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Chronic Social Stress and Emotional Well-Being: An Analysis of Mental Health of Immigrants in Alberta

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Abstract

This article examines the cause and effect relationships between chronic stress and mental health status of 20 to 64 year old immigrants living in Alberta. For the purpose of this analysis, the 1994/95 Canadian National Population Health Survey data were used. The study considers years of schooling, place of birth, age, household income, socioeconomic status and general chronic stress index as important factors that may influence immigrant's mental disorder. A multivariate analysis was utilized to highlight the significant predictor variables. The study proposes an explanation using the socio-demographic stressor model. It seems that age and household income have a strong effect on general chronic stress, which in turn influences the mental health of the immigrants. By splitting the place of origin into developed and developing regions, differences in the use of indicators to predict mental health condition of immigrants were noticed. The study presents two path models to examine the social stressor theory.

Résumé

À partir de données tirées de l'Enquête nationale sur la santé de la population de 1994-1995, la présente étude examine les relations de cause à effet entre le stress chronique et l'état de santé mental d'immigrants âgés de 20 à 64 ans vivant en Alberta. L'étude considère les années de scolarité, le lieu de naissance, l'âge, le revenu du ménage, le statut socio-économique et l'indice général de stress chronique en tant que facteurs susceptibles d'exercer un effet déterminant sur les troubles mentaux des immigrants. Une analyse multivariable a servi à mettre en vedette les variables descriptives importantes. L'étude propose une explication utilisant le modèle des agresseurs socio-démographiques. Il semble que l'âge et le revenu du ménage ont un effet puissant sur le stress chronique général, qui influe à son tour sur la santé mentale des immigrants. En classant le lieu d'origine entre les régions développées et en voie de développement, les chercheurs ont relevé des différences dans l'utilisation des indicateurs servant à prédire l'état de santé mentale des immigrants. L'étude présente deux modèles de pistes causales pour examiner la théorie des stresseurs sociaux.

Key Words: *immigrants, chronic stress, social indicator*

Introduction

The past several years have seen a trend among Canadian health service providers and practitioners to address health and illness from a health promotion and illness prevention perspective. This framework emphasizes holistic health care service and has increased awareness that mental health[1] is one of the key elements of the general well-being of human life, irrespective of one's social category such as class, gender, ethnicity, religion, culture or immigration status (Fenton and Sadiq-Sangster, 1996; Flynn and Cappeliez, 1993; deCosta, 1993; Trovato, 1992; Vega and Rumbaut, 1991).

This study examines the impact of demographic variables on mental health of immigrants[2] living in Alberta. Focussing primarily on household income, years of schooling, classification of occupation, age and length of stay, this analysis also includes an examination of the effect of general chronic stress. This social variable is developed from a combination of immigrant's ongoing problems like marital relationship, child stress, financial stress and environmental stress, on mental health. Additionally, the study analyzes the role of place of origin. In this context, the study deals with the following questions: (1) Are there mental health differences among immigrants from developed[3] and developing regions? (2) What is the contribution of household income, classification of occupation, years of schooling, age, length of stay and general chronic stress on mental health differences? (3) How do these socio-demographic variables affect across immigrants groups?

This analysis is limited to immigrants aged 20 to 64 years. Presently, they are the largest immigrant group in Canada (Statistics Canada, 1997). Examining the mental health status of immigrants between ages 20 to 64, therefore, could help to identify immigrants 'at risk' for mental health problems, and more specifically what types of immigrants are more likely to have that problem.

For conceptual understanding, the social stress explanation is used in this study. This theory helps to examine how demographic variables affect a diverse immigrant sample population's mental health. Most of what we know concerning mental health in general, and immigrant mental health in particular have primarily come from this theoretical perspective in sociology (Cockerham, 1996; Wade, 1993; Lequerica, 1993; Vega and Rumbaut, 1991). For example, like the native-born Canadians, socioeconomic status of immigrants has a dramatic effect on their level of stress. This stress, in turn leads to the risk of severe mental disorder (Rousseau and Drapeau, 1996; Henry et al., 1995; Link et al., 1993). Although these studies strongly recognize the effect of demographic factors and other social stressors like pre-migration and post-migration (Beiser, 1988), it seems that most research somehow fails to elaborate on the extent of differences found in immigrants' mental illness.

We know that everyday Canada accepts different categories of immigrants. Despite this, immigrant mental health research is mostly constructed under the assumption that immigrants are homogeneous groups with similar social, cultural and physical experiences and background. Some authors, however, (Fenton and Sadiq-Sangster, 1996; deCosta, 1993; Vega and Rumbaut, 1991; Kleinman and Good, 1985), argue that while all immigrants share the same socially constructed label, they are heterogeneous in relation to experiencing and expressing mental disorder. This study therefore compares two groups of immigrants, from developed and developing regions, with regard to their mental health, and what demographic factors contribute to the development of mental illness.

Understanding the Role of Six Social Variables on Mental Health

Household Income[4]

It has been pointed out by many scholars (Novak, 1997; Broman et al., 1995; Dooly et al., 1994; Link et al, 1993; Economic Council of Canada, 1990) that directly or indirectly, economic interests are on the minds of most people. Previous authors also note that household income is widely acknowledged as a potential factor in the development of both acute and chronic mental disorder. For instance, according to the *1994/95 National Population Health Survey (NPHS) Report*, income is associated with depression; the prevalence of depression among people in the lowest household income group is reported at 8%, compared to about 5% for those in the lower-middle, upper-middle and highest income groups. The

same depression pattern may be seen among immigrants ages 20 to 64 living in Alberta.

Classification of Occupation[5]

Immigrants have higher rates of labour force participation than the Canadian-born (Beaujot, 1991). For example, Kelly (1995) reports that according to the 1991 Census, adult Filipinos, Blacks, South Asians and Pacific Islanders, had highest labour force participation. However, others show that many of these people are underemployed (Henry et al., 1995; Beiser, 1988). This is particularly a stressful event for this population. It seems that an immigrant's place of origin is a strong contributory factor to his/her underemployment (Henry et al., 1995). Using the 1986 Census data, Reitz and Breton (1994) note that immigrants from developed countries earned as much as Canadian-born, whereas immigrants from developing countries had an earning disadvantage, earning lower than both the Canadian-born and immigrants from developed countries. The present study focuses mainly on the effect of occupational classification (which includes labour force participation and income) on general chronic stress and mental health. Based on earlier research, this study argues that occupational position could account for differential social stress and mental illness among immigrants.

Years of Schooling

There seems to be a general trend in Canada that immigrants from developing regions with university degrees are not recognized by Canadian employers (Kelly, 1995; Beiser, 1988). Henry and her colleagues (1995) studied the 1991 and 1992 annual reports of *Employment and Immigration* and found that despite higher levels of education, people from developing countries, particularly those from non-European countries, continued to be concentrated in lower paying jobs. In the banking sector, for example, 40% of men from developing countries were employed in the clerical category, compared with only 19% of all men. This study hypothesize that despite their education levels, immigrants from developingregions are more prone to underemployment, and therefore will exhibit a proportionately higher level of general chronic stress than those originating from developed regions. Consequently, this may positively affect their mental health.

Place of Origin

Studies addressing the relationship between place of birth and mental health have attracted limited attention in sociological research. Nevertheless, literature pertaining to immigrant's country of origin have been focussed in three areas. First, comparative studies target mainly the mental health condition of immigrants and native born citizens (Statistics Canada, 1995; Trovato, 1992; Trovato and Jarvis, 1986). The second major domain of research is immigrant's mental health and coping (Bernstein and Rosser-Hogan, 1993; Samuel, 1987; Deschamps, 1987; Chan, 1987). Unfortunately, these authors have paid particular attention to the

situation of Indochinese immigrants who came as refugees. The third area of immigrant mental health research relates to barriers to adjustment to their adopting country. Researchers in this area (Dreidger, 1996; Samuel, 1987; Kalin, 1981; Berry et al., 1977) have taken assimilation and adaptation theories into account when discussing the relationship between attitude and social isolation.

Although existing immigrant mental health data provide some evidence linking place of origin to mental illness, researchers must try to understand the rate of differences present across immigrant groups. One conclusion drawn from the literature is that, on the whole, immigrants from developed regions will show a lower level of mental disorder than their counterparts from developing regions. The question is why? Several authors have observed that Canadians show differential degrees of acceptance of immigrants based on race, ethnicity, and country of origin (Henry et al., 1995; Kalin, 1981; Berry et al., 1977). Familiarity with Canadian culture, language (Balakrishnan and Rao, 1997), community network (Trovato, 1992; Trovato and Jarvis, 1986), social system and physical environment (Beiser, 1988) may account for reduced mental health.

Age

The impact of aging on mental health is also worth examining particularly as middle aged adults are generally identified as the *locus of mental illness* (Cockerham, 1996; Thomson, 1995). Past research on mental health problems, however report the treated cases and somehow systematically ignored the untreated cases. In addition, other studies have been handicapped in explaining the relationship between immigrants' age and length of stay, when it is widely recognized people who migrate to Canada in later life, may face unique challenges (Novak, 1997:127).

These two characteristics could positively affect the mental health of an immigrant; an immigrant may be 45 years old, yet has lived in Canada for a short period of time. Basavarajappa (1997) reports that under the family class immigration category, a significant proportion of elderly immigrants from developing regions arrived during the last fifteen years. Furthermore, during their initial arrival, these people are not eligible for government social assistance. As a consequence, a higher proportion of older immigrants may depend upon their relatives or sponsoring agencies. Others argue that for some older immigrants (55+ years) community cohesion may not strongly influence their mental health status. The reason being that these people have small community size in Canada (Novak, 1997). Dissatisfaction with living arrangements, empty nest syndrome, and lack of social contact are other factors which contribute to the older immigrants' poor mental health (Hall, 1993). Therefore, both age and length of stay could produce variations in general chronic stress and mental health among immigrant populations. In particular, these two factors possibly may lead to severe depression among immigrants from developing regions.

Length of Stay

Whereas interest in immigrant mental health is mild, there is a general acknowledgement in the social scientific community that length of stay is an important stressor to consider. Beiser (1988) believes that recent immigrants are at greater risk of mental illness than are immigrants who migrated long ago. Factors like lower social support and unfamiliarity with Canadian culture are mentioned. Other studies (including *The 1987 Canadian Task Force*) have documented a second period of elevated mental health risk which primarily occurs several years after resettlement, and is associated with personal problems such as marital conflicts, family structure, intergenerational conflicts and aging. Thus, it seems that general chronic stress is mostly derived from differential rates of accommodation and acculturation. Therefore, respondents who are less integrated into Canadian society (Driedger, 1996) are more vulnerable to mental illness than their counterparts. This hypothesis however, is not fully supported by Trovato (1992). In his violent and accidental mortality study, Trovato shows instead a strong association between ethnic community cohesion and suicide rate, and no association between length of stay and suicide rates.

The other research area relating to immigrants and length of stay is chronic illness. Although this triangulation analysis (Statistics Canada, 1995) is relatively new, it highlights the strength of association between length of stay and chronic illness among different immigrant groups and the Canadian-born. Interestingly, the 1994/95 NPHS analysis shows that over time, immigrants reported more allergies (which is similar to Canadian-born; Statistics Canada, 1995:12), yet overall immigrants have lower rates of chronic condition (50% versus 57%). Implicitly length of stay was confounded with immigrants' age when the report concluded, "...as their length of time in Canada increases, so does the reporting of chronic conditions"(ibid.). Based on existing studies, length of stay is more likely to affect immigrants from developing regions than those from developed regions.

General Chronic Stress[6]

General chronic stress, a derived variable, is composed of events that are relevant to all respondents. This index is useful to determine an individual's psychological health and is normally used as a scale for social stress analysis. Dohrenwend (1975), for example, argued that an accumulation of several life events in a person's life may eventually lead to stressful consequences. Other studies show that negative life events are more important predictors of mental health outcome (Almqvist and Brandell-Forsber, 1995; Link et al., 1993). Therefore, it is vital to understand what type and combination of life events are causally linked to mental illness.

Mental health research in Canada indicates that immigrants are thought to experience a greater number of stressful life events than the majority group. This is critical, particularly for people migrating from countries that are in political turmoil (Rousseau and Drapeau, 1996). Viewing household income, employability, family relationship, length of stay, age and education as stressful life events may

help to understand the development of mental illness in immigrants. Chan and Lam (1987) for example, maintain that general chronic stress is an important component of immigrant's mental health status. In their study of Vietnamese immigrants, the authors found that older respondents suffered most from acute and psychiatric problems. The reason being, they were unable to cope with economic and socio-psychological dependency on young members of their family.

Most immigrants come to Canada for a better life, however, they have less time to attain this goal. In order to fulfill their dreams and achieve a desired life style many immigrants, particularly from developing countries, work at more than one job and in unsafe environments (Bolaria and Bolaria, 1994). Furthermore, many of them suffer from chronic illness and fear disclosure along with a fear of job loss (Anderson, et al., 1993). This pattern of thinking and working may affect the mental health of immigrants from developing regions more than immigrants from developed regions.

Mental Health[7]

Mental health is described in different terms with respect to the symptoms presented by individuals. Vega and Rumbaut (1991) argue that the term "mental health" was originally intended to reflect psychological well-being and resilience. However, most often it is understood as serious illness for which people are institutionalized. The intention of this analysis is to examine and compare the level of mental illness experienced by non-institutionalized immigrant groups.

Members of various immigrant groups show anxiety at different levels. Using the United States data, Vega and Rumbaut (1991) provide a critical explanation of mental health status of people of African, Hispanic, Asian and American Indian ethnic origins. They argue that immigrants from developing regions who are continuously exposed to highly stressful environments have a tendency to emulate the higher levels of stress that characterize other American-born, non-European groups.

Hypotheses

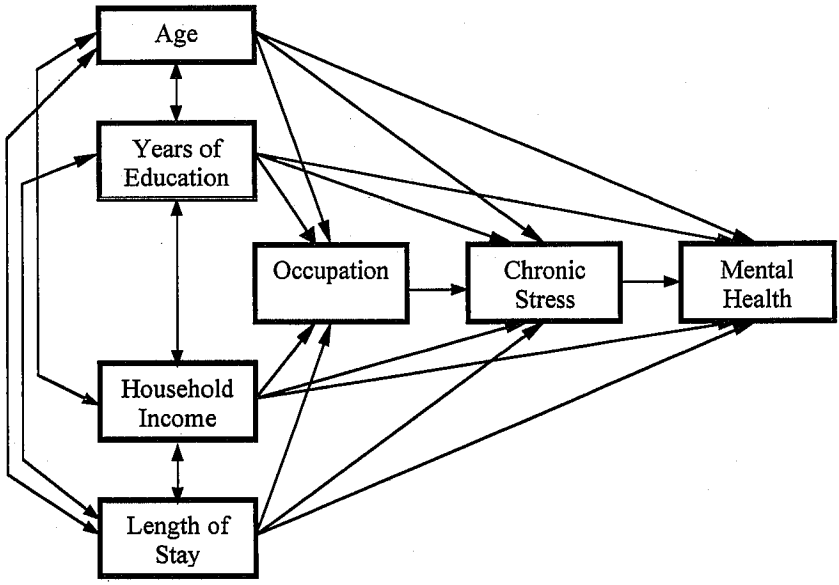
The *causal path model* (Figure 1) summarizes the following hypotheses with respect to differences in stress factors and mental health status among immigrant groups from developed and developing regions.

1. Recent studies suggest that general chronic stress as a vulnerable variable for affecting individual's mental health. It is therefore fair to hypothesize that general chronic stress will show as an equal risk factor for both groups of immigrants.

2. General chronic stress differences will be accounted for by household income, occupational differences, years of schooling, age and length of stay.

Figure 1

Schematic Representation of the Preliminary Path Diagram



3. Age and length of stay will have an interaction effect. Regardless of this, immigrants from developing regions will experience more general chronic stress. They may also indicate more mental health problems than their counterparts from developed regions.

4. Based on previous arguments that household income is an important predictor of individual's mental disorder, this study hypothesizes that immigrants so affected, like other Albertans, may also report negative life experiences.

5. Because immigrants from developing regions have education and employment disadvantages (often experienced as negative life events) they will show more general chronic stress and mental illness than immigrants from developed regions.

6. On the whole, therefore, immigrants from developing regions will exhibit higher levels of general chronic stress and mental illness than their developed regions counterparts.

Data and Methodology

Sample

Data for the present analysis were taken from Statistics Canada's National Population Health Survey (NHPS) carried out in 1994 through telephone interviews. The survey sample included approximately 20,000 households on a Random Digit Dialling Method.[8] The subsample for this study was restricted to Alberta, and weighted to generate a sample size of 1594.[9]

Since, the analyses focuses only on immigrants, not all 1594 respondents were considered as appropriate. Therefore, a frequency distribution was carried out for the immigration variable. Of the 1594 respondents, 16.2% (n=258) identified themselves as immigrants. Immigrants between 20 and 64 years of age were selected and a new variable was constructed, eliminating 67 individuals. Furthermore, to compare mental health status among immigrants, 189 respondents were subdivided according to two broad categories. Those respondents who identified their place of origin as countries like the United States, Mexico, Europe or Australia, were classified under "developed regions". Those from South America, Asia or Africa were grouped under "developing regions" (see Table 1).

Table 1

Number of Immigrants by Place of Birth

Region	Frequency	Percent
Developed Regions	114	60.5
Developing Regions	73	38.8
Not Stated	2	0.7
Total	189	100.0

Measures

Based on earlier research findings, the original NPHS data code book was scrutinized and 16 variables were selected from the 665. Measures such as sex, marital status, language, general health, restricted activities, religiosity, household type[10] and occupational classification were used for descriptive purposes. Later, only household income, occupational classification, level of education, age, place of birth, length of stay and general chronic stress variables were selected to examine the direct and indirect effects on immigrants' mental health status.

Methodology

First, various demographic and health related information of immigrants between the ages of 20 and 64 were examined by cross-tabulation. This descriptive analysis was primarily used to compile a socio-demographic and cultural profile of respondents. Second, a *delta index* was used to further measure the socio-demographic differences between immigrants from developed and developing regions.

As the focus of this study is to predict a causal link between demographic variables and mental health, the analysis was carried out in two steps. First, the relationship between demographic variables with general chronic stress and mental health was evaluated. For this, two separate Pearson's "r" or correlation coefficients were calculated for both groups. This analysis has an advantage: it allows for a determination of the level of significance, while it eliminates demographic variables such as occupational classification and years of schooling from multivariate path analysis.

Above all, this study is concerned with group differences; so two multivariate path analyses were carried out. This statistical analysis enables testing the hypotheses, and also the investigation of both the direct and indirect effects of explanatory variables on mental health (dependent variable). In short, this analysis enables the assessment of the relative effects of household income, age, length of stay and general chronic stress on mental health among immigrant groups.

Two issues, however, need to be addressed here. First, the concept of general chronic stress. As mentioned earlier, only past life events of immigrants are collapsed into one variable and labelled as general chronic stress. This variable then indicates the effect of certain demographic stressors in the development of general chronic stress which then explains the level of mental health.

Second, as is apparent, the total sample size of 189 is small. When this sample is further subdivided by place of origin, the sample of immigrants from developing regions (73) is considerably smaller than the sample of immigrants from developed regions (114). Consequently sample sizes can sometimes influence inferential statistical analysis. This study respond to this problem in two ways: whereever applicable the data is discussed, and the standard errors and associated significance level (as shown in Table 6) are highlighted.

Results

Immigrant Groups Comparisons on General Characteristics

It is evident from the descriptive statistics that the groups did not differ significantly in some responses (Table 2). For example, when we first consider the sex differential, both groups had more female respondents than male. For developed and developing regions, the ratio of females were 55.2% and 58.9%, respectively. The proportion of employed people in these categories were 76.6% and 71.8%. Although these sample sizes are small, the data is consistent with earlier survey trends which note that a higher percentage of immigrants are employed (Reitz and Breton, 1994; Beaujot, 1991) compared with the Canadian-born.

Approximately 64% of respondents from developed regions and 66% from developing regions expressed profound support for religious activities. A majority of people from the total sample described their general health in positive terms. For instance, 86% of respondents from developed regions rated their health as excellent, very good or good, and 87.8% of respondents from developing regions indicated similar health status. Only a small proportion of respondents reported having fair to poor health status. While this may suggest that immigrants are healthy people, it also indicates the selection bias in the immigration process that results in immigrants having better physical health than the general Canadian population (Statistics Canada, 1995).

The statistical outcome demonstrates some distinct differences between the two immigrant groups. The results show that immigrants from developing regions were of younger age than immigrants from developed regions. The majority of adults (54.0%) from developing regions were 20 to 39 years of age, in contrast to only 34.0% of similarly aged adults from developed regions. Only 6.3% of immigrants from developed regions lived with children and/or relatives over the age of 25 years, whereas 16.2% immigrants from developing regions had this type of family structure; almost two and a half times the proportion of household type of immigrants from developed regions. This result could be explained using financial reasoning which suggest that, until older immigrants are financially well-off on their own, they may be forced to share accommodation with sponsoring or other relatives in multi-generation households (Basavarajappa, 1997:3). It is equally possible to interpret that living in a multi-generational home is common among this group of immigrants.

Table 2
Characteristics Summary of Immigrant Groups in Alberta, Canada: 1994/95

Variable		Developed Regions		Developing Regions		Delta Index[1]
Age Range:	20-39 Years		34.0%		54.0%	
	40-64 Years	n=114	66.0%	n=74	46.0%	40.0%
Female (n = 189)		n=114	55.2%	n=74	58.9%	3.7%
Marital Status:	Married/Common-Law		74.3%		72.6%	
	Single		15.0%		19.2%	
	Other	n=113	10.6%	n=73	8.2%	8.3%
Language:	English Only		41.7%		6.8%	
	English & French		3.5%		0.0%	
	Other	n=115	54.8%	n=73	93.0%	76.3%
Work: Currently Working		n=111	76.6%	n=68	71.8%	4.8%
Attendance of Religious Activities		n=106	64.0%	n=68	66.2%	2.0%
Household Type:	Children		45.5%		57.3%	
	Couple Alone		21.4%		11.8%	
	Relatives		6.3%		16.2%	
	Single		9.8%		5.9%	
	Single Parent	n=112	2.7%	n=68	4.4%	36.9%
Household Income:	$0.0 - $34,499		46.7%		50.7%	
	$40,000 - $110,000	n=105	53.3%	n=71	49.3%	8.0%
Education:	Under 13 Years		26.9%		44.5%	
	13 Years		30.7%		20.8%	
	13.5 Years		6.2%		6.9%	
	14 Years		23.9%		8.4%	
	16 Years		9.7%		12.5%	
	18 Years	n=113	2.6%	n=72	6.9%	50.8%
General Health:	Good Health		86.0%		87.8%	
	Fair to Poor Health	n=114	14.0%	n=74	12.2%	1.8%
Health Problem		n=23	71.8%	n=9	28.8%	43.0%
General Chronic Stress:	No Stress		22.3%		17.6%	
	Medium Stress		35.1%		33.8%	
	Severe Stress	n=108	42.5%	n=68	48.5%	12.0%
Mental Health:	No Distress		19.8%		24.2%	
	Some Distress		80.2%		71.3%	
	Severe Distress	n=106	0.0%	n=66	4.5%	17.8%

[1]Delta Index is a measure of dissimilarity between samples, a Delta Index of 10% or over is considered dissimilar.

Table 2 presents the percent distribution of the total household income of the two immigrant groups. In 1994/95, immigrants from developed regions living in Alberta had a total household income that was proportionately higher than their developing regions counterparts. The delta index column reveals the magnitude of earning difference (8%) between the two groups.

The majority of immigrants (53.3%) from developed regions had better paying jobs and higher wages than immigrants from developing regions. In general, this result supports Reitz and Breton's (1994) empirical data. Unlike previous studies, this analysis suggests that respondents from developed regions proportionately had more years of schooling than respondents from developing regions.

Compared to immigrants from developing regions, 71.8% of immigrants from developed regions expressed some form of health restriction on daily activities. However, this result is interpreted from a relatively small (32) number of responses. Although restricted activity is not utilized in this study as an explanatory variable, it seems that this is an important variable to consider in future health-related research on immigrants. Another characteristic that distances both immigrant groups is the language competency: approximately 7% of respondents from developing regions could make conversation in English only and none could speak French, whereas almost 42% could speak English only and 3.5% could speak both English and French. Interestingly enough, 93% of respondents from developing regions could speak languages other than English or French, as opposed to 55% from developed regions. Among other things, these language differences illustrate Canada's changing immigration pattern (McVey and Kalbach, 1995; Beaujot, 1991).

Correlations Among Explanatory Variables of Mental Health by Place of Origin

In keeping with earlier literature, Tables 3 and 4 highlight differential correlation coefficient results from the survey, showing the significant relationships of household income, occupational classification, age, length of stay and general chronic stress on mental health of both groups of immigrants. On the whole, significant correlations were found between chronic stress and mental health; household income and general chronic stress; occupational classification and years of schooling; age and length of stay; and length of stay and chronic stress. However, general chronic stress has a moderate positive relationship with mental health for members of both developed and developing regions: $r = 0.49$, $p<.05$ and $r = 0.45$, $p<.05$, respectively. Although this is not a strong association, it is nevertheless statistically significant.

Although Link et al., (1993) found inverse relationship between socioeconomic status and depression, this analysis indicates a moderate to strong relationship ($r = -0.40$, $p<.05$; and $r = -0.66$, $p<.05$) between years of schooling and occupational status in the two groups. The result estimates that on average in 1994/95,

immigrants had lower occupational position in comparison to their years of schooling. But the significant negative value (at a 5% level) is found particularly among respondents who migrated from developing regions. The result somewhat supports earlier conclusions that downward occupational mobility is common among immigrants (Beiser, 1988; Samuel 1987). The most striking thing is that neither years of schooling nor occupational classifications are related to general chronic stress or mental health in either group under study (see Tables 3 and 4). This lack of correlation may perhaps be explained by the small sample size, and as seen most immigrants in this study had some form of employment which possibly gave them a greater sense of job and employment security.

Age and length of stay are important variables in determining mental health. As shown in Table 3, age exhibits a statistically significant, yet a weak, negative relationship with mental health ($r = -0.29$, $p<.01$) of immigrants from developed regions. A significant positive correlation coefficient between household income and chronic stress ($r = 0.25$, $p<.05$) suggests the severity of the respondent's psychological experience and feelings. Surprisingly enough, length of stay has no association with age, education, income, general chronic stress and mental health in this subsample.

Table 3

Correlation Matrix among Theoretical Variables for Developed Regions

Variable	1	2	3	4	5	6
1. Age	-					
2. Years of Education	-11	-				
3. Household Income	-.05	-.03	-			
4. Occupation	-.08	-.40*	0.03	-		
5. Length of Stay	0.15	-.06	-.14	-.01	-	
6. Chronic Stress	-.13	-.14	0.25*	0.15	0.12	-
7. Mental Health	-.29*	-.01	0.13	-.09	-.06	0.49*

*Significant at 0.5 level.

Table 4 shows that age has a significant correlation with chronic stress ($r = 0.28$, $p<.05$) and length of stay ($r = 0.30$, $p<.05$) among immigrants from developing regions. Although a majority of immigrants (n=141) had lived in Canada for ten years or more (Table 5), there are variations in results relating to length of stay and

general chronic stress. Given what is known from earlier studies, this finding is consistent. The general conclusion may be drawn that age and length of stay are not just demographic variables, but have a significant interaction effect on mental health.

Table 4

Correlation Matrix among Theoretical Variables for Developing Regions

Variable	1	2	3	4	5	6
1. Age	-					
2. Years of Education	0.21	-				
3. Household Income	-.02	-.08	-			
4. Occupation	0.05	-.66*	0.06	-		
5. Length of Stay	0.30*	-.03	-.09	-.23	-	
6. Chronic Stress	0.28*	0.05	-.05	0.18	0.26*	-
7. Mental Health	0.14	-.10	0.07	0.15	0.18	0.45*

*Significant at 0.5 level.

Table 5

Immigrant's Length of Stay in Canada, the 1994/95 NHPS Data

Length of Stay	Frequency	Percent	Cumulative Percent
0 – 4 Years	18	9.3	9.3
5 – 9 Years	30	16.0	25.3
10 + Years	141	74.7	100.0
Total	189	100.0	

Immigrant Groups Comparison on Predictor Variables and Mental Health Status

Table 6 presents the results of the two alternate regression coefficient models. There are two country categories, with different sample sizes in each. To address the problem of unbalancedsample size, the results are presented under two separate headings with the standardized β values (β - Beta), their standard errors and significance levels. The variables with main or interaction effects that were significant at a 0.05 level are presented in the table.

According to hypothesis 1, general chronic stress is the main factor influencing mental health. As is apparent from Table 6, general chronic stress has an important role in determining the mental health condition of all immigrants. This stressor, for example, has two statistically significant positive effects for immigrants from developed and developing regions. This appears to support the above hypothesis. An obvious interpretation is that immigrants who migrated to Canada for a better life have a greater probability of experiencing general chronic stress like their Canadian-born counterparts. Thus, if there is change in respondent's life activities we may see a change in general chronic stress level of immigrants.

Table 6

Beta Coefficients for the Effects of Immigrant Demographic Characteristics and Mental Health

Place of Origin	Demographic Characteristics	Standardized Beta Coefficients	Standard Error	Significance Level
Developed Regions (n = 114)				
	Household Income	0.25	.124	.002
	Age	-0.23	.111	.007
	General Chronic Stress	0.52	.141	.000
Developing Regions (n = 73)				
	Age	0.28	.099	.023
	Length of Stay	0.25	.294	.037
	General Chronic Stress	0.45	.272	000

According to hypothesis 2, immigrants chronic stress will be caused by household income, occupational status, years of schooling, age and length of stay. As expected, by undertaking two separate regression analyses by place of origin, the study adds useful new information.

What does the results in Table 5 suggest? Interestingly enough, immigrants from developed regions indicate only one demographic variable which contributed to their general chronic stress. These respondents generally reported concern over *household income* as the main cause for experiencing chronic stress. Given what is known about the immigrant group's position relating to earning pattern, this result is *not* surprising, because studies have suggested that this group's earnings are equivalent to that of the Canadian-born and more than their developing regions counterparts (Reitz and Breton, 1994).

When only household income influences the chronic stress level of respondents from developed regions, age could predict the mental health status of all immigrants. What is surprising is that there are differences in results based on immigrants place of origin. The respondents from developed regions, for example, exhibit a negative cause-effect relationship with age and mental health (β =-0.30). This data certainly contradicts earlier research that found that adults (ages 20-64 years) are highly stressed because of multiple life events (Thomas, 1995).

Oddly, the analysis suggests that age mostly benefited this group in having good mental health. There are several possible explanations. It turns out that people from developed regions on average were older, 66% belonged to the 40 to 64 age category, primarily lived in a nuclear family structure (67.9%), were proficient in English language, and were employed with comfortable household income (Table 2). It is also possible to interpret the age effect using adaptation theory for this subsample. Adaptation theorists argue that those who are familiar with Canadian culture, social system and physical environment integrate into Canadian society more easily regardless of their age. Perhaps for this reason, this analysis highlights a significant negative relationship between age and mental health and no association between age and general chronic stress in this group of immigrants.

In contrast, age and length of stay seems to have a significant positive affect on general chronic stress of respondents from developing regions. As discussed earlier, many respondents from this subsample were young (between the age range of 20 to 39 years). The majority of them lived with children (57%) and other relatives, and had some language problems. Although many have resided in Canada for ten years or more, length of stay continues to positively affect their general chronic stress and mental health. This analysis is inconsistent with earlier studies in showing a link between length of stay and reduction of depression rates among the larger immigrant population living in Canada (Beiser, 1988). Overall, the results display variations in the use of demographic variables like household income, age, length of stay and general chronic stress to explain mental health status of immigrants.

This allows a further elaboration of hypothesis 3. This hypothesis posits that

immigrants from developing regions will experience more general chronic stress regardless of their age. The above discussion supports this hypothesis that age and length of stay have a strong interaction effect among immigrants from developing regions, which in turn affects mental health. The interaction is positively related (age and chronic stress, $\beta = 0.28$; and length of stay and chronic stress, $\beta = 0.25$). Given the recent history of immigrants from developing regions, this is not surprising. For example, in 1991 the proportion of South Asian immigrants aged 55 years and over living in a three or more generation household was about 16% in total higher than that of the Canadian-born group (Basavarajappa, 1997). The results thus suggest that, unlike immigrants from developed regions, this group probably will continue to experience mental health problems regardless of their age. In fact they may be more likely to indicate mental illness as they grow older, because of possible changes taking place in the future to their family structure in Canada. Moreover, this finding is certainly inconsistent with assimilation and adaptation theorists' empirical data which explains that the longer an immigrant lives in Canada, the less prone he/she will be to mental health problems (Beiser, 1988). Instead, this result indicates that length of stay will be a potential risk to the emotional well-being of this subsample.

According to hypothesis 4, immigrants in general will express negative life experiences primarily from household income. First, the analysis shows that (Table 6) among immigrants from developed regions there is a significant interaction effect involving household income, chronic stress and mental health. The regression coefficients also indicate that household income has an independent positive effect on general chronic stress ($\beta = 0.25$), confirming that household income is a potential predictor of general chronic stress and mental health for this subsample. This positive relationship can be partly explained by the respondent's feeling of job insecurity at the time of this survey; a majority of respondents (76.6%) were employed, and on average, earned about $15,000 per year. Like other employed adult Canadians in 1994, these immigrants therefore may have been under tremendous stress from the fear of becoming unemployed. Consequently, they reported experiencing personal and financial stress which is included in the general chronic stress variable. On the contrary, household income has no effect on general chronic stress and mental health of immigrants from developing regions. This finding simply suggests that lack of financial stress is strongly related to their family structure (Fong and Gulia, 1997).

Hypothesis 5 suggests that education and occupational status among immigrants from developing regions will greatly affect general chronic stress and mental illness than will be the case for immigrants from developed regions. As mentioned in the earlier section, this analysis found that occupation and years of schooling have no relationship with general chronic stress and mental health for either group of immigrants. Consequently, these two variables were withdrawn from further analysis. The study concludes that hypothesis 5 is not supported by our data. This raises an interesting question about the occupational classification, a derived variable. As seen, the data clearly indicates that the occupational classification variable strictly categorizes respondents based on their employment and income status. Yet, according to the hypothesis, it is immigrants' occupational status (clearly based on educational qualification) that should produce increased chronic

stress and mental illness among immigrants from developing regions. The main reason being that their educational credentials are mostly *not* recognized by Canadian employers and so they are usually underemployed. Therefore, it may be appropriate to conclude that the combination of variables to create this occupation category has influenced this analysis and suggests an avenue for further exploration.

Finally, hypothesis 6 is fully supported by the analysis. Within this sample, immigrants from developing regions exhibit a higher level of stress and mental illness than their counterparts from developed regions. To summarize this up, the results clearly show that the mental health condition of immigrants from developing regions can be best explained by age, length of stay and general chronic stress. On the other hand, the mental health of respondents from developed regions can be explained by using household income and general chronic stress characteristics.

Discussion and Conclusion

This study addresses an important question within demography: what is the mental health of Canadian immigrants from different countries of origins? It is certainly true that every immigrant experiences general chronic stress, but the rates and the use of indicators vary. Several of the results described above are consistent with this argument. However, the analysis proposes that place of origin has a significant effect on the mental health of immigrants. Therefore, it is appropriate to suggest that immigrant mental health is greatly dependent on the country of origin. As Trovato and Jarvis (1986) note, "... place of birth variable per se is much stronger and in actuality overrides the convergence tendencies among immigrant subpopulations". To support this, two distinct path models demonstrating the differences in mental health of immigrants living in Alberta are presented. The first regression data (Figure 2) illustrates both the direct and indirect effect involving household income, general chronic stress and mental health of immigrants from developed regions. Similarly, Figure 3 displays the observed predictors (age, length of stay and general chronic stress) of mental health condition of immigrants from developing regions.

As illustrated, this analysis is complex, at times contradicting and at other times supporting earlier results. Therefore, it is not possible to rely on one theoretical framework or the use of same explanatory variables to study the mental health status of all immigrant groups. Although it is difficult to be definitive about the results when the analysis is based on a relatively small sample size, the path models suggest that immigrants from developing regions are 'at risk' for mental health problems and that this group warrants attention. Attempts should be made to gradually shift from using a blanket approach and focus more on examining mental health problems across immigrant groups, and look for alternate theoretical approaches to better understand mental health differences among immigrant groups. This *type* of analysis provides an interesting insight into the mental health differences between immigrants from developed regions compared to those from developing regions which is important for providing holistic health care service.

Figure 2

An Alternate Path Analysis Model for Immigrants from Developed Regions

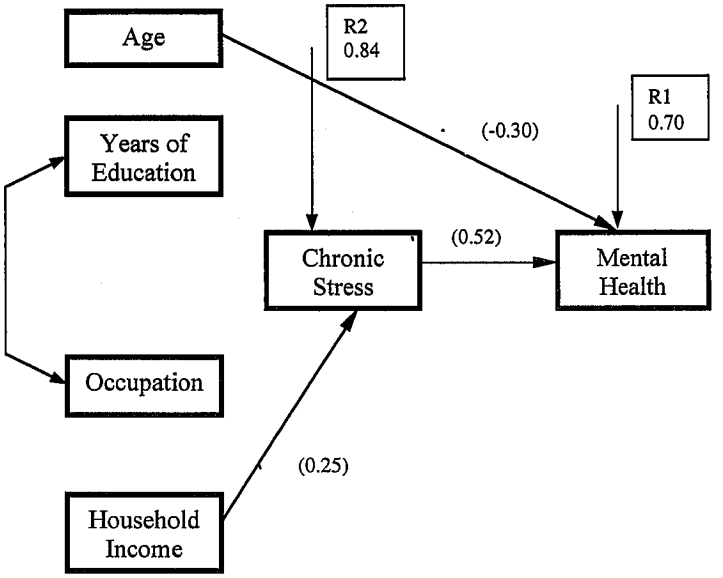
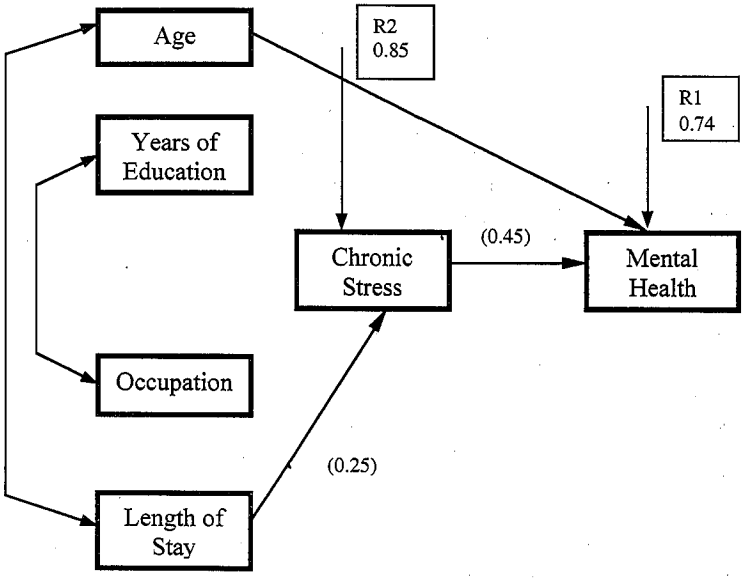


Figure 3

An Alternate Path Analysis Model for Immigrants from Developing Regions



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Endnotes:

1. Mental health is generally defined in terms of psychiatry, which includes substance-related disorders, schizophrenia, mood disorders, anxiety disorders, and personality disorder. In this study the concept mental health measures the level of anxiety and depression among immigrants. To avoid repeating the same word, terms like emotional well-being, mental illness, mental disorder or distress are used interchangeably.

2. Immigrants are people who are allowed into a country through formal government rules and procedures. For example, the Canadian government's immigration policy has established four classes of immigrants: the *independent class, family class, entrepreneur business class and humanitarian conditions.* For this study, all categories of immigrants are included because of the sample size and availability of immigration information.

3. In the 1994/95 National Population Health Survey, Mexico was included in the list of developed nations. This could be due to the fact that Census Canada has always included this country with the United States. In any event, Canada has traditionally had a lower representation of immigrants from this country. Most importantly, these two categories are created based on continent rather than race or ethnicity.

4. The statisticians of the National Population Health Survey project team created this variable based on the total household earnings including income obtained through employment, investment, business and other sources.

5. This variable is generated through an amalgamation of several labour force and income variables, but it includes respondent's primary occupation only and categorizes people mostly on their occupational status.

6. In keeping with conceptualizing social stress as a subjective evaluation caused by ongoing problems, a separate stress index variable was generated by the NPHS project team. After the calculation of the original survey data, a general chronic stress index was established. This item was measured on an 11-point scale (1=minimum stress; and 11=maximum stress). This intermediary variable was considered a better indicator of social stress than marital status, household type,

employment status, household income or restricted activities alone. This derived variable was created to demonstrate a person's level of stress from a combination of issues and probably a better scale of measurement of multiple problems which influences in some fashion an individual's emotional well-being.

7. The mental health variable used in this study is a continuous 24-point distress scale. The main measure of mental health is a measure of everyday feelings, experiences and life activities. It asked questions like, "during the past 12 months, was there ever a time when you felt sad, blue, or depressed for 2 weeks or more in a row?" Those who reported *no* were assigned value 1. Respondents reported whether or not twenty-eight emotional well-being questions affected them in the last twelve months. Taking these responses, the 24-point distress scale index was developed.

8. This method gives rise to a stratified simple random sample, by eliminating the business telephone numbers, which is popularly known as elimination of Non-Working Banks Method. For detailed information see *NPHS Code Book*, 1995.

9. The weighting was done to make the sample size representative of Alberta's actual population.

10. This new variable was created by the statisticians of the NPHS project team after the completion of the NPHS survey. This variable was derived based on the ages and reported relationships of each person to all others in the household. It was established to indicate the living arrangements within the household.

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