

Components of Refugee Adaptation

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This article explains the need to improve research methods in studies of how Third World refugees cope with resettlement in the First World. Research on refugee adjustment (*e.g.*, psychological and family dynamics) and adaptation (*e.g.*, sociocultural-economic measures) indicates that these dependent variables are not unidimensional or homogeneous. Rather, adjustment and adaptation may have several components which each require unique sets of causal variables and contributory factors to be identified. Subjective aspects of adjustment and adaptation are important and can sometimes have opposite effects on objective measures of adjustment and adaptation. Conflicting findings in the literature suggest interaction effects among predictor variables, which are thus not “independent” variables.

This article is a secondary or “reanalysis” of survey data collected previously by the author in the province of Alberta, Canada.

METHODOLOGY

The survey methodology is described in Montgomery (1991). The sample was not derived by a random method but was shaped every few days, as interviews were completed, to conform to the universe on seven known demographic traits. The result was a representative sample, which allows use of the standard tests of statistical significance in analyzing the results. A synopsis of the survey method is provided in Appendix A. Colleagues at the University of Alberta Department of Sociology, such as P. Krishnan and G. Jarvis, offered constructive criticism of the earlier analytic methodology and suggested a reanalysis. The other motive for secondary analysis was more theoretical, namely to reconceptualize and reinterpret results in light of dozens of research publications which appeared from the mid-1980s and were unavailable to this author when the survey was underway and the earlier paper was written. After reviewing the most recent publications, about 50 in number, this author felt that apparent contradictions between similar studies could be investigated by more sophisticated methods of analysis of the author’s dataset. Specifically, it was desired to test the hypothesis deduced from recent studies that sociocultural measures of adaptation, labor market or financial dependent variables, and subjective measures required separate analysis (in regard to causal or predictor variables). Unlike earlier research (including Montgomery, 1991)

which simply added all significant dependent variables to create a single index of adaptation, for this study three separate scales of adaptation were created and a weighted average of variables comprising each was used to cope with the differing ranges. Another difference from the omnibus method is that dummy variables were created for nominal (categorical) variables. Finally, in addition to the "independent" variables used in the regression analysis to determine the strength and order of predictors of the three scales, eighteen interaction variables were constructed.

Predictor Variables

This analysis began with the same eleven predictor or independent variables listed in Montgomery (1991). Before performing the multiple regression, the four nominal or categorical variables (sex, marital status, ethnicity, and type of sponsorship) were converted to $n - 1$ dummy variables, after categories with small n s were combined (n = number of valid values in the original variable). The final list of predictor variables is shown in Table 1.

In order to perform a sophisticated regression analysis, the number of potential predictors was not restricted to the thirteen shown in Table 1. It was anticipated that there might be some first order interaction effects worth investigating. Rather than an unwieldy and speculative attempt to use all possible first order interaction terms, it was decided specifically to investigate those listed in Table 2.

Dependent Variables

Prior to performing multivariate analysis, it was necessary to construct the dependent scales. The three main aspects of adaptation induced from the literature were satisfaction with Canadian life (mostly subjectively assessed), sociocultural adaptation, and economic status (the latter includes financial and labor force participation data). The obvious problem was how to measure and operationally define these three main concepts.

From the review of literature and from the suggestions of interested academics, government officials, and managers of agencies which dealt with refugee settlement and/or English language training, a large list of potential dependent variables was compiled. Exploratory (as opposed to confirmatory) factor analysis was used to refine this list to the dependent scales required for multivariate analysis.

Factor (Principal Component) Analysis

Several hundred original survey and derived (calculated postsurvey) variables were available as possible dependent variables. The manner in which variables

TABLE 1
REVISED LIST OF INDEPENDENT (PREDICTOR) VARIABLES

1.	English progress ^a
2.	Education ^b
3 and 4.	Two dummies for marital status
5.	One dummy for sex
6.	Age
7.	Size of municipality of residence
8.	Voyage trauma ^c
9.	One dummy for ethnicity
10.	Length of residence in Canada
11.	Ethnic social network involvement (ESN) ^d
12 and 13.	Two dummies for type of sponsorship

^aSelf-rated, derived from respondent's rating of own comprehension, speaking, reading and writing ability (ordinal scales) on arrival and at time of interview.

^bTotal years of academic or formal vocational schooling or apprenticeship at time of arrival in Canada.

^cThis variable derived from simple question "Was your trip from Vietnam to the first refugee camp or first country of asylum?" followed by the following forced choices coded as follows: Traumatic or terrible = 1, Some problems = 2, Smooth and easy = 3.

^dMeasures of extent of recent participation. For detailed definition see Montgomery (1991).

TABLE 2
INTERACTIONS CHOSEN FOR ENTRY INTO REGRESSION ANALYSIS

1.	Sponsorship dummy1 × age
2.	Sponsorship dummy2 × age
3.	Voyage trauma × age
4.	ESN × education
5.	ESN × sex dummy
6.	ESN × age
7.	ESN × municipal size
8.	English progress × age
9.	Ethnicity dummy × sponsorship dummy1
10.	Ethnicity dummy × sponsorship dummy2
11.	Length residence Canada × sponsorship dummy1
12.	Length residence Canada × sponsorship dummy2
13.	Sex × marital status dummy1
14.	Sex × marital status dummy2
15.	Education × ethnicity dummy
16.	English progress self-rating × education
17.	English progress self-rating × sex
18.	Sex × age

were selected for deletion from the inventory prior to performing the regression runs is described in Appendix B.

The option of pairwise deletion of missing values was chosen for the initial factor analysis, resulting in a satisfactory *n* of 327. (Using the listwise option would have meant an *n* of only 161; using mean substitution for missing values would have maintained the full *n* of 537, but the results would be distorted to

the extent that the variance is compressed around the means.) SPSS program test runs revealed that choice of factor extraction method made no appreciable difference to the results. Ultimately, the maximum likelihood method was chosen for the final runs as it seemed to provide a slightly tighter clustering than the principal components method.

For the initial runs no limit was set on the number of factors; subsequent runs specified fewer and fewer allowable factors. Inspection of the graphs and a "scree test" showed that three factors had eigenvalues exceeding 2.0, there was a steep linear drop in eigenvalues between the fourth and seventh factor, and starting with the eighth factor (eigenvalue 1.33), eigenvalues decreased gradually and steadily to 0.5 with factor 33. Thus it seemed reasonable for the final analysis to choose the maximum likelihood run specifying three factors (and a minimum eigenvalue of 1). The criterion of minimizing residual variance was chosen. The author also selected the popular suboption of orthogonal rotation with varimax, as the output proved far easier to interpret than unrotated. The final factor analysis run (with loadings below 0.25 suppressed for readability and as a minimum level for inclusion in the dependent scale construction) is presented in Table 3.

Factor Analysis Results

After inspection of Table 3, the three clusters were named "economic adaptation", "sociocultural adaptation" and "subjective adaptation," respectively. They were then converted into dependent scales, as described below. It can be seen that the first cluster (Economic Adaptation) consists of 1) current gross monthly pay, 2) the pay at the best Canadian job (same as previous if current job is the best yet), 3) average number of hours worked per week at current job (if any), 4) the percent of time, measured in months, in Canada wherein the refugee was employed (with "part-time only" counting as 1/2 month), 5) refugee's monthly income compared to expenses (simple three point rating), and 6) the number of appliances or home entertainment or recreational devices possessed by the refugee.

Cluster 2 (Sociocultural Adaptation) includes 1) present English language ability measured by the score on the scale, 2) refugee's own assessment of his/her progress in English since arrival, 3) refugee's estimated English skill on arrival in Canada, 4) Blishen score of the refugee's best Canadian job, 5) number of weeks of English lessons taken by refugee, 6) whether refugee would return to Vietnam if the Communists were overthrown (higher number equals "never," presumably indicating most adaptation in Canada), 7) refugee's ranking of any job training problems (lower number corresponds to most serious problems, accounting for the negative polarity of the loading), and 8) number of friends, excluding close friends, the refugee now has in Canada.

TABLE 3
FACTOR ANALYSIS RESULTS (ROTATED)

Variable Name	Loadings		
	Factor 1	Factor 2	Factor 3
Current monthly pay	0.952		
Pay at best Canadian job	0.943		
Average hourly work week	0.599		
Percent work that was part-time	0.562		
Net income per month	0.460		
Number of appliances, etc., owned	0.332		0.313
English skill score		0.820	
Perceived English improvement		0.773	
Self-rated English on arrival		0.654	
Blishen score for best job		0.443	0.331
Number of English lessons taken	-0.319	0.395	
Willingness to return Vietnam		-0.341	0.298
Rank of job training problems		-0.305	
Number of friends, except close		0.300	
Job satisfaction rating			0.604
Overall satisfaction rating			0.479
Salary rating (subjective)	0.312		0.458
Current job versus expectation			0.452
Job helps acculturate?		0.310	0.413
Job utilizes skills?			0.312
Job security rating			0.306
Number of incidents of prejudice			-0.299
Upward mobility score			0.271

Note: Variables with loadings below the set minimum (0.25) omitted.

The loading for willingness to return to Vietnam has a negative sign, possibly indicative of a “suppressor effect.” (Hatcher and Stepanski, 1994:406, provide a simple explanation of how such effects may increase the accuracy of the predictive formula.) It is worth noting in regard to the composite English index within the second cluster that fluency in the host culture’s language often appears in research as a significant predictor of adaptation. In the present survey this variable is conceptualized as a component of the dependent variable. It is submitted that the reason studies which use English skill as a predictor of adaptation find it to be so significant and powerful is that English skill is an aspect of that adaptation. In other words, such studies may be suffering from circular reasoning. (What better indicator of sociocultural, economic or self-perceived adaptation than skill in the language of the host culture?) For this reason, plus the fact that English skill has so often been shown to be a major predictor of adaptation, it was decided that it would not be used as a potential predictor in the present survey. Also, of course, having decided to treat English

skill as a measured aspect of adaptation, it would have been senseless to also include it as a potential predictor.

Cluster 3 (Subjective Adaptation) includes 1) satisfaction rating of present job on a simple five point scale, 2) refugee's felt satisfaction with overall life situation, 3) refugee's rating of present wages from "not good" to "very good," 4) refugee's perception of whether present job is worse, better, or the same as expected, 5) extent to which refugee thinks present job helps own acculturation, 6) extent to which refugee's present job involves utilization of any skills for which the refugee was trained, 7) refugee's perception of own present and near future job security, 8) number of incidents of apparent discrimination or prejudice experienced by the refugee in Canada (hence the negative polarity of the loading insofar as more incidents corresponds to decreased adaptation), and 9) upward mobility defined as Blishen score on present job divided by score on first Canadian job (which could be unity if no job change or negative in event of downward mobility).

As seen in Table 3, there are at least two variables which one would not expect to see under Factor 2 (Sociocultural Adaptation), namely Blishen score of best job, and a question on job training. While one would expect to find these variables appearing most strongly under Economic or Subjective Adaptation, scientific results must dictate over the hypotheses, intuitions, or desires of the researcher. Remembering that it is the variation rather than any high scores or static measures of central tendencies (mean, mode, or median) that operate to determine results here, it could be that the Blishen score (which attempts to measure status as well as more concrete aspects of occupations) is not going to be as strongly related to Economic Adaptation as it is to other aspects, and this variable did make a strong showing under the "subjective" column as well.

It is not known why the ranked order of perceived importance of nine job training problems (negatively related to the second factor) appeared here, although one cannot expect every empirical measure to conform to theoretical constructs.

Creation of Dependent Scales from Factor Analysis Results

Having discovered which variables comprised each of the three factors, and with what relative weight (the factor loadings), it was necessary to score each respondent on each of the three dependent scales, thereby linking individual survey responses to the scales. This is described in Appendix C.

Regression Methodology

The regression was run using the pairwise method to handle missing response values (the listwise or casewise method would have reduced the n so low that the correlation matrix would have been unstable). With the pairwise method, the

n was still sufficiently large, at 327, that it was not necessary to resort to mean substitution for missing data, which could have reduced the quality of the results.

The regression was run stepwise, *i.e.*, predictors entered in descending order of power, controlling for effects of all others. The method of minimizing residual variance was chosen. Appendix D provides an explanation as to how statistical confidence levels were selected.

BASIC REGRESSION RESULTS

The data in Tables 4, 5, and 6 indicate the ranked order of importance of the predictive variables for each of the three dependent scales.

KEY TO ABBREVIATIONS USED IN TABLES 4, 5, AND 6

LGTHRESC	=	Number of months of residence in Canada
RSEX	=	Sex
EDVIET	=	Number of years of formal education or vocational training on arrival in Canada
MSTAT	=	Marital status (two dummy variables)
ENGPROGR	=	Self-rated progress in English language since arrival
RACE	=	Name for dummy variable calculated from ethnicity
SPONSOR	=	Type of sponsorship (dummy variables)
TRIP	=	Degree or extent of trauma experience in voyage from Vietnam to initial refugee camp
MUNIPOP	=	Size of municipality of residence in Canada according to population in 1981 census
ESN	=	Degree or extent of involvement or participation in ethnic social work
INT	=	Interaction (via simple multiplication)
1 = ENGPROGR		7 = TRIP
2 = EDVIET		8 = RACE
3 = Not used		9 = LGTHRESC
4 = RSEX		10 = ESN
5 = AGE		S1,2 = Dummies for SPONSOR
6 = MUNIPOP		MS1,2 = Dummies for MSTAT

TABLE 4
STEPWISE MULTIPLE REGRESSION RESULTS: SUBJECT ADAPTATION

Predictor Variable ^a	b	Std. Error	B	T	Sig. of T
MUNIPOP	0.000	0.000	-0.197	-3.51	0.0005
MSTAT2	0.131	0.037	0.209	3.60	0.0004
INT4*MS1	0.148	0.061	0.136	2.43	0.0155
INT5*7	-0.001	0.000	-0.140	-2.49	0.0134
INT10*5	0.000	0.000	0.518	3.31	0.0010
ESN	0.007	0.003	-0.420	-2.64	0.0086
INT1*2	0.004	0.002	0.174	2.83	0.0050
INT2*8	-0.006	0.003	-0.125	-1.99	0.0470
Constant	0.729	0.056	N.A.	13.11	0.0000

Number of steps to converge = 8, Multiple R = .410; squared = .167; equation F = 7.91; p = .0000.

Notes: b = Regression coefficient or "slope;" B = standardized b, being the slope of the least squares regression line when the independent and dependent variables are expressed as Z scores, calculated as "b" × "standard deviation of independent variable"/"standard deviation of dependent variable."

^aSee "Key to Abbreviations Used in Tables 4, 5, and 6."

TABLE 5
STEPWISE MULTIPLE REGRESSION RESULTS: SOCIOCULTURAL ADAPTATION

Predictor Variable ^a	b	Std. Error	B	T	Sig. of T
EDVIET	0.557	0.050	0.481	11.23	0.0000
AGE	-0.117	0.018	-0.273	-6.47	0.0000
LGTHRESC	0.060	0.011	0.213	5.21	0.0000
INT4*MS2	-2.196	0.560	-0.210	-3.92	0.0001
INT1*4	0.600	0.222	0.142	2.70	0.0073
TRIP	-0.465	0.201	-0.094	-2.31	0.0218
Constant	5.293	1.056	N.A.	5.01	0.0000

Number of steps to converge = 6; Multiple R = .696; squared = .484; equation F = 50.0; p = .0000.

Note: b and B defined as per Table 4.

^aSee "Key to Abbreviations Used in Tables 4, 5, and 6."

TABLE 6
STEPWISE MULTIPLE REGRESSION RESULTS: ECONOMIC ADAPTATION

Predictor Variable ^a	b	Std. Error	B	T	Sig. of T
LGTHRESC	0.120	0.015	0.367	7.78	0.0000
RSEX	-4.145	0.626	-0.376	-6.63	0.0000
EDVIET	0.285	0.085	0.212	3.35	0.0009
INT2*8	-0.114	0.054	-0.131	-2.11	0.0353
MSTAT2	2.273	0.610	0.208	3.72	0.0002
INT4*MS1	3.468	1.108	0.183	3.13	0.0019
constant	2.915	0.985	N.A.	2.97	0.0033

Number of steps to converge = 6; Multiple R = .560; squared = .314; equation F = 24.45; p = .0000.

Note: b and B are defined as per Table 4.

^aSee "Key to Abbreviations Used in Tables 4, 5, and 6."

DISCUSSION

Each of the variables which appeared as significant had been found in at least one previous study to be a significant predictor of adaptation; it is somewhat surprising, therefore, that some of these significant variables did not appear as significant in all three equations (economic, sociocultural, and subjective). Indeed, the most substantively significant result from the regressions is that the results differ according to the three dependent scales.

This general finding underlines the importance of treating adaptation as a multidimensional phenomenon. What predicts one aspect of adaptation has less or no predictive power for another, *e.g.*, sex was a major predictor of Economic Adaptation but not of Sociocultural or Subjective Adaptation. Age and voyage trauma were significant predictors of Sociocultural Adaptation

only. Size of municipality and ethnic social network involvement were predictors of Subjective Adaptation only.

The results also show the importance of considering interactions among predictor variables. For example, sex alone does not appear in the results as significant except for Economic Adaptation, but it appears in Sociocultural Adaptation in interaction with self-rated English progress and the second dummy variable for marital status. Similarly, for Subjective Adaptation, sex appears in interaction with the first dummy variable for marital status, and this interaction is the third most powerful of all predictors in that equation. This may explain the contradictory findings among other studies which variously find sex, marital status, or neither to be significant.

Education

Many studies, *e.g.*, literature review by Richmond (1974) and Samuel and Woloski (1985) have found a significant positive relationship between education and economic adaptation. The expectation that the former would predict the latter in this study was confirmed. Education was the third most powerful predictor of Economic Adaptation, and the sign of the coefficient was positive.

Moreover there is one indication that education interacts with ethnicity to affect the scale. Specifically, interaction term INT2*8 has a standardized coefficient of -0.131 and a T significance of 0.035. This can be interpreted as follows.

Refugees who are relatively highly educated (or vocationally trained) ethnic Vietnamese tend to score low on Economic Adaptation, while relatively poorly educated Sino-Vietnamese tend to score high on the dependent scale. Given a strong and significant correlation between education and ethnicity ($r = +0.324$, $p < 0.0001$), it appears that the relatively higher education of the ethnic Vietnamese did them little good compared to the Sino-Vietnamese on Economic Adaptation.

The present analysis revealed that education was not a significant predictor of subjective adaptation, although the interaction term "education self-reported English language progress" was. This provides some support for the possibility that refugees with higher education and perceived English progress feel better adjusted than those with low education and level of self-reported English progress. Education was a positive predictor of Sociocultural Adaptation; in fact, it was the most powerful of the significant predictor variables.

Overall, the null hypothesis must be rejected, and the present study can be said to support previous research.

Sex

Sex per se was not a significant predictor of Subjective Adaptation nor of Sociocultural Adaptation, but there were interaction effects (in both cases with

marital status, and for Sociocultural Adaptation also with English progress). Starr and Roberts (1982) and Strand (1984) found sex to be only spuriously related to adjustment. Given the coding used in the present study, it appears that single males are least satisfied with Canadian life and married females are most satisfied, with married males and single females in between. In regard to the sociocultural index, single males are relatively most adapted and married females are least adapted.

An explanation as to why sex and self-rated English skill significantly relate to the Sociocultural Adaptation scale is that the sex which learns English faster will be able to adapt more quickly, *ceteris paribus*. This explanation assumes that self-rating of English has a high correlation with actual English skill. In fact, that relationship is only moderately large ($r = +0.25$, $p < 0.001$). Since the dummy variable for sex was coded male = 0, female = 1, and the regression coefficient in Table 5 is positive, one might conclude that femininity is related to higher self-reported English progress and together these variables correlate with better Sociocultural Adaptation. However the simple r correlation between sex and self-reported English progress is zero, so it remains unclear how the interaction of sex and reported English progress affect Sociocultural Adaptation.

Sex was significantly related to scores on Economic Adaptation, with females scoring below males, overall.

Boyd (1975, 1980, 1984) and Michalowski (1987) posit that female immigrants are worse off than male immigrants, which would lead one to expect in the present context that females would be significantly less satisfied than males. However Lin, Tazuma and Masuda (1979) seemed to say that young females had less role stress than some other age-sex groups of immigrants, and Indra (1988) reported that Vietnamese female immigrants had higher self-concepts than males. Woon, Wong and Woo (1988) found that while some adult female, married-with-children refugees were isolated in their homes, others had paid jobs outside the home and it was their husbands who felt "trapped" and "lonely." Chan and Lam (1987: 38) also mention this "role reversal." The Woon, Wong and Woo (1988) research team also found that women and children learned English and other key aspects of the new culture faster than did males and elders. Adult females seemed to quickly adopt the attitudes and lifestyles of modern Western women. Dorais (1988) found young adult females to be better off than males and elders of both sexes for similar reasons.

Thus there are several studies which indicate that females are poorly adapted compared to males, several contradictory studies, and two studies (Starr and Roberts, 1982, and the present one) which show no "pure" sex difference in subjective adaptation. Further research is needed before generalizations can be stated.

Age

Age was not a significant predictor of Subjective Adaptation, contradicting those who think that older refugees are significantly less satisfied. There were interaction effects, however. Older refugees who participated more in their ethnic social network (ESN) were happiest (younger refugees with least ESN being relatively unhappy), and those older refugees who had experienced the worst trips from Vietnam to the refugee camp were relatively least happy with Canadian life.

The regression results indicate that age was the second most powerful predictor of Sociocultural Adaptation and confirm the expectation of a negative sign (older refugees being least adapted and younger ones most adapted).

Age may be so closely linked to sex (Lin, Tazuma and Masuda, 1979; Michalowski, 1987) that looking at either variable in isolation may be myopic. The present results do at least offer some support to the following conclusions of Chan and Lam (1987:35–36):

... significant age differences in the nature and degree of preoccupation with the past among our refugee respondents . . . the most acute loss was of a closely knit and cohesive social network comprising kin, neighbors, friends and acquaintances. . . . For the older persons, that is, those 35 years old or beyond, the sense of loss was multi-faceted, and was sometimes all encompassing. . . . Upon arrival in Canada, the basis on which our older refugee respondents traditionally built their sense of personal competence and self-esteem had been largely destroyed.

Size of Municipality of Residence

Size of the municipality of current residence was inversely related to Subjective Adaptation (refugees in villages and towns were more satisfied than those in the big city) but not at all related to Sociocultural Adaptation or Economic Adaptation. For planners and policymakers, this may mean that it makes sense to allocate refugees to nonmetropolitan places since they will be no different economically or in terms of acculturation than they would be in the metropolis and will be more satisfied (at least during the first five years the present sample represents). Interestingly, the subjective satisfaction scale was biased toward perceived measures of job satisfaction, suggesting that not only were nonurban refugees relatively happier with life, they felt relatively content with their job situations.

In regard to Sociocultural Adaptation, one might have assumed that larger cities would lead to greater refugee adaptation due to opportunities for social and cultural interaction, or, contrarily (*cf.* Beiser, 1990; Bushart, 1990), that smaller places allow more intimacy and less alienation. While the variables in the present scale of Sociocultural Adaptation are disparate, they include English skill (objectively measured) and number of friends (other than close friends), so the finding of no-relationship has implications for settlement planners.

Ethnicity

Ethnicity (ethnic Vietnamese versus Chinese Vietnamese) was not a significant predictor of Subjective Adaptation. The main components of the scale of Subjective Adaptation in this study relate to satisfaction in the workplace, which is not directly comparable to psychological measures used in other studies. However, the literature on complex organizations has long shown the importance of the workplace on mental health, including self-concept. To that extent, and to the degree that job satisfaction measures a difference between newcomers' expectations of the West and their progress therein, the results may be valid measures of the absence of differences between the "ethnic" and "Sino" Vietnamese.

In this study ethnicity was not a significant predictor of Sociocultural Adaptation, which fails to replicate the findings of Indra (1980), Nguyen, Cook and Phung (1983), Desbarats (1986), Gold (1989), and Beiser (1990). A partial explanation is that this study uses a unique measure of sociocultural adaptation. Another explanation is that there are sample differences between the present study and others. The ethnic Vietnamese had higher average English skills (objectively measured) than did the ethnic Chinese, but since English skill is part of the dependent scale one cannot expect this difference to help create a difference between the two independent variables comprising ethnicity.

In this study ethnicity was not a significant predictor of Economic Adaptation. Apparently in Alberta the existing Chinese-Canadian community ignored the Chinese-Canadian newcomers to the extent that they had virtually no advantage over their non-Sino countrymen. The findings of Desbarats (1986) and Gold (1989) are therefore not fully supported, but as discussed above under education there is, in Table 6, a significant relationship between INT2*8 (the interaction of ethnicity and education) and the dependent scale. As mentioned earlier, the master correlation matrix shows that the simple (Pearson product-moment r) correlation between education and ethnicity is high, positive (+0.324), and significant ($p < 0.0001$). Given that for the dummy variable RACE, "Chinese" was coded 0 and "Vietnamese" as 1, this means that the ethnic Vietnamese have a higher average education than the Sino-Vietnamese.

This could well account for the interaction and support the conclusion that education is the more important of the two potential predictor variables. However, for the ethnic Vietnamese the effect of education or vocational training was detrimental to economic adaptation compared to the ethnic Chinese refugees for whom low education corresponded to higher scores on economic adaptation.

It could be that the business skills of the Sino-Vietnamese are offset by the higher average education of the ethnic Vietnamese. Possibly the entrepreneurial skills of the Sino-Vietnamese were, for this sample, of more economic benefit to them than education was for the ethnic Vietnamese.

Ethnic Network

Ethnic social network (ESN) participation was inversely related to Subjective Adaptation, *i.e.*, those with relatively less involvement in the ESN were more satisfied with Canadian life. Superficially at least, this seems to support those who advocate more of an “immersion” or “strict weaning” approach and to not support those who encourage the forming of ethnic ghettos and the maintenance (often with government funds) of the ethnic culture. This conclusion, if correct, only is applicable to the particular dependent variable used (the scale of subjective satisfaction, which was heavily weighted toward job variables). Extensive ESN involvement may keep participants from being satisfied with Canadian life outside the ethnic “cocoon,” perhaps because of low status job referrals from within the cocoon (the Gatekeeper phenomenon).

This is one of the few results for which the order of cause and effect are uncertain. There even may be a two-way direction over time. It is worth noting that there is no correlation between age and ESN ($r = -0.05$, not significant). Perhaps ESN involvement for older refugees (where it exists) helps adaptation, whereas for younger refugees ESN participation (where it exists) does not assist adaptation.

There was also an interaction with age in that the product of age and ESN was significant as a predictor of Subjective Adaptation, but with a positive polarity suggesting that for older refugee ESN participation led to higher satisfaction with their life in Canada. This may be because older refugees have no high occupational or economic mobility expectations and feel rewarded with whatever income they have, as well as with their ESN. Deschamps (1982) found Southeast Asian refugees generally to be grateful for any job and to be resigned to the situation but determined to make the best of it – an attitude Chan (1987) called “pragmatic realism.” Perhaps younger Vietnamese refugees have higher occupational expectations and thus are less satisfied (and less prone to ESN participation and fulfillment). As noted above, most of the variables in the scale of satisfaction relate to occupational attainment and expectations.

ESN was not related to Sociocultural Adaptation, so it is incorrect to conclude that high ESN involvement keeps refugees from learning English (and all the other variables which comprise the dependent scale used in this study). Neither the researchers who seem to suggest that the ESN helps initial adaptation (*e.g.*, Beiser, 1990) by “immunizing” against culture shock and allowing for smoother eventual adaptation (Dorais, 1991) nor those who

implicitly advocate the "sink or swim" method of immersion in the new culture (e.g., Geiger, 1982; Nguyen and Henkin, 1982; Cox, 1985) receive unequivocal support here.

The null result may be due to the actual level of ESN in the sample. Finnan (1983) mentioned that in California efforts to get Vietnamese refugees to participate in ethnic associations tended to fail from apathy. Haines, Rutherford and Thomas (1981) thought that Vietnamese refugees were less active in ethnic organizations than were refugees from other Southeast Asian countries. Deschamps (1985:102, 103) reported that in Quebec the Vietnamese were much less likely than the Laotians and Cambodians to participate in any ethnic organizations. Indra (1980:181–184) explained why the ethnic Vietnamese in Alberta were much more active in forming organizations than their ethnically Chinese compatriots.

All of this suggests an interaction between ethnicity and ESN, but further regression analyses failed to illuminate the matter. This may be a rare instance where the "controlling" or "partialling out" done by multiple regression is not the best method. Possibly a time frame approach may be better for this particular relationship, *i.e.*, looking at the relationship at different times, via subsamples where resurveying is not practical. Therefore, the overall stepwise multiple regression analysis (excluding length of residence) was repeated, but the sample was divided into the four quartiles on the basis of duration of residence in Canada. These quartiles represent 1–32 months residence in Canada, 33–41 months, 42–50 months, and over 50 months; henceforth they will be referred to as duration groups I, II, III, and IV. Respective group sizes were 134, 135, 133, and 135 respondents. The results clearly indicated that presence and order of significant predictors differs across the four duration groups. Thus length of residence has an important effect.

In regard to Subjective Adaptation, there was a mixture of inconsistent results. The only clear conclusions are that size of municipality is significant for the first three groups but ceases to have an effect for duration group IV. For Sociocultural Adaptation, the significant predictor variables and their rank again varied greatly across duration groups, but education was always at the top, except for group IV where it followed age. In regard to Economic Adaptation, the results defy generalization as they vary so much across duration groups, but it can be noted that ESN was not a significant predictor.

Sponsorship

In contradiction to the results of other studies (e.g., Montero, 1979; Lam, 1983; Woon, 1984, 1987; Chan and Lam, 1987; Woon, Wong and Woo, 1988), here type of sponsorship did not affect Subjective Adaptation nor Sociocultural Adaptation. Perhaps this means that the affect of sponsorship in

other studies was to some extent illusory or spurious. Woon (1987) explains how different types of sponsors lead to different outcomes (*e.g.*, economic adaptation, residential clustering, rate of acculturation, feelings of being controlled), which suggests that when other variables are controlled for, sponsorship *per se* may not be significant.

Likewise, Indra (1987:9–10) reviewed several previous studies and concluded that sponsorship effects may be minimal compared to what had originally been thought. Perhaps any significant effects disappear over time, after the period of sponsorship. An alternate explanation is that, compared to other places, the various sponsors in Alberta were equally good or equally insignificant to the refugees' overall adaptation.

Voyage Trauma

The extent of trauma involved in the original sea voyage from Vietnam to the country of first refuge was a significant predictor of Sociocultural Adaptation and interacted with age on Subjective Adaptation. (As stated earlier, older refugees with more trauma were relatively least adjusted on the scale of subjective satisfaction.) Voyage trauma had no unique effect on Subjective Adaptation and no effect at all on Economic Adaptation.

Marital Status

Marital status was the second most powerful predictor of Subjective Adaptation and the fourth most powerful predictor of Economic Adaptation. Specifically, the dummy variable represented whether or not the respondent was married and living with the spouse and was coded so that no = 0, yes = 1, such that the positive sign of the coefficients corresponds to better adaptation when married and cohabiting with the spouse. (Because some respondents were widows, widowers, or separated from their spouses for various reasons, they were lumped in with the unmarried persons for the regressions.)

For Sociocultural Adaptation, the interaction of this dummy variable with sex was a significant predictor, but the negative sign suggests that the combination female/married and living with spouse was related to least sociocultural adaptation. Again the explanation for such findings is simple. The institution of marriage provides various supports and benefits which assist subjective adaptation and coping with life in general. To the extent marriage is a financial partnership or economic unit, it will obviously assist economic adaptation.

Length of Residence

As would be expected, length of residence in the new country (Canada) was a positive predictor of Economic and Sociocultural Adaptation. Length of

residence did not appear as a predictor of Subjective Adaptation, however. Presumably it takes longer to like a new place and feel "at home" than it does to earn a living and learn the culture.

English Skill

As English skill (objectively measured) was part of the dependent scale of Sociocultural Adaptation, it was not logical to use it as one of the independent (potential predictor) variables. The only available proxy was the subjective variable "self-rated progress in English" (ENGPROGR), which was therefore used as a slightly inferior substitute in the list of predictor variables in the original computer runs.

As noted earlier, there was a significant positive correlation ($r = +0.25$) between ENGPROGR and English skill, but it may be said not to have substantive significance given the large sample size of 537. Even as a measure of English progress from arrival to interview, it may be influenced by the respondents' egos or confidence and by whether the native language was Vietnamese or Chinese. Thus, the lack of any significant relationship between the independent variable measuring English and the dependent scales was initially attributed to problems with the use of this particular independent variable.

The Pearson correlation between English skill and economic adaptation is virtually zero (+0.09). Separate multiple regression runs, identical to all the others but using English skill in the predictor list instead of ENGPROGR, were conducted both with and without the interaction terms. The terms involving ENGPROGR were simply deleted in one run, whereas English skill was substituted for ENGPROGR in the interaction terms in the other. When terms involving the language variable were not included, the result was exactly the same as when ENGPROGR had been used, namely no relationship. English skill did not appear in the list of significant predictors.

When English skill was substituted for ENGPROGR in the interaction terms, the order of significant predictors was duration, sex, INTE*4 (interaction of English skill and sex), MSTAT2 (dummy 2 for marital status) and INT4*MS1 (sex and marital status dummy 1). However, this appearance of English skill in interaction with sex was the only predictor in the above set which was not significant ($p = .07$). Thus the substitution of English skill for ENGPROGR made no significant difference to the finding of no relationship between the language variable and economic adaptation.

When originally used to test H16, ENGPROGR was considered a poor proxy for current English skill. However, Nguyen and Henkin (1982) asserted that the rate of learning the new language is far more important than actual skill on arrival. Thus ENGPROGR may have been an appropriate variable after all.

The null relationship remains a major surprise, given the general finding that education is a significant predictor of Economic Adaptation. Education and job training have traditionally been correlated with income levels simply because many highly paid jobs require education and/or training to perform and because diplomas or degrees are prerequisites to high status positions in modern society. (The research of Wooden, 1991, is a notable exception, as he found education to be spurious in regard to the economic adaptation of refugees in Australia.) One may presume that if one common phenomenon applies, so should the other, especially since researchers such as Richmond (1974), Nguyen and Henkin (1982), and Woon (1987) perceive that education and rate of learning English are highly correlated. Perhaps the present finding is due to the fact that 96 percent of the sample had been in Canada five years or less (69% four years or less), and were still in occupations which did not require much English skill.

Another explanation for the surprising finding is that it is possible to earn a good income in English-Canada without much English skill. Examples known to the author from various research and personal experiences in three Canadian cities include running a snack bar, an "ethnic" restaurant, a wholesale food service, a retail fruit and vegetable store, working in a factory where the workers are also recent newcomers, working at a skilled blue-collar trade which involves mostly machinery rather than social interaction, being a talented artist, and unionized janitorial work. Computer systems analysis and troubleshooting where little communication with end users is required is another example.

The null finding for English language progress and actual skill on economic adaptation prompted the author to perform a similar run for the dependent scale of Subjective Adaptation. The hypothesis was that English language skill or progress affects degree of subjective adaptation. (Again, since English skill was not part of this scale there are no problems in using it in the predictor list.) There was, however, virtually no effect of English skill on the dependent scales. Nguyen and Henkin (1982:112-113) reported that higher education led to faster acculturation (including English skill), but that higher education did not necessarily lead to a more positive attitude to the new country. In fact, the result could be dissatisfaction. At any rate, in this study there appears to be no direct effect of the language variable on Subjective Adaptation.

CONCLUSION

Methodological Recommendations for Future Research

The most general findings from this study are that refugee adjustment and adaptation are best conceived of as having multiple components, rather than being homogenous. Indeed, predictors of one component of adaptation may not have the same effect, or any effect, on another component. In this study,

the components were economic, sociocultural and subjective aspects, so future research could begin by using the same three scales or attempt to replicate the present results.

More thought should be devoted to the distinction between subjective (self-report or perceived measures) and objective measures of adaptation or adjustment. It is becoming apparent that how refugees feel about their experiences or rate their own progress is as important as objective indicators from the host government's perspective. For example, how newcomers perceive and react to the new environment will affect the number of compatriots they will encourage to emigrate or will formally sponsor ("chain pull" migration).

Interaction effects (among predictor variables) were found to be very important, which means that simple methods of analysis must be deemed obsolete. The findings from this study also suggest that future researchers may be well advised to investigate nonlinear relationships (*e.g.*, curvilinear ones resulting from interaction terms created by multiplication, step functions, or threshold effects).

Duration or length of residence in the country of final asylum has always been a favorite measure in this area of research, and this "time factor" cannot be underestimated – it is not really an independent variable but is a proxy for a plethora of other dynamics. What has significant effects on adaptation at one "length-of-residence" stage (*e.g.*, type of sponsorship, skill in the host country's language, educational or vocational skill, ethnic social network involvement) may have no effect or the opposite effect at a different stage.

Self-described ability in the language of the new society appears to be an unreliable and invalid measure. However, via careful planning and much training using accepted measures, interviewers can achieve valid and reliable ratings of the actual language ability of respondents. Degree of skill in the new language may be usefully conceptualized and operationalized as an aspect or component of adaptation (*i.e.*, a dependent variable) rather than as a predictor of adaptation.

Settlement Policy Implications from Selected Findings

Better educated or vocationally trained newcomers can be expected to adapt better according to objective standards, but not necessarily to feel better about the experience. It may be worthwhile for settlement counsellors and advisors to pay more attention to the better educated or trained newcomers in regard to psychological aspects of adjustment.

Results of the present study suggest that ability in the new language (where the host culture uses a different language than that of the newcomers) is not likely to be significant for economic or self-perceived adaptation for at least the first five years.

Lack of a significant effect for type of sponsorship may be due to differences between this sample and others, but this is not the first study to conclude that the effects of sponsorship differences may be spurious or much less than previously thought. Any effects may simply fade with time, beyond the period of sponsorship. If so, it means one less variable for planners to worry about.

Age was significantly inversely related to Sociocultural Adaptation, which is no surprise.

Other variables that were expected to have significant effects on certain dependent scales of adaptation failed to do so independently, but they did so when in interaction with other variables from the predictor list. Sex, age, and marital status were among such variables which lacked independent effects on certain dependent scales but had significant effects when in multiplicative interaction with other variables (*e.g.*, sex with marital status was a significant predictor in all three scales).

Degree of trauma experienced in the original escape from Vietnam was a significant independent predictor, inversely related to Sociocultural Adaptation. Voyage trauma also interacted with age on Subjective Adaptation, such that the older and more traumatized voyagers were most affected. Voyage trauma did not affect Economic Adaptation. Voyage trauma (and trauma occurring soon before leaving) can be considered "prearrival variables" beyond the control of settlement workers. However, the facts that trauma was related to relatively worse Sociocultural Adaptation and that for older refugees it affected Subjective Adaptation suggest that special programs may prove worthwhile in identifying and counselling such high risk groups.

Perhaps the most interesting findings were in regard to the effect of ethnic social network (ESN) involvement and size of municipality of residence on Subjective Adaptation (both inverse relationships). This may be of interest to regional planners eager to disperse population growth and to politicians concerned about interethnic friction and friction between refugee populations and the indigenous population. This finding may not be generalizable beyond this study, but at least it means that the idea of sending many of the government-sponsored Boat People to smaller municipalities in Western Canada was a good one.

However, the attraction of ethnic neighborhoods in large Western cities and the phenomenon of internal remigration to those areas must be considered. Refugees begin to sponsor relatives under regular immigration procedures once refugee programs have ceased or when the relatives are ineligible. Given the same rate of sponsorees per refugee, ethnic enclaves in large cities will grow at the same rate but become very large in absolute numbers compared to those in smaller municipalities, creating a larger impact culturally, economically, and thus politically. Perhaps decentralization has its best prospects when refugees first arrive in a country which has no established urban communities of that

ethnic group. If newcomers are induced to settle in nonmetropolitan places and to remain there for some time, there will be no enclave in the metropolis to motivate remigration. Moreover, the cost of housing may be higher in the metropolis and thereby discourage secondary resettlement, especially if the newcomers are gainfully employed in the nonmetropolitan places.

Another interesting finding was that there were virtually no significant differences between the ethnic Vietnamese and the Chinese Vietnamese, except for an interaction with education for both Economic and Subjective Adaptation.

APPENDIX A

A team of seven Vietnamese newcomers (including some ethnically Chinese Vietnamese) were carefully trained over several weeks to administer a structured interview of 249 questions face-to-face with Vietnamese refugees who had arrived in the northern half of Alberta province since the 1979 airlifts began. There were two pretests to improve interviewer competence and consistency and to achieve reliability between interviewers (with special emphasis on rating interviewees' English language abilities), and to modify the questionnaire. Potential respondents' locations were ascertained via a variety of methods, and interviewers used creative methods to contact interviewees and solicit their cooperation. Demographic characteristics of the refugees were known from a federal database, so the author of this study and his assistant (a survivor of a Hong Kong refugee camp) met daily with interviewees to inspect the completed interview forms and instruct the interviewers on what demographic traits were being under-selected so that the sample could be shaped to approximate the "universe." This method proved very successful, with the results being very similar to what would have been obtained with a true random (representative) sample. In terms of sample size, use of a sampling formula resulted in a target of 350 residents of the City of Edmonton and 150 residents elsewhere. When the survey was completed, 111% of the Edmonton quota and 90% of the nonmetropolitan target had been accomplished, for a total of 537 respondents.

APPENDIX B

The criteria used to reduce the number of variables were as follows. Variables with a *n* of less than 200 valid responses were deemed ineligible for inclusion. (Many variables had an *n* well below the sample size of 537 due to inapplicable responses and the occasional failure to answer an applicable question.) The second criterion was that variables whose responses clustered excessively in one category must be deleted, on the simple ground that such a variable would not vary enough to contribute meaningfully to the factor analysis (*e.g.*, the question

dealing with childcare problems had 279 applicable and nonmissing responses, but 202 were "0" and 77 were "1"; similarly, there were 470 valid answers to the question regarding number of accidents incurred at work, but the response was "0" for 429).

As it happened, all remaining variables had an n of over 320, which is reassuring and connotes robustness. The net was 42 variables available for inclusion into the analysis. (Of course the number of significant variables appearing in the factor analysis output is less and varies according to minimum loading specified and maximum number of factors allowed.)

APPENDIX C

One could simply define a new variable (*i.e.*, the score on the given scale) as the sum of scores on the variables comprising the scale or as the average of those scores. The former method would be acceptable for constructing a scale or index wherein the sum was crucial regardless of the mix of components involved in arriving at that sum (which would vary according to respondents). An example is a health fitness score comprised of measures of muscle strength, endurance, flexibility and cardiovascular components. The latter method is a variation of the former, which crudely compensates for the differing (per respondent) proportions in the mix by "washing them out" across the sample via averaging for each respondent.

However, the method chosen for this study was to weight the variables (comprising each scale) according to their contribution to the scale. This was easily accomplished as follows. The variables comprising each cluster were 1) multiplied by the loading of each variable on the factor, 2) summed, and 3) divided by the number of variables in the cluster. The result is the desired dependent scale score for each respondent. This method is obviously arithmetically and logically more impressive, but it does have the possible disadvantage of somewhat restricting the results to any sampling or factor analysis peculiarities. The former two methods are said to allow the researcher to more confidently generalize.

APPENDIX D

It was necessary to decide on an "alpha" or confidence level ($1 - \alpha = p$) in interpreting the data. *Prima facie* one might assume that smaller samples require more conservative p values, *e.g.*, a p of $<.01$ or $<.02$ for the runs of $n = 327$ compared to a less rigorous p of $<.05$ or $<.10$ for the runs of $n = 537$. However, due to the way sampling formulae are constructed, the larger the sample, the smaller the Pearson product-moment r correlation needed to reach a significance level. Thus, to achieve scientific conservatism, one should require

a smaller p for larger samples and allow a larger p for smaller samples, assuming comparable quality of the samples.

With the foregoing in mind, a p value maximum of .01 was set for the runs involving $n = 537$, and a slightly more tolerant level of .02 was set for runs involving $n = 327$. As noted above, inspection of the output led to the decision to report only the results of the latter set of runs, so all references to significance in this paper refer to a p value of .02 or less.

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