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Differential Responses to Trauma: Migration-Related Discriminants of Post-Traumatic Stress Disorder Among Southeast Asian Refugees

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This study examined possible differentiating experiences between Post-Traumatic Stress Disorder (PTSD) and non-PTSD refugees, after matching them on certain demographic characteristics and exposure to trauma. Previous research on predictors of PTSD usually has not controlled for differences in trauma exposure between the comparison groups. By examining individuals who have had similar traumatic histories, this study more clearly identified some factors implicated in the development of PTSD among Southeast Asians. To increase comparability with previous PTSD research, all events were assessed with reference to three time frames involving premigration, migration, and postmigration periods. The role of anger reactions was also examined in view of previous findings from the veteran-based PTSD research. Finally, this study ascertained the influence of acculturation and cultural identity orientation because these variables often have been implicated in the adjustment of Asian Americans. Results from the present study indicate that respondents with PTSD appeared to experience and express much more anger and were more dependent on public assistance. They were also less engaged in maintaining their cultural traditions and ties. However, more life changes and a trend toward more separations and reunifications with family members were evidenced for those without PTSD. The implications of these findings in developing community intervention strategies for Southeast Asian refugees who have experienced trauma are discussed.

Both community and clinical studies indicate that many Southeast Asian refugees have experienced serious and prolonged trauma as a result of the mass exodus from their homelands during and following the Vietnam War (Gong-Guy, 1986; Kinzie et al., 1990; Mollica, Wyshak, & Lavelle, 1987). Traumatic experiences reported to mental health professionals by Cambodian refugees, for instance, have included forced labor, wandering in the jungle for years, witnessing execution of family members, and death of family members due to starvation, torture, or illness (Kinzie, Fredrickson, Ben, Fleck, & Karls, 1984). Other trauma commonly experienced by refugees include painful separations from spouses, children, and parents whose fate remains unknown, as well as the violence, crowding, and unsanitary conditions common in many refugee camps.

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As a result of these experiences, many Southeast Asian refugees have been at high risk for developing Post-Traumatic Stress Disorder (PTSD). In one study of 52 Southeast Asian psychiatric patients, half were given a diagnosis of PTSD (Mollica et al., 1987), where another study found that of 322 clients seen at a psychiatric clinic, 70% were diagnosed as having PTSD (Kinzie et al., 1990). In Mollica et al.'s (1987) study, patients with PTSD suffered twice as many traumatic events as did other psychiatric patients. In addition, almost every case of PTSD occurred with another diagnosis, most often major depression. Kroll et al. (1989) reported that major depression and PTSD were the two major prevalent disorders in their clinic population of 404 refugees. Last, previous studies may have underestimated the prevalence of PTSD in these clinical populations due to underreporting by patients. In the Kinzie et al. (1990) investigation, over one third (38%) of the PTSD cases were not given that diagnosis at their initial interview.

Post-Traumatic Stress Disorder first appeared as a formal diagnosable disorder in 1980 to account for the disturbances seen in many combat veterans, rape victims, and victims of natural disasters (Saigh, 1992). According to *DSM-III-R* (American Psychiatric Association, 1987) nosology, PTSD symptomatology has three core clinical features. The first feature involves intrusive reexperiencing of the trauma through repetitive thoughts and images, flashbacks, and nightmares. The second set of symptoms centers on avoidance of stimuli associated with the trauma as manifested by psychogenic amnesia, emotional numbing, and social withdrawal. The third major feature of PTSD encompasses persistent physiologic hyperarousal involving such symptoms as sleep difficulties, increased irritability and anger, hypervigilance, and exaggerated startle response.

Despite the clinical salience of PTSD among Southeast Asian refugees, it is also true that many refugees who have undergone traumatic experiences have not developed PTSD (see Gong-Guy, 1986). Among studies of Southeast Asian refugees, not one has systematically examined the conditions or variables that may serve as differentiating factors in whether or not the full PTSD syndrome occurs. This is important because the identification of these conditions could provide insight into the development of PTSD in this population, as well as promote advances in intervention programs that may better manage this chronic condition.

Research addressing experiences that differentiate PTSD from non-PTSD cases has been conducted with Vietnam veterans. Foy, Sipprelle, Rueger, and Carroll (1984) compared PTSD cases with non-PTSD cases among veterans seeking psychological services, finding that combat exposure, and to a lesser degree military adjustment, accounted for most of the variance in the severity of the disorder. Carroll, Rueger, Foy, and Donahue (1985) also noted, however, that postmilitary social functioning was an important mediating factor in the development of PTSD among veterans. Significant differentiators between PTSD-positive and PTSD-negative veterans included greater difficulty in adjusting to intimate dyadic relationships, less expressiveness and self-disclosure, and greater hostility and aggression on the part of PTSD-positive veterans. In a related vein of research, familial psychopathology has also been examined as a possible risk factor in the development of PTSD among combat veterans (Foy, Carroll, & Donahue, 1987). In Foy et al.'s 1987 study, it was found that although veterans experiencing high levels of combat exposure were significantly at risk for developing PTSD regardless of whether they had a family history of psychopathology, veterans who were exposed to low levels of combat, but who reported a family history of mental illness, were at greater risk for developing PTSD compared to those who were exposed to similar levels of combat, but who did not report psychopathology in their family.

It is unclear if the types of events and experiences found in research on Vietnam veterans contribute to PTSD reactions among Southeast Asian refugees. Previous research on predictors of PTSD has not consistently controlled for differences in trauma exposure between the comparison groups. As a result, the various differences in social and other types of functioning between PTSD and non-PTSD groups could be attributable to the former group simply experiencing more trauma than the latter group. What would appear to be more informative in the study of the concomitants of PTSD in this population would be the identification of experiences that may increase the likelihood of a PTSD reaction *once a person has experienced the trauma.*

The present study examined possible differentiating experiences between PTSD and non-PTSD refugees, after matching them on certain demographic characteristics and exposure to trauma. By examining individuals who have had similar traumatic histories, the study was better able to identify some factors associated with the development of PTSD among Southeast Asians. Furthermore, to increase comparability with previous PTSD research (see Foy, Carroll, & Donahue, 1987), all events were assessed with reference to three time frames involving premigration, migration, and postmigration periods. The role of anger reactions was also examined in view of previous findings from the veteran-based PTSD research. Finally, the investigation ascertained the influence of acculturation and cultural identity orientation because these variables often have been implicated in the adjustment of Asian Americans (e.g., Abe & Zane, 1990; Sue & Zane, 1985).

Method

Respondents

Respondents were 308 Southeast Asian adults who participated in a larger statewide mental health needs assessment of California's Southeast Asian refugee population (Gong-Guy, 1986). Data for the needs assessment were collected during 1- to 4-hour interviews with 2,773 adults of Southeast Asian background, including Hmong, Lao, Cambodian, Vietnamese, and Chinese Vietnamese. All interviews were conducted in the native language of each respondent. The specific methodology of the needs assessment project has been detailed elsewhere (Gong-Guy, 1986).

The 308 respondents selected for this study ranged in age from 19 to 76 (M = 40.33, SD = 12.00). A majority of the respondents (52.9%) were male. Most of the respondents were either Cambodian (36.0%) or Lao (34.4%), with the remaining respondents being Hmong (8.4%), Vietnamese (19.2%), or Chinese Vietnamese (2.0%). Close to two thirds of the sample (62.7%) had a 6th-grade education or less, although a sizable number of respondents (16.2%) had completed high school and/or some college. About half of the respondents (54.5%) came from cities with a population less than 20,000. Finally, the large majority of respondents (72.7%) held traditional religious beliefs, specifically Buddhism or Theravada-Buddhism.

Matching Procedures

Respondents for the present study were selected from the needs assessment based on their self-report about experiencing one or more traumatic events before leaving their home country. Furthermore, selected respondents met one of two conditions: (a) They met criteria for a diagnosis of Post-Traumatic Stress Disorder (PTSD), or (b) they were

selected as a matched control group, having experienced trauma, but not meeting the criteria for PTSD. The matching procedure was performed in order to examine what factors were associated with the development of PTSD *after* trauma exposure had occurred. The PTSD and trauma-control groups were matched on demographic variables that are described later in this section.

The criteria for PTSD used in the needs assessment (Gong-Guy, 1986) were based on an early version of the *DSM-III-R* (1987) and used standards that were slightly more stringent than the current criteria; specifically, whereas the *DSM-III-R* specifies that symptoms must persist for at least 1 month, the criteria used in the needs assessment required a symptom duration of at least 6 months. Otherwise the criteria for PTSD were the same.

Out of the 2,773 individuals interviewed in the statewide needs assessment, 594 respondents (21.4%) verbally reported one or more traumatic events. Traumatic experiences were dichotomously classified as involving either direct victimization (e.g., torture and other forms of victimization) or indirect victimization (e.g., witnessing killing or torture, and other experiences, including being forced to perpetrate trauma on others).

From the group of 594 respondents who described one or more traumatic experiences, 154 individuals (25.9%) met the full criteria for a diagnosis of PTSD, whereas 440 respondents (74.1%) reported traumatic experiences but did not meet the PTSD diagnosis. From this latter group of respondents, 154 individuals were matched with the PTSD group on two variables, (a) ethnicity and (b) the number of years spent in the United States. By matching on these particular variables, we tried to ensure that the control group would share roughly similar cultural experiences in their homeland, as well as similar time periods to adapt to life in the United States. The latter variable also controlled for the amount of time that had passed since the reported traumatic experiences. As a result of the matching procedures, 308 respondents were retained for the study: 154 individuals with PTSD (80 male, 74 female), who constituted the PTSD group, and 154 individuals who reported trauma but did not meet the diagnosis for PTSD, who comprised the trauma control group (83 male, 71 female).

Measures

The following measures, administered as part of the larger needs assessment in 1 to 4-hour structured interviews, were used in the present study.

Demographic Measures

The demographic measures were categorized into three general time periods to which the variable referred: premigration, migration, and postmigration.

Premigration. Respondents were asked for demographic information that predated their migration from their homeland, including age, gender, the size of their hometown, level of education, prior literacy in English, occupational status, religion, head of the household, and help-seeking behavior.

Help-seeking behavior referred to the sum of affirmative responses on three "yes/no" items assessing if they utilized services from healers, Eastern medicine, and medical doctors in their home country. Occupational status was ranked according to three categories: (1) professional, (2) service/sales/clerical, and (3) manufacturing/labor. Type of religion was classified as "Eastern" (specifically Buddhism or Theravada-Buddhism) or "Other" (including Catholicism, other religions, or no religion). Finally, head of household was classified as "self" versus "other."

Migration. Respondents were also asked a series of questions related to their migration experiences, including age at time of migration, motive for leaving, who made the decision to leave, type of trauma, number of family members from whom they were separated, number of family members with whom they were reunited, total number of family members who died, and the number of years they spent in a refugee camp after leaving their homeland.

The dichotomous variables were coded as follows: (1) motive for leaving (e.g., political versus economic), (2) who made the decision to leave (e.g., self versus another individual), and (3) type of trauma (e.g., direct victim versus other).

Postmigration. The nature of refugees' experiences in the United States since they arrived was also determined from questions such as the number of life changes experienced, changes in their previous religious beliefs, attempts to improve job skills, reliance on public assistance, current employment status, help-seeking behavior in the United States, size of household, the similarity between the size of the city they migrated to and the size of their native hometown, and their current fluency in English.

The postmigration factors that were composite variables consisted of the following items (summed across affirmative responses): (1) Life changes (i.e., including marital status changes, number of children born since migrating, number of times moved in the United States, and changes in the head of household), (2) attempts to improve job skills (i.e., participation in English as a Second Language classes, Job Training programs, and/or other education), (3) reliance on public assistance (i.e., Medicaid/Medi-Cal, food stamps, AFDC, and general assistance), and (4) help-seeking behaviors in the United States (i.e., whether they sought help from healers, Eastern medicine, and Western doctors). The other postmigration variables involved were dichotomously classified, including (a) current employment status (e.g., employed versus not employed), and (b) a match between urban/rural settings in their native country and the United States (e.g., matched versus not matched).

Psychological Measures

The Health Opinion Survey was administered in order to assess the validity of the PTSD diagnostic distinction between the two groups in terms of clinical symptoms and subjective distress. The attitudinal scale and anger items were administered to determine whether they could be used to discriminate between individuals with PTSD and those without PTSD.

Health Opinion Survey. Levels of maladjustment were assessed using factors derived from the Health Opinion Survey (HOS) (Warheit, Auth, & Vega, 1985). The HOS is a psychiatric symptom/dysfunction scale that has been used in psychiatric epidemiological field surveys (Warheit et al., 1985) as well as in a clinical cross-validation study on the Southeast Asian population in Santa Clara County, CA (Meinhardt, Tom, Tse, & Yu, 1984). The five HOS subscales purportedly measure depression, anxiety, psychosocial dysfunction, cognitive impairment, and general psychopathology. Meinhart et al. (1984) found that the items assessing cognitive impairment had limited utility in the Southeast Asian population, so the items comprising this scale were not used in the present study.

Sample items from the HOS include: "Have you ever had periods of days or weeks when you couldn't take care of things because you couldn't get going?" (depression); "In the last year, has this feeling [that you might have a nervous breakdown or that you might lose your mind] caused problems with your family/personal life?" (psychosocial dysfunction); "Are you ever troubled by your hands or feet sweating so

that they feel damp and clammy" (anxiety); and "How often do you have unwelcome or strange thoughts or thoughts which frighten you?" (general psychopathology). All items were scored on a 5-point scale ranging from "never" to "all the time," except for responses to items on the anxiety subscale which were scored as "often," "sometimes," or "never."

The HOS factors that emerged in the present study were the same as those derived in the study by Chung and Kagawa-Singer (1993). The composites of items reflecting these factors were used in all subsequent analyses.

Cultural Adaptation Scale. Rumbout (1985) developed a 13-item attitudinal scale to assess different types of cultural adaptation. Sample items include "[we] will never have status that is equal to that of other Americans," "schools should help [our] children learn American ways of behaving and become more like the American children in the neighborhood," and "[our] children should be taught about [native homeland] history and culture so that they can have pride and self-identity." Items were scored on a 7-point Likert scale ranging from "strongly agree" to "strongly disagree."

Anger Reaction Index. In studies of Vietnam veterans, hostility and anger have been significantly associated with combat experience (Egendorf, Kaduschin, Laufer, Rothbart, & Sloan, 1981). In addition, one study identified the frequency of hostile expressiveness and physical aggression as an important discriminator between PTSD-positive and PTSD-negative veterans (Carroll et al., 1985). Thus, two items involving the emotional experience and physical expression of anger associated with the traumatic experiences were included in the present study. These items were "Since the traumatic experiences, have you ever had periods of time when you felt great rage toward anyone who might be blamed for the trauma or towards persons associated with the trauma" and "After these disturbing events, have you ever had a period of time when you would become so angry that you would physically attack some object or person?"

The items were moderately correlated with each other ($r = 0.50$). It should be noted that these items are not part of the criteria used for a diagnosis of PTSD. As such, they are not confounded with a PTSD diagnosis and can be used as possible clinical differentiators. As a result, these items were collapsed in subsequent analyses to form an "Anger Index."

Analyses

Data Reduction

Both psychological measures used in this study, the Health Opinion Survey and the Cultural Adaptation Scale, were subjected to factor analysis to validate the structure of the scales for the sample in the present study.

Health Opinion Survey. The items from the Health Opinion Survey were factor analyzed, yielding four orthogonal factors, one of which was slightly different from the original scales. These factors were labeled general psychopathology, depression, psychosocial dysfunction, and somatic symptoms. The first three factors, general psychopathology, depression, and psychosocial dysfunction factors, were fairly similar to the original scales, whereas somatic symptoms emerged as a new factor. However, this latter scale also incorporated many items from the original anxiety scale (e.g., "Do you feel you are bothered by all sorts of ailments in different parts of your body?") and may reflect the somatic expression of anxiety.

These modified factors were used because they demonstrated greater reliability than the original scales in this sample. The internal reliabilities of these factors were as follows: general psychopathology (8 items; alpha = .81), psychosocial dysfunction (6 items; alpha = .95), depression (10 items; alpha = .85), and somatic symptoms (14 items; alpha = .89). The HOS factors that emerged were the same as those derived in the study by Chung and Kagawa-Singer (1993). Thus, the composite of items reflecting these factors were used in all subsequent analyses.

Cultural Adaptation Scale. Three factors emerged for the factor analysis of the Cultural Adaptation Scale. The first factor contained the following four items: (1) "children should be taught about [our] history and culture so that they can have pride and self-identity," (2) "[we] may adapt [ourselves] to American society in order to earn a living, but [we] must stay together as a group to preserve our own culture," (3) " . . . it would be more comfortable to live in a neighborhood that has at least some [of us] than in one which has none," and (4) "[we] should stick together in order to keep company with each other and to be assured of mutual assistance in case of emergency." These items appeared to reflect a desire to maintain cultural ties and a cultural identity. Consequently, the factor was labeled "Culture Preservation" (*alpha* = .60).

The second factor consisted of the following four items: (1) "the American way of life may be good enough for others, but not for you," (2) ". . . [we] in the U.S. will never have status that is equal to that of other Americans," (3) ". . . the [native people] in the U.S. will never have status that is equal to that of other Americans," and (4) " . . . in the U.S., there is no place you really belong." These items seemed to indicate a sense of alienation, with a heightened sense of minority status in the United States. Thus, this factor was labeled "Alienation in the U.S." (*alpha* = 0.55).

Finally, the two items comprising the last factor assessed the extent to which there was a desire to return. The factor, labeled "Desire to Return" (*alpha* = 0.75) included the items, "you expect to return to [native homeland] someday," and "if there were a change of government in [native homeland], you should definitely return to [native homeland]."

Group Comparisons

A 2 × 4 (Group × Psychological Variables) multivariate analysis of variance (MANOVA) was performed in order to determine differences in experiences of psychological distress and maladjustment between the PTSD and trauma control group. MANOVAs are particularly appropriate when multiple dependent measures are thought to be correlated with each other, as in the case of various indices of psychological distress and maladjustment. In this study, the correlations between the four psychological factors ranged from 0.59 to 0.67. Significant differences would support the diagnostic distinction between the two groups.

Once the clinical validity of the diagnostic distinction was established, a discriminant analysis was performed in order to determine what differentiated the PTSD group from the trauma control group in terms of their migration experiences, cultural attitudes, and level of anger.

Results

Validity of Diagnostic Distinction

Results of a 2 × 4 MANOVA with depression, general psychopathology, somatic symptoms, and psychosocial dysfunction as dependent variables revealed that the PTSD group was more psychologically maladjusted than the control group, $F(S = 1, M = 1,$

N = 150.50) = 3.12, $p < .02$. Subsequent t-tests using standardized scores for the factors demonstrated that the PTSD group experienced higher levels of general psychopathology ($M = 0.76$, $SD = 1.19$) compared to the control group ($M = 0.18$, $SD = 1.10$), $t(306) = 4.48$, $p < .000$. The PTSD group was also more depressed ($M = 0.76$, $SD = 1.10$) and experienced more somatic symptoms ($M = 0.96$, $SD = 1.11$) compared to the control group, which was less depressed ($M = 0.16$, $SD = 1.00$), $t(306) = 5.04$, $p. < .000$, and expressed fewer somatic symptoms ($M = 0.42$, $SD = 1.15$), $t(306) = 4.21$, $p < .000$. Finally, the two groups differed in their level of psychosocial dysfunction, with the PTSD group manifesting higher levels of dysfunction ($M = 0.83$, $SD = 1.50$) than the control group ($M = .39$, $SD = 1.40$), $t(306) = 2.65$, $p < .008$. In summary, the PTSD group showed greater signs of distress and dysfunction on all psychological measures compared with the control group.

Group differences on psychological measures of general psychopathology, depression, and somatic symptoms support the validity of the PTSD diagnosis for the PTSD group. Thus, although PTSD may occur among individuals who experience trauma, not all such individuals will develop PTSD. Results of a t-test also indicated that there were no group differences in the actual number of traumatic events that respondents reported experiencing. Thus, although respondents in the PTSD and trauma control groups reported similar numbers of traumatic events, they were clinically quite distinct from each other. The next step, then, is to identify which variables discriminate between individuals who report trauma who have PTSD, and those individuals reporting trauma who do not have PTSD.

Identification of Differentiating Experiences

A stepwise discriminant analysis (SPSSx) was performed to determine the best combination of migration experience (e.g., premigration, migration, and postmigration variables) and psychological variables (e.g., culture preservation, alienation in the United States, desire to return, and the Anger Reaction Index) that would maximally differentiate between the PTSD and the trauma control groups.

The following 10 variables were found to discriminate optimally between the two groups: (1) premigration variables—size of hometown and religion; (2) migration variables—type of trauma experienced and number of family members reunited with; and (3) postmigration variables—change in religious beliefs, number of life changes, public assistance, and present help-seeking behavior. Psychological variables that emerged as important discriminators included culture preservation and the Anger Reaction Index.

The discriminant function was highly significant (10, $N = 308$) = 63.31, $p < .0000$. With this linear combination of variables, 67.53% of respondents could be correctly classified; that is, the two groups could be discriminated at a rate approximately 18% better than chance. The canonical correlation was .44 between the discriminant function and the two groups. The relationship of each predictor variable to the discriminant function is shown in Table 1.

Given that the multivariate discriminant analysis was significant, a series of univariate comparisons were made to identify particular experiences that significantly differentiated PTSD from non-PTSD cases. Table 2 shows the comparisons on each migration and psychological variable.

There were no significant group differences in any of the premigration variables, including age, sex, gender, head of household, occupational status, level of education, religion, prior fluency in English, size of hometown, and help-seeking behaviors.

Table 1
Standardized Canonical Discriminant Function Coefficients and Correlations Between Variables and the Discriminant Function

Variables	Standardized coefficients	
Migration variables		
Premigration		
Size of city	0.32	0.17
Religion	−0.23	−0.09
Migration		
Type of trauma	0.21	0.18
Reunited with family	0.33	0.22
Postmigration		
Life changes	0.36	0.23
Help-seeking behaviors	0.40	0.16
Public assistance	−0.21	−0.28
Change in religion	0.21	0.18
Psychological variables		
Culture preservation	0.35	0.27
Anger index	−0.75	−0.64

Table 2
Means and Standard Deviations of Migration Variables and Psychological Variables Used in the Discriminant Analysis

	Control		PTSD		
Variables	*M*	*SD*	*M*	*SD*	
Migration variables					
Premigration					
Size of city	3.16	0.95	3.02	0.93	1.40
Religion	1.25	0.44	1.29	0.46	−0.77
Migration					
Type of trauma	1.82	0.38	1.75	0.43	1.54
Reunited with family	0.31	1.00	0.14	0.53	1.86†
Postmigration					
Life changes	3.14	1.59	2.79	1.58	1.98*
Help-seeking behaviors	1.05	0.49	0.96	0.59	1.36
Public assistance	2.20	1.15	2.49	1.04	−2.35*
Change in religion	0.16	0.36	0.10	0.30	1.54
Psychological variables					
Culture preservation	8.92	3.89	8.00	3.16	2.27*
Anger index	0.47	0.75	0.95	0.83	−5.42***

Note: Asterisks denote significant group differences: †$p < .06$; *$p < .05$; **$p < .01$; ***$p < .001$

In terms of migration variables, there were no differences between the two groups in their motives for leaving their native country, who made the decision to leave, type of trauma experienced, age at the time of their migration, total number of family members who died, or the number of years they spent in a refugee camp before arriving in the United States. There was a trend for the control group to experience a greater number of separations from family members ($M = 1.09$, $SD = 1.33$), than the PTSD group ($M = 0.83$, $SD = 1.10$), $t(306) = 1.87$, $p < .06$, as well as to experience more

reunifications with family members ($M = 0.31$, $SD = 1.00$) compared to the PTSD group ($M = 0.14$, $SD = 0.53$), $t(306) = 1.86$, $p < .06$.

In terms of group differences in experiences after arriving in the United States, the control group relied less on various forms of public assistance ($M = 2.20$, $SD = 1.15$) compared with the PTSD group ($M = 2.50$, $SD = 1.04$), $t(306) = 2.35$, $p < .02$. Public assistance referred to reliance on various forms of government aid including Medicaid/Medi-Cal, food stamps, AFDC, general assistance, and SSI. The control group did, however, experience a greater number of life changes ($M = 3.14$, $SD = 1.59$) than the PTSD group ($M = 2.79$, $SD = 1.58$), $t(306) = 1.98$, $p < .05$. These life changes included marital status changes (positive and negative status changes were separately included), number of children born since migrating, number of homes lived in, in the United States (reflecting the number of moves made), and changes in the head of the household. More specific comparisons revealed that the group differences occurred in two of the items comprising the composite life change variable. The PTSD group moved more often ($M = 0.64$, $SD = 0.48$) compared with the trauma control group ($M = 0.52$, $SD = 0.50$), $t(306) = -2.08$, $p < .04$, and the trauma control group experienced more changes in the head of the household ($M = 0.36$, $SD = 0.48$) in comparison with the PTSD group ($M = 0.23$, $SD = 0.43$), $t(306) = 2.51$, $p < .01$. No differences were found between the two groups in changes in their religious beliefs, their attempts to improve their job skills, their current employment status, their help-seeking behaviors, size of household, current fluency in English, and the extent to which the size of the city they migrated to matched the size of their native hometown.

In terms of respondents' attitudes towards cultural adaptation, there were significant group differences in culture preservation, $t(306) = 2.27$, $p < .02$, with the control group reporting higher culture preservation scores ($M = 8.92$, $SD = 3.89$) than the PTSD group ($M = 8.00$, $SD = 3.16$). There were no differences on the remaining cultural adaptation factors, indicating that the two groups did not differ in the extent to which they were highly aware of themselves as a distinct ethnic group in the United States, or the extent to which they desired returning to their homeland at some point in time. The largest difference between the two groups was in the extent to which respondents continued to experience intense anger regarding their trauma experiences; the PTSD group had significantly higher scores on the Anger Reaction Index ($M = 0.95$, $SD = 0.83$) compared with the trauma control group ($M = 0.47$, $SD = 0.75$), $t(306) = -5.42$, $p < .000$.

Discussion

The results of the present study indicate that refugees who have PTSD can be differentiated from refugees who do not have PTSD, with respect to different migration and psychological experiences. Moreover, the results suggested that we have been able to identify associated factors that may contribute to the development of PTSD in addition to trauma exposure, which was controlled for through the matching procedure. Respondents with PTSD appeared to experience and express much more anger and were dependent on public assistance. They were also less engaged in maintaining their cultural traditions and ties. Respondents who did not have PTSD reported more life changes. There was also a trend for individuals without PTSD to experience more separations and reunifications with family members, which may reflect a greater number of changes in household composition. These group differences did not appear to be attributable to premigration variables or to demographic factors.

In addition, although the *type* of trauma respondents experienced during their migration process (i.e., whether they were a direct or indirect victim) contributed to the discriminant function that distinguished between the two groups, there were no group differences on this variable. Although past studies with Vietnam vets have found that the *frequency* of combat trauma is a salient predictor of PTSD (Foy et al., 1984; Melick, Logue, & Frederick, 1982; Penk et al., 1981), these studies have not directly examined trauma *type* as a separate dimension. Addressing this issue, Foy, Osato, Houskamp, and Neumann (1992) observed that the risk for PTSD is increased for combat veterans if they were exposed to death during the trauma either through personal involvement in the killing of enemy combatants (and even more so with noncombatants), or if they experienced the loss of a close buddy. Thus, the type of trauma experienced, particularly the distinction between exposure to death or not, may be an important dimension to explore in the development of PTSD. In the present study, the classification of trauma as "direct victim versus other" did not allow an exploration of this dimension in the migration experiences of Southeast Asian refugees. However, this study did examine the role of other factors implicated in the development of PTSD among Southeast Asian refugees, controlling for the type of trauma experienced.

Although all of our respondents experienced traumatic stress, greater stress did not predict PTSD. In fact, those individuals who had PTSD did not seem to experience greater levels of stress, either in their migration experiences or in their resettling processes in the United States, compared with their trauma control group counterparts. Not only were there strikingly few differences in the experiences of the two groups, but the trauma control group actually experienced a greater number of life changes during the resettlement phase, as well as slightly more separations and reunifications with family members. Although the life changes variable was not easily imterpretable, with the PTSD group experiencing a greater number of moves in the United States, and the control group experiencing more turnovers in the head of their household, these findings clearly indicate that the experience of stress alone could not account for the pattern of results.

However, the experience of stress may be conceptualized, not as simply stemming from the number or types of events experienced, but also from differences in individuals' vulnerability to stress. For example, the higher levels of depression, general psychopathology, somatic symptoms, and psychosocial dysfunction seen in members of the PTSD group compared to members of the trauma control group were interpreted as supporting the diagnostic distinction between the two groups. From the present data, however, it was not possible to determine whether the greater psychopathology and distress evidenced in the PTSD group also predated the disorder, rather than simply resulting from, or co-occuring with, the disorder. Thus, it is conceivable that the individuals in the PTSD group were more vulnerable to the difficulties involved in resettling in a new country as a refugee, as well as possibly having had a greater diathesis for the development of PTSD.

Notwithstanding potential individual differences in vulnerability to the development of the disorder, the actual predictors of PTSD in the present study had very little to do with factors predating the traumatic experiences. This result supported findings with Vietnam veterans (Foy, Carroll, & Donahue, 1987). There were no demographic differences between the two groups in terms of premigration factors. Instead, the effects of the traumatic experiences seemed to be moderated by refugees' postmigration adjustment, with both demographic and psychological factors playing a role.

The most powerful discriminating variable between the two groups was the Anger Reaction Index, which included items assessing both the level of anger towards those who might be blamed for the trauma and the level of physical aggression demonstrated as a result of the trauma. Although this finding was based on an anger index which contained only two items, these results supported the findings of Carroll et al. (1985), which indicated that verbal and physical expressions of anger were important discriminators of PTSD among Vietnam combat veterans. The replication of this finding among Southeast Asians is noteworthy, given that cultural differences exist between Asian and White cultures in the expression of anger (Markus & Kitayama, 1991). In many Southeast Asian cultures, similar to other Asian cultures, the direct expression of anger is considered culturally unacceptable. The finding that anger was the single most important discriminator for PTSD, even among refugees, underscores its importance as a major correlate of PTSD.

The PTSD group also demonstrated greater dependence on public assistance. This finding is consistent with Lin, Tazuma, and Masuda's (1979) study which showed that individuals receiving public assistance scored significantly higher on the Cornell Medical Index (CMI). They concluded that individuals receiving public assistance were "less resourceful and less healthy" (p. 959), with the interpretation that the dependence on such resources would be culturally perceived as degrading and would hence incur a "loss of face."

Cultural factors appeared to play a beneficial role for the trauma control group. This group was more involved in preserving their cultural identity and demonstrated greater commitment to maintaining ties with their own ethnic community compared with the PTSD group. The trend towards the trauma control group experiencing more reunifications with family members also suggests that they may have had greater opportunity to develop a meaningful social support network.

The results of the present study most likely were somewhat conservative due to the more stringent criteria (i.e., a 6-month versus 1-month time period required for symptom duration) used to assign respondents to the PTSD group. The use of these criteria may have increased the number of false negatives in the trauma control group resulting in a greater overlap between the comparison groups.

Other limitations involved the retrospective nature of the study and its reliance on the self-report of individuals to describe their traumatic experiences. In addition, respondents' descriptions of their traumatic experiences were not rated according to severity levels. Thus, it is possible that with severity levels assessed, trauma exposure may have had a larger role in discriminating between the comparison groups. With the dichotomous classification used there was some attempt to account for levels of trauma severity, but the classification of trauma in terms of "direct" or "indirect" victimization may not have sensitively assessed the severity of trauma exposure.

The results of the present study may be useful in designing community programs and interventions. For instance, to assist an individual in the task of "placing their traumatic experiences in some context of meaning," as Boehnlein (1987) noted, a community might develop programs for facilitating the search for missing family members, similar to programs for Holocaust survivors. Such programs would, of course, be dependent upon high levels of international cooperation, but may be feasible at some point in time. In addition, while past research (Kroll et al., 1989) suggests that the disruption of family ties has a negative impact upon refugees, the results of the present study suggest that reunification with family members may reduce the likelihood of developing PTSD.

Programs that foster cultural identity and social support may also be productive. The results of the present study suggest that maintaining strong cultural ties may serve a protective function against the development of PTSD. Previous research has shown that a focus on the past during the early phases of resettlement is not a normative pattern for refugees (Beiser, 1987), and that refugees who do not follow this pattern are at higher risk for developing depression (Beiser, Turner, & Ganesan, 1989). However, it may be that culture preservation may function as an important anchor during the resettlement process as a positive link to the past, although not necessarily a tie to the traumatic experiences that occurred in the past. Encouraging the development of cultural ties may take place on multiple levels. At the individual level, this could be facilitated by integrating cultural issues into individual therapy, while at the community level, this could be encouraged by establishing community centers for informal information exchange and social contact within a culturally consonant, familiar context. Finally, to facilitate attempts to place the trauma into perspective, community centers might also develop programs that focus on anger management and coping. Such programs may be useful because anger has emerged as a powerful discriminator of PTSD in this population, as in other populations. Because the results of this study indicate that postmigration factors, and in particular anger, were more important than premigration or migration factors in the development of the disorder, there appears to be strong empirical justification for the use of intervention programs that specifically target these variables.

Out of all potential discriminating factors, the role of anger in the development of PTSD may yield interesting information upon further investigation. In their 2-year study of refugees, Lin et al. (1979) noted the sharp escalation of anger between the first and second years of resettlement, which was closely associated with elevated symptomatology on the CMI. One hypothesis about the high level of intense anger that the PTSD respondents reported may be that they are unable to place their experiences in a meaningful context (see Boehnlein, 1987) even after they have had some time to resettle, and that they eventually experience the maladaptive consequences of these high anger levels.

Religio-cultural factors may influence this process as well. For instance, many people may interpret Buddhism as holding an individual personally responsible for suffering due to the person's misbehavior in past years. Boehnlein (1987) points out how many of these beliefs do not allow the placing of the traumatic event outside personal karma. In the present study, religious variables did appear to play a limited role in contributing to the discrimination of PTSD between the comparison groups. Although there were no significant group differences in religion between the two groups, religious variables did contribute to the discriminant function as both premigration and postmigration factors. Because research in other areas has shown that a sense of personal responsibility for the experience of trauma may result in poor coping and psychological outcomes (Maxwell, 1993), it may be fruitful to explore the extent to which individuals' beliefs that they are somehow personally responsible for their own suffering may impact the development of PTSD, whether or not these beliefs are influenced by traditional religions.

Whether we choose to examine the role of anger or, to a lesser extent, possible religious variables that have been associated with PTSD, it may be valuable to explore the social psychological mechanisms whereby these and other variables impact the development of PTSD. Furthermore, the results of the present study strongly suggest that the influence of culture in the operation of these social psychological variables should also be examined. On one hand, for instance, the present findings suggest that the

experience of severe trauma may result in a similar progression of psychological distress even across populations which hold different cultural values regarding the appropriate expression of anger. Individuals who verbally or physically expressed high levels of anger, whether they were Vietnam veterans or Southeast Asian refugees, developed PTSD. On the other hand, cultural attitudes helped distinguish between Southeast Asian refugees who were PTSD-positive or PTSD-negative. In addition, other research suggests that cultural variables may play an important role in the treatment of PTSD. Clinics specializing in the treatment of refugees have found that traditional methods of treating PTSD, such as verbal catharsis of traumatic events, do not appear effective in this population. Indeed, such methods often exacerbate the symptomatology of the disorder (Kinzie et al., 1984). It may be that cultural sanctions against the direct expression of anger may contribute to the ineffectiveness of verbal catharsis as a viable mode of treatment. Nevertheless, whether or not this is the case, the results of the present study suggest that we need to examine the role of culture *independently* in the etiology and treatment of Post-Traumatic Stress Disorder—and perhaps other disorders as well.

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