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THE EMOTIONAL IMPACT OF POST-DISASTER RELOCATION

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1987

Quick Response Research Report #05

## SUMMARY AND MAJOR FINDINGS

We surveyed 116 families of the Santa Carolina housing project in Santiago, Chile, approximately 8 months after the March 3rd, 1985 Chile earthquake. Our goals were to assess the general mental health impact of the earthquake; to document post-earthquake relocation patterns; and to explore the potential relationship between relocation and mental health.

The report, partial and preliminary because it is dependent on collection of additional data, deals only with the first of these goals - assessing mental health impact. Specifically, we will discuss the preliminary findings for prevalence of major depression and post-tramatic stress disorder among residents of this housing project.

Key findings are summarized below:

1. We found that crude prevalence rates of major depression among those surveyed in Chile were about the same as depression rates for residents of Coalinga, California following the May 1983, earthquake. Both rates were 2 to 4 times higher than those of the four Epidemiological Catchment Area (ECA) study sites in the United States.

2. Crude post-earthquake prevalence rates of Post-Traumatic Stress Disorder (PTSD) were seven times as high as those found in Coalinga and about nine times as high as the lifetime PTSD rate in the Los Angeles ECA study.

3. As in the U.S., both major depression and PTSD rates exhibited sex differences with depression rates also showing age differences. However, they differed in the relative rates for different categories.

## What Is the Epidemiological Catchment Area (ECA) Study?

Since 1980, researchers in four parts of the U.S. have conducted large-scale epidemiological community studies of the prevalence of major

depressive episode without bereavement using the Diagnostic Interview
Schedule (DIS) developed with the support of the National Institute of
Mental Health.  The Epidemiological Catchment Area Study (ECA) has so far
included over 15,000 interviews.  It provides background rates against
which to compare prevalence rates found in Coalinga, and Chile.


## SPECIFIC FINDINGS

**Overall Prevalence Rates.**

   **Major Depression.**

   The crude period prevalence of major depression in our Chile sample
following the earthquake was 18.4 cases per 100 population.  This rate is
slightly higher than both the rates found in our Coalinga sample (15.4
cases per 100) and the community-wide rate (adjusted for damage level) of
17.4 per 100  (see Table 1).


## TABLE 1

### RATES OF MAJOR DEPRESSION AND PTSD
### FOR SELECTED STUDY AREAS
### (RATE PER 100)

| Site | Rate of Major Depression | Rate of PTSD |
|------|--------------------------|--------------|
| Chile | 18.4 | 19.3 |
| Coalinga (sample) | 15.4 | 2.7 |
| Coalinga (adjusted) | 17.4 | |
| New Haven ECA | 6.7 | |
| Los Angeles ECA | 6.4 | 2.2 |
| St. Louis ECA | 5.5 | |
| Baltimore ECA | 3.7 | |

## Post-Traumatic Stress Disorder.

The crude prevalence rate for postearthquake PTSD in the Chile sample is 19.3 per 100. This rate is 7.1 times as high as the post-earthquake PTSD rate (2.7 per 100) of our Coalinga sample, and 8.7 times the lifetime PTSD prevalence rate for PTSD in Los Angeles (2.2 per 100).

## Sex Specific Rates: Depression and PTSD.

Previous ECA studies of major depression have observed that major depression is more common in women than men with the sex ratio ranging from 2.0 to 3.2 (see Table 2). Our Coalinga study found a ratio of 2.5 (P value = .005). The Chile study found a ratio of 4.0. However, both the Chile and Coalinga rates, in both categories, are higher than those of the three ECA sites.

TABLE 2

SEX PREDOMINANCE OF DEPRESSION
COMPARISON OF CHILE WITH COALINGA AND ECA SITES
(RATES PER 100)

| Location | Male | Female | Sex Ratio |
|----------|------|--------|-----------|
| Chile | 5.9 | 23.8 | 4.0 |
| Coalinga | 8.0 | 21.9 | 2.7 |
| New Haven | 4.4 | 8.7 | 2.0 |
| St. Louis | 2.5 | 8.1 | 3.2 |
| Baltimore | 2.3 | 4.9 | 2.1 |

The sex-specific PTSD rate ratio for Chile is also similar to that of the Los Angeles ECA study (see Table 3), but the Chile rates are six and eight times higher than their Los Angeles counterparts.

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TABLE 3

SEX PREDOMINANCE OF PTSD
COMPARISON OF CHILE WITH LOS ANGELES ECA SITE
RATES PER 100

| Location | Male | Female | Sex Ratio |
|---|---|---|---|
| Chile | 5.9 | 25.8 | 4.2 |
| Los Angeles | 1.0 | 3.1 | 3.1 |

**Age Specific Rates: Depression**

Age is another factor associated with depression. Table 4 shows the age-specific rates of major depression in our Chile and Coalinga samples and at three ECA sites. Once again, the Chile and Coalinga rates parallel the ECA rates for each age group. However, the Chile and Coalinga rates are again many times higher.

TABLE 3

AGE COMPARISON OF RATES OF MAJOR DEPRESSION
COALINGA WITH ECA SITES
RATES PER 100

Age

| Location | 18-24 | 25-44 | 45-64 | 65+ |
|---|---|---|---|---|
| Chile | 10.0 | 11.8 | 40.7 | 12.5 |
| Coalinga | 14.2 | 20.9 | 12.5 | 15.4 |
| New Haven | 7.5 | 10.4 | 4.2 | 1.3 |
| St. Louis | 4.5 | 8.0 | 5.2 | 0.8 |
| Baltimore | 4.1 | 7.5 | 4.2 | 1.4 |

The only exceptions to the ECA patterns are the depression rates in the Chile 45-64 age group and in both the Chile and Coalinga 65 and over

age category.

## RESEARCH DESIGN

**Development of Survey Instruments.**

We used a Spanish version of the survey instruments developed for our recent study of the emotional impact of relocation following the Coalinga earthquake of 1983. These instruments were designed to assess specific characteristics of the physical setting and to document the prevalence of mental health symptoms. Diagnostic levels of destress were assessed with parts of the National Institute of Mental Health's Diagnostic Interview Schedule (DIS), a structured interview which can be administered by trained lay interviewers and which generates information to make diagnoses according to the most recent criteria of the American Psychiatric Association. In addition, we used an instrument for indicating post-traumatic stress disorder (PTSD), recently developed for NIMH by Dr. Lee Robins at Washington University in St. Louis and by Dr. Richard Hough, formerly at U.C.L.A., and presently at San Diego State University.

The use of these instruments enabled us to compare results from Chile with results from our 1983 Coalinga investigation. Since some of these instruments are currently being used in the U.S. as part of a multi-university, nationwide mental health study (the Epidemiological Catchment Area Study) of 15,000 persons, we could compare our results with this baseline data.

These instruments, translated into Spanish for use in this study, covered the following areas:

A) Demographic data.

B) Physical setting data including:

    I) characteristics of the dwelling unit at the time of the earthquake, and

    II) relocation chronology, Including type of relocation option, tenure, number of people Inhabiting each option, reason for selection, and modification of the physical setting.

C) Comparative evaluation of physical aspects of the residence at the time of the earthquake with those of the major relocation option.

D) Post-traumatic stress disorder (PTSD). Adapted from Instruments developed for NIMH by Washington University In St Louis and U.C.L.A.

E) Major depression. Adaptation of sections of the NIMH Diagnostic Interview Schedule (DIS).

F) Acute Anxiety.

G) Economic, educational and employment data.

H) Actions during earthquake.


## Supervision of Interviews

These Interviews were conducted by staff and students of the University of Chile's Institute of Housing, located In Santiago. Professor Edwin Haramoto, Director of the Institute of Housing, and Professor Reginald Budd supervised data collection.


## Sample Selection.

Here, we had two objectives. First, we wanted to select a sample which was representative of the entire Santa Carolina community In order to calculate period prevalence rates of major depression and to Infer relocation patterns on a community-wide basis. Second, we wanted to

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Investigate the mental health impact of specific relocation options.

Aware that earthquake damage was a potential major confounder, we initially selected, from the 342 Santa Carolina households, a random sample of 116 housing units by level of damage (0 = no damage, 1 = minor damage, 2 = moderate damage, 3 = major damage). We based this selection on building damage information provided by the Chile Ministry of Housing and Urban Development and confirmed by architects from the Institute of Housing.

The sample size was stratified by damage level, with the sample size proportional to the respective number of damaged housing units.

Interviews were restricted to those over 18 years old. To randomize the selection of household members, each household contact began with a set of screening questions including a procedure for selecting one respondent based on "Kish tables."

**Data Collection.**

We began interviews in Chile in October of 1985. The interviews were completed in January of 1986. In the course of data collection, individuals representing 116 Santa Carolina households were interviewed.

Students, specially trained by the project staff, conducted the interviews. An interviewer supervisor coordinated these interviewers.

Each interview took about 45 minutes to complete. To control quality, interviewers met periodically with the supervisor to review progress, turn in their completed work, and obtain new assignments. Each of the completed interviews was thoroughly edited by the supervisor, including checks on

completeness of responses, observance of correct skip patterns, and correct choice of designated respondent. It was the interviewer's responsibility to resolve any problem found at this stage.

Because of our decision to use diagnostic instruments and therefore complex probing patterns, a long training period was required for interviewers.

To maintain representativeness, we spent a considerable amount of time locating the many families who relocated after the earthquake both within and outside of Santiago.

## Data Reduction.

After the completed interviews passed editing and validation procedures, we removed identifying information (i.e., the household screener information) were removed to maintain confidentiality. Interviewers were pre-coded, and were keypunched on cards with 100% verification. Data runs were conducted with checks for invalid codes and checks for logical consistency between items. Problems identified were resolved by checking the original survey instrument booklets.

## Data Analysis.

Data analysis is now being conducted employing simple non-parametric techniques and standard general linear models, including multiple regression and analysis of variance. Data was keypunched from the pre-coded survey protocol to cards, with double punching for verification. A raw data file was generated, and analysis of data is proceeding using standard statistical packages, primarily SAS and SPSS.

The first stage of the analysis was to determine rates of major depression and post traumatic stress disorder and to compare them on the basis of demographic and other background characteristics of sampled persons.

Upon receipt of specific damage level information from Chile, a second stage analysis will compare rates of major depression and post traumatic stress disorder on the basis of damage level and major relocation alternatives.