely associated with depressive symptoms; pointing, perhaps, to a lack of success in efforts at social and cultural integration. Hypothesis 8 yields two of the strongest associations with symptoms. The perception of great distance from place of origin and the difficulty of visiting both relate to higher depression. Under H.9 it appears that those who feel closer to friends in Mexico than those in the United States have higher symptom levels. Importantly, this does not seem to be the case for relatives. In summary, all of the hypotheses other than H.3 which deals with migration planning, appear to show at least a weak zero-order association with depressive symptoms.

Interrelated concepts underly the nine Model hypotheses. Although we observed above that most of the Model variables are, in fact, associated with depression, intercorrelations among the variables may be such that a more parsimonious rendering of the Model would be appropriate. Toward this end, we used multiple regression analysis beginning with the assumption that the most parsimonious configuration to explain variation in depressive symptoms would employ only demographic variables (i.e., income, education, age, employment, and marital status). Upon regressing symptoms on these H.1 variables we found only income, education, and years in the U.S. to yield statistically significant partial slopes (Column 5, Table 1). The very low correlation between family income and education (r=.13, Appendix 1) in this subpopulation permits the use of both without substantial threat to estimate stability due to multicollinearity. Both age and employment showed virtually no zero-order effect but marital status, usually a good predictor of depressive symptoms, falls from the equation because of its correlation with income (the "married" dummy variable with income yields r=.35). As with other variables which show bivariate association but fall-out as partials, this should not be interpreted as lack of a variable's import. Instead, it means that the variable is a linear function of other independent variables and, as such, explains the same dependent variable variance.

The re-estimated partial slopes for the significant H.1 variables (income, , education, and years in the U.S.) are reported enclosed in parentheses

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under Column 5 and represent the demographic predictors equation. These three H.1 variables explain 4.6 percent of the variance in depressive symptoms (multiple R^2 =.046, adjusted for degrees of freedom). Interaction terms among these variables were tested but none was found to increment significantly explained variance. Given this parsimonious set of demographic predictors, we next test each of the remaining hypotheses individually, by adding their respective indicator(s) to the equation containing these three variables. This allows us to determine whether or not the more subjective variables of H.2 through H.9 add to the variance explained by the more simple demographic predictors of H.1. The standardized slopes of these tests are reported for each model variable under Column 5 of Table 1. A statistically significant slope may be interpreted to reflect a statistically significant increase in explained variance.

Examination of Column 5 reveals that outcomes similar to those observed in the bivariate analyses with the exception that H.2, H.6, and H.7 are no longer significant because of their correlations with the demographic variables. Specifically, an examination of Appendix 1 correlations reveals that those who do not like to have more relatives are low in education years in the United States; parenthetically, those who would like to have more friends, are also low on income. With respect to H.7, a preference for learning American customs is associated with low income and education but unrelated to years in the U.S. When cast against the demographic explanation of depressive symptoms, hypotheses 4, 5, 8, and 9, taken individually the demographic and remaining variables were performed and none were found to yield a statistically significant increment in explained variance.

To this point, we have rejected H.3 and one indicator of H.9 (A) on the basis of their failure to show a zero-order association. In the above regression analyses we demonstrated that the indicators for hypotheses 2,6 and 7 do not add to the variation in depressive symptoms which can be explained by demographic variables (H.1) in the Model. Therefore, rather than reject these hypotheses, we simply argue without a hierarchical causal analyses that they do not enhance a more parsimonious prediction of depression.

Having addressed the question of association with symptoms of H.2 through H.9 variables which could be due to their intercorrelations with demographic predictors (H.1), we now address the extent to which this could be due to their intercorrelations among each other. If, in fact, the measures of the remaining hypotheses (4, 5, 8 and 9) are measuring the same underlying concept their intercorrelations would be such that most fall out of a multiple regression. Our final test, therefore, introduces all of the model variables simultaneously. The resultant partial slopes are reported under Column 6. Remaining as the best combination of predictors here are income and education from H.1 and indicators from H.4, H.8 and H.9. Specifically, we see that low income and education, perceptions of unfair economic opportunity, great distance from place of origin, and difficulty in visiting



and feeling closer to friends in Mexico are all related to higher levels of depressive symptoms. The variance explained in depressive symptoms by all the Model variables (*i.e.*, equation in Column 6) is 9.7 percent — half attributable to the demographic variables and half to the subjective variables. Hypothesis 5, the cultural compatibility question, falls out probably because of its correlation with H.4 dealing with opportunity. The second indicator of H.4 dealing with regret for having migrated is correlated with H.8 (A) and H.9 (A), both of which show a stronger association with depressive symptoms. Although we have achieved a not uncharacteristically modest level of explained variance in depressive symptoms, it is clear from these analyses that considerations beyond simple demographic variables enhance our ability to predict depression among immigrant Mexican women to the United States.

DISCUSSION AND CONCLUSION

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Migration is a complex process with potential mental health ramifications. In our sample of low income Mexican immigrant women, most of the hypotheses derived from the Fabrega Model are statistically significant predictors of depressive symptoms. Only one hypothesis, that related to planning of migration, failed to demonstrate even a weak association with depressive symptoms. This central finding also points to the usefulness of the Fabrega theoretical framework for guiding empirical research. Although this study is certainly exploratory, with so little empirical verification about conjectured mental health effects of migration factors available in the literature, the findings of this research provide supportive evidence that impressions derived from clinical reports and anthropological observations are often well founded and generalizable.

This research reinforces the impression that satisfactory adjustment of migrants is heavily dependent on resolving the interpersonal stressors associating with breaking-up social networks in the sending nation and replacing those ties in the receiving nation. For example, about threefourths of the sample would like to have more friends and relatives in the United States. However, there is evidence in our data that fewer years in the United States are related to dissatisfaction with current levels of social support. This finding complements previous research which indicates that Mexican immigrants, when compared to native born Mexican Americans, report less social support available and lower satisfaction with it (Vega and Kolody, 1985). It is also noteworthy that emotional ties to friends, in contrast to relatives, had greater importance in predicting depression.

Frustrations surrounding unfulfilled expectations about economic efficacy or the belief that unfair treatment has blocked goal attainment are also related to depressive symptoms, as is the feeling expressed by respondents that their migration was a mistake. Not unexpectedly, the low income

respondents were more likely to perceive unfair treatment. Perceiving a fundamental incompatibility between their own culture and that of the receiving nation is also related to depression and may further indicate feelings of marginality, alienation and social discrimination. This would, perhaps, explain why respondents who prefer to learn the culture in the receiving nation (the United States) in preference to Mexican culture, have higher levels of depression. These individuals may be demoralized by their inability to comprehend the new culture or to manage its language, symbols and institutions. Desires to integrate culturally in this study are related to low socioeconomic status which, in turn, has often been associated with cognitive traits such as powerlessness and low self-esteem. This finding is consistent with the widely reported tendency of immigrants to adjust more favorably in ethnic ghettos where social isolation and cultural marginality are minimized (Kuo, 1976), rather than in less ethnically dense demographic settings which relegate the migrant to the role of a perpetual "outsider". Nevertheless, it is important to note that our sample was derived from relatively homogeneous ethnic enclaves.

The demographic variables had the expected covariation with depressive symptoms. Those with lower income and education, the unmarried, and those with fewer years in the host country had the highest levels of depressive symptoms. The most unusual finding is that, although income and education are weakly correlated, they both correlate with depression. This would suggest that either the respondents: 1) are not primary wage earners (because their husbands are), 2) educational attainment has such a restricted range in this population that it creates a ceiling effect on earned income, or, 3) occupational opportunities are seriously restricted. Obviously these explanations are not mutually exclusive and are more likely to be mutually reinforcing.

Multivariate analyses were used to test the individual and combined effects of Migration Model factors. Even after adjustment for other Model variables, clear (albeit modest) statistical associations were found between depressive symptoms and: 1) income and ecducation; 2) perceived economic opportunity; 3) perceived distance between centers involved in the migration, and 4) loss of emotional support in country of origin. Although explained variance was generally low for each variable, the fact that they were not significantly intercorrelated indicates that each is making an independent contribution to depressive symptoms in this sample. We hasten to reiterate that other Model variables are not necessarily diminished in their salience simply because they "fall out" of regression analyses, since their elimination in many cases was due to intercorrelations with other model predictors, and not to a lack of association with depressive symptoms.

Despite acknowledged limitations of a cross sectional design, we believe this research responds to the deficit of verificational studies in the mi-

gration-mental health literature. Nevertheless, our interpretation of findings is necessarily cautious since there is a theoretical symmetry in our analyses. In other words, while the Model factors may be causing depression, it is also possible that current depressive mood is precipitating a revision in the recall or interpretation of migration-adaptation experiences. A methodological solution to this problem is difficult and requires testing predictors within prospective research designs to detect how Model variables covary with depression across time. Moreover, well defined models of stress and coping could be used to guide such research (Vega, Hough, and Miranda, 1985). In this light, our study has value as a general screening of depression indicators that could be included in future studies of migration stress and mental health.

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