



# **BEHAVIORAL AND EMOTIONAL PROBLEMS OF IMMIGRANT CHILDREN**

**The First Ten Years in Canada:**

**A Multilevel Assessment of Behavioral and Emotional Problems of Immigrant  
Children**

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## **Abstract**

Using data from the National Longitudinal Survey of Children and Youth (NLSCY), the current study examined behavioral and emotional problems of immigrant children (conduct disorder, indirect aggression, property offences, hyperactivity, prosocial behavior, and emotional disorder) conditional on child and city characteristics. Multilevel data analyses showed that only emotional disorder was a significant concern at the national level, and that hyperactivity, prosocial behavior, and emotional disorder varied significantly from city to city. At the child level, family structure (number of parents) and gender of immigrant children were the most important child characteristics responsible for behavioral and emotional problems of immigrant children. At the city level, population characteristics (e.g., population size and population density) had major effects on emotional disorder of immigrant children. Socioeconomic conditions (e.g., housing cost) affected prosocial behavior of immigrant children in a substantial way. Social services conditions were influential of emotional disorder and prosocial behavior of immigrant children. Implications for social policies for immigration were discussed.

## **The First Ten Years in Canada: A Multilevel Assessment of Behavioral and Emotional Problems of Immigrant Children**

The twenty-first century shows Canada at an interesting phase of transformation. The proportion of children in Canada's population is at its lowest ever, and the immigrant population is growing at its fastest since 1941, almost threefold the growth of native-born Canadians. At the intersection of these two trends, a particularly vulnerable and important new demographic is revealed: immigrant children. The Canadian Council on Social Development (1998) reported that a growing proportion of young people in Canada, especially in large cities, were born in other countries (for example, 30% of youth in Toronto and 28% of youth in Vancouver). This new social-demographic situation is unique in Canadian history; however, the scarcity of research on this group of children is remarkable when compared with studies on Canadian children in general (Beiser, Hou, Hyman, & Tousignant, 1998; Kinnon, 1999). The National Longitudinal Survey of Children and Youth (NLSCY), the largest survey of Canadian children and their families ever conducted in Canada, may be the best hope in remedying this lack.

It is well-known that immigrant children have different patterns of adaptation to immigration (see Aronowitz, 1984). Several individual factors appear to influence immigrant children's adaptation to immigration, such as gender, socioeconomic status (SES), culture of origin, age at immigration, length of residence since immigration, and experience prior to immigration (see Pepler & Lessa, 1993). Although some early studies reported behavioral and emotional problems resulting from poor adaptation to immigration among immigrant children (e.g., Bagley, 1972; Gaertner-Harnach, 1981; Rutter, et al., 1974), more studies, particularly recent ones, indicated that immigrant children do not necessarily suffer more from behavioral

and emotional problems than their native counterparts (Aronowitz, 1984; Mirsky, Ginath, Perl, & Ritsner, 1992; Osborn, 1971; Pepler & Lessa, 1993; Touliatos & Lindholm; 1980). For example, Beiser et al. (1998) reported that immigrant children tend to be mentally and physically healthy, perform well in school, and are more resilient to the negative effects of poverty than native-born children.

In countries like Canada, refugee children are a significant proportion in the population of immigrant children. Among immigrant children under the age of 12, one quarter of them enter Canada as refugees (Canadian Council on Social Development, 1998). Williams and Berry (1991) indicated that refugee youth are at risk for alcohol abuse, drug addiction, delinquency, depression, post-traumatic stress disorder and psychopathological problems. These risk factors can be enhanced by the extent of pre-immigration trauma, violence witnessing, and separation from parents (Williams & Berry, 1991). Jacob and Blais (1991) found that younger refugee children experiencing trauma typically exhibit sleep disorders, eating disorders, and developmental problems, while older refugee children typically display depression, fear, anxiety, and learning difficulties. There are reports, however, indicating that despite various stresses encountered along their life course, most children and youth in refugee families cope well with the challenge of their new culture (Hyman, Beiser, & Vu, 1996).

Behavioral and emotional well-being of immigrant children are also influenced by their family characteristics. For example, parents' adaptation to immigration has been identified as an influential factor on immigrant children's adaptation to immigration (see Pepler & Lessa, 1993). Barankin, Konstantareas, and DeBosset (1989) found a significant relationship between parental depression upon immigration arrival and poor adaptation of their children to immigration.

It is still a fact, that, many immigrant families face socioeconomic challenges in their new countries. For example, in Canada, almost one third of immigrant families live in poverty, residing in low-income neighborhoods. Statistics like this justifies the necessity for the inclusion of environmental factors, in addition to individual and family factors, when researchers determine behavioral and emotional problems of immigrant children (Boyle & Lipman, 1998). For example, culture of the host and social resources are proposed as factors that influence behavior and emotional outcomes of immigrant children (Beiser, et al., 1995; Pepler & Lessa, 1993). Environmental characteristics are particularly important considerations in Canadian immigration studies because immigrants to Canada tend to follow specific patterns of destination, occupation, and social circle (Reitz & Sklar, 1997; Harrison, Harrison, & Park, 1997; Samuel, 1994). “Macrospheres” (see Bronfenbrenner, 1992), such as population, economy, social climate, and social services, are important to more accurately describe the environment in which immigrant children live.

This range of individual, family, and environmental factors implies that children’s adaptation to immigration is a complex process that requires considerable attention to the interactions among immigrant children, their families, and communities they reside (Pepler & Lessa, 1993). The current study was a response to Beiser et al. (1995, p. 67) who stated that “research about immigrant children is scant”. Specifically, the current study attempted to examine how immigrant children are surviving adaptation into Canadian society with an emphasis on behavioral and emotional outcomes among immigrant children. Using data from the first cycle of the NLSCY to derive variables descriptive of children, families, and cities (coming from census data), three principal research questions were addressed:

1. What is the average level of behavioral and emotional problems of immigrant children among Canadian cities?
2. How do behavioral and emotional outcomes of immigrant children vary across Canadian cities?
3. What child, family, and city characteristics contribute to the variation in behavioral and emotional outcomes of immigrant children?

## **Method**

### **Data Source**

Data for the current study came from the first cycle of the National Longitudinal Survey of Children and Youth (NLSCY). As part of the research initiative – Investing in Children, the NLSCY measured the development and well-being of Canadian children, with a specific design to provide information to guide “effective policies and strategies to help young people live healthy, active and rewarding lives” (Statistics Canada, 1996, p 5). The first round of this survey was conducted by Statistics Canada in 1995 on behalf of Human Resources and Development Canada. The target population in the NLSCY was children at the age of newborn to 11 years. A stratified sampling approach produced a national random sample of 22,831 children (newborn to 11 years old). These children came from (a) rural region (a combined category without further specification) and (b) major cities (there were 71 specific cities). For the purpose of the current study, a subsample was taken from the NLSCY data that included only school-aged (7 to 11 years old) immigrant children and their families. The resulting sample size was 417 immigrant children from 25 major cities (few immigrants to Canada reside in rural areas – almost all immigrants reside in sizable major cities).

## Measures

The NLSCY collected a wide range of information from the medical, educational, psychological, and sociological perspectives (see Statistics Canada, 1996). Outcome variables in the current study were derived from the NLSCY, including (a) conduct disorder, (b) indirect aggression, (c) property offences, (d) hyperactivity, (e) prosocial behavior, and (f) emotional disorder. The NLSCY staff constructed these outcome variables as composite measures (see the Appendix for item descriptions). Cronbach's alpha was 0.77 for conduct disorder (on a scale of 0 to 12), 0.78 for indirect aggression (on a scale of 0 to 10), 0.64 for property offences (on a scale of 0 to 12), 0.84 for hyperactivity (on a scale of 0 to 16), 0.82 for prosocial behavior (on a scale of 0 to 20), and 0.79 for emotional disorder (on a scale of 0 to 16). In all these scales, a high score indicated the presence of certain behavior or emotion.

Student characteristics included gender, age, SES, family structure (number of parents), family size, length of residence in Canada, and culture of origin (original culture). Descriptions of these student-level variables are presented in the Appendix. SES, age, family size, and years in Canada were continuous variables, whereas gender and family structure were dichotomous variables. Original culture was a categorical variable with immigration from (a) the United States, (b) Europe, (c) Asia, and (d) other regions. Three dichotomous variables were created to represent this categorical variable with the last category as the base-line effect against which other categories were compared (see the Appendix). These student-level variables captured the major individual and family factors influential of behavioral and emotional outcomes of immigrant children as presented in the literature.

The NLSCY offered no information on city characteristics. To overcome this limitation, the 1996 Census Data (the first round of NLSCY was conducted in 1995) were used to generate city information describing (a) population characteristics, (b) socioeconomic conditions, (c)

social mobility, (d) social climate, and (e) social services conditions. Each category contained multiple variables, and definitions of these variables are presented in the Appendix. Note that social support for students in the category of social climate was derived from the NLSCY.

Originally a composite variable (on a scale of 0 to 16) constructed by the NLSCY staff (Cronbach's alpha was 0.82), it was used in the current study as a measure aggregated from the child level to the city level. These city-level variables tapped the major environmental factors influential of behavioral and emotional outcomes of immigrant children as presented in the literature.

### **Statistical Analysis**

Social data are often structured in a hierarchical manner, for example, individuals nested within communities, or children nested within cities as in the case of the current study. Statistical analysis ignoring this multilevel nature of the data produces biased statistical results (see Bryk & Raudenbush, 1992). In the current study, multilevel models were developed to analyze each of the six outcome measures of behavioural and emotional problems, with children nested within cities. Therefore, the first level was the child model in which each outcome measure was regressed on the child-level variables. The intercept or constant of the regression was then the average measure of the outcome for a particular city adjusted for child characteristics in that city. Using these adjusted city-average measures of the outcome as the dependent variable, the second level was the city model in which this dependent variable was regressed on the city-level variables (see Bryk & Raudenbush, 1992).

Two multilevel models were tested for each of the six outcome variables of behavioural and emotional problems. The first model was the "null" model which contained only the outcome variable (as the dependent variable) and no independent variables at either the child or the city level. This null model functioned to partition variance in the outcome measure into

within-city (between-child) and between-city components. Results of this variance partition and the estimation of the grand mean were used to answer the first two research questions. The second model was the “full” model which contained independent variables at both the child and the city levels. This full model functioned to model the variation in the outcome measure as it was related to child and city characteristics. Estimates indicated child-level and city-level variables that were responsible for the variation in the outcome measure. Results of this model were used to address the third research question.

For the purpose of data analysis and result interpretation, all continuous variables were standardized (to have a mean of zero and a standard deviation of one) at both the child and the city levels. Meanwhile, all dichotomous variables were centered around their means at the child level (there were no dichotomous variables at the city level). These standardizing and centering procedures produced statistical estimates for what is often referred to as the “typical” child with nationally average characteristics among immigrant children (see Bryk & Raudenbush, 1992). These statistical estimates of behavioral and emotional problems for the typical immigrant child were important national measures of the problems in behavior and emotion among immigrant children.

## **Results**

Table 1 presents descriptive statistics for outcome variables and variables used at the child and city levels. With consideration of the scale on which each outcome variable was measured, the results did not show any serious concerns about behavioral and emotional problems among immigrant children. For example, the mean for conduct disorder was 0.88 on a scale from 0 to 12. This indicated that conduct disorder was quite trivial among immigrant children. For another example, the mean for prosocial behavior was 12.85 on a scale from 0 to

20. Recall that for all outcome measures, a high score indicated the presence of certain behavior and emotion. Therefore, prosocial behavior was definitely on the positive side among immigrant children.

Table 1

Descriptive Statistics of Outcome Variables, Child-level Variables, and City-level Variables

	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
<b>Outcome variables</b>				
Conduct disorder	0.00	7.00	0.88	1.42
Indirect aggression	0.00	6.00	1.37	1.66
Property offences	0.00	6.00	0.59	1.02
Hyperactivity	0.00	15.00	3.54	3.21
Prosocial behavior	3.00	20.00	12.85	3.92
Emotional disorder	0.00	15.00	2.08	2.31
<b>Child-level variables</b>				
Gender	0.00	1.00	0.47	0.50
Age	7.00	11.00	9.18	1.40
Socioeconomic status (SES)	-3.58	2.19	0.00	1.00
Family structure	0.00	1.00	0.83	0.37
Family size	2.00	10.00	5.02	1.61
Years in Canada	0.00	11.00	4.77	2.56
Immigration from the United States	0.00	1.00	0.08	0.28
Immigration from Europe	0.00	1.00	0.21	0.41
Immigration from Asia	0.00	1.00	0.19	0.40
<b>City-level variables (population characteristics)</b>				
Population size (a)	1.10	389.89	63.47	95.20
Population density	0.82	1.00	0.95	0.04
Population age	0.05	0.17	0.11	0.03
Population without high school education	0.23	0.40	0.32	0.04
Population with post-secondary education	0.19	0.43	0.29	0.06
<b>City-level variables (socioeconomic conditions)</b>				

	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
Median family income (b)	44.22	59.99	50.76	4.21
Incidence of family low income	10.10	22.60	14.73	3.19
Unemployment rate	4.90	12.00	7.34	1.56
Housing (c)	5.82	9.40	7.30	0.95
City-level variables (social mobility)				
Migration	0.03	0.13	0.07	0.02
Immigration	0.03	0.42	0.17	0.09
City-level variables (social climate)				
Divorce	0.05	0.09	0.07	0.01
Social support for students (d)	13.84	18.49	15.66	1.09
City-level variables (social services conditions)				
Social work professionals	0.05	0.11	0.07	0.01
Health care professionals	0.04	0.07	0.05	0.01
Health care work force	0.08	0.14	0.10	0.02
Education work force	0.05	0.12	0.07	0.02

Note. (a) population size is represented as the number of units, with 10,000 residents as the unit. (b) median family income is represented as the number of units, with 1,000 dollars as the unit. (c) housing is represented as the number of units for average rental and mortgage, with 100 dollars as the unit. (d) social support for students is a measure aggregated to the city level from data at the child level as collected in the NLSCY.

Descriptive statistics for the child-level variables illustrated the characteristics of the population of immigrant children. Gender was well-balanced among immigrant children. The current study included school-aged children (7 to 11 years old) with the average age at 9 years old. About 83% of immigrant children came from both-parent households. The average family size was 5 persons. Immigrant children, on average, had been in Canada for about 5 years. About 8% of immigrant children came to Canada from the United States, about 21% from Europe,

about 19% from Asia, and the rest of immigrant children (about 52%) came to Canada from other regions.

Descriptive statistics for the city-level variables were generated based on the 1996 Census Data. The variables portrayed city characteristics from various perspectives (see Table 1 for descriptive results and the Appendix for definitions of city characteristics). Although descriptive statistics for outcome measures were informative, these results were “raw” estimates without any adjustment of child and city characteristics. For such a propose, multilevel models were developed to take into consideration characteristics at the child and city levels. Table 2 presents variance partition on each of the six outcome measures of behavior and emotion.

Table 2

Proportion of Variance in Behavioral and Emotional Problems Between Children and Between Cities

<b>Outcomes</b>	<b>Between children</b>	<b>Between cities</b>
Conduct disorder	0.98	0.02 (a)
Indirect aggression	1.00	0.00 (a)
Property offences	1.00	0.00 (a)
Hyperactivity	0.92	0.08 (b)
Prosocial behavior	0.87	0.13 (c)
Emotional disorder	0.92	0.08 (c)

Note. (a) variance is not statistically significant. (b) variance is statistically significant at the  $\alpha = 0.05$  level. (c) variance is statistically significant at the  $\alpha = 0.001$  level.

Analyses as presented in Table 2 focused on the variation of each of the six outcome measures as it was distributed among children and among cities. The variance component at the city level was not statistically significant for conduct disorder, indirect aggression, and property offences, indicating that there was no variation across cities in conduct disorder, indirect

aggression, or property offences among immigrant children. Stated differently, child characteristics, rather than city characteristics, were responsible for variation among immigrant children in conduct disorder, indirect aggression, and property offences.

The variance component at the city level was statistically significant, however, for hyperactivity, prosocial behavior, and emotional disorder. City characteristics were responsible for 8% of the variation in hyperactivity among immigrant children, were responsible for 13% of the variation in prosocial behavior among immigrant children, and were responsible for 8% of the variation in emotional disorder among immigrant children. Although child characteristics were responsible for the majority of the variation in hyperactivity, prosocial behavior, and emotional disorder among immigrant children, these three outcome measures did vary significantly from city to city. Some cities had significantly lower incidents, whereas other cities had significantly higher incidents of hyperactivity, prosocial behavior, and emotional disorder among immigrant children.

Table 3 indicates the “true” city average behavioral and emotional problems among immigrant children. One panel of the results in the table shows the unconditional true city average behavioral and emotional problems among immigrant children (without any adjustment for child and city characteristics). The other panel of the results in the table indicates the adjusted true city average behavioral and emotional problems among immigrant children (with adjustment for child and city characteristics). These true city average effects could be considered national measures of behavioral and emotional problems among immigrant children.

In terms of the unconditional estimates, there were no statistically significant city average effects in conduct disorder, indirect aggression, property offences, hyperactivity, and prosocial behavior. Therefore, conduct disorder, indirect aggression, property offences, and hyperactivity

among immigrant children were not a social problem at the national level. However, immigrant children did not demonstrate significant prosocial behavior at the national level either. This finding certainly signaled some social concern. Emotional disorder had the only statistically significant city average effect among the six outcome measures of behavioral and emotional problems among immigrant children. Therefore, emotional disorder among immigrant children was a significant social problem at the national level.

These unconditional true city average behavioral and emotional problems among immigrant children were then adjusted for child and city characteristics. Sometimes, a significant unconditional effect is a reflection of “unbalance” in child and city characteristics. If this is the case, the adjusted effect usually becomes insignificant indicating that child-level and city-level variables are responsible for the significant unconditional effect. This situation did not happen to emotional disorder in the current study; that is, the adjusted true city average for emotional disorder continued to be statistically significant. Therefore, nationally, emotional disorder was still a significant social problem among immigrant children even after child and city characteristics were taken into account.

Table 4 shows the results of the multilevel models estimating the effects of child and city characteristics on behavioral and emotional problems among immigrant children. Note that the effects of the city-level variables were not estimated in the multilevel models for conduct disorder, indirect aggression, and property offences because these outcome measures did not have significant variation at the city level. City characteristics were included in the multilevel models for hyperactivity, prosocial behavior, and emotional disorder because these outcome measures had significant variation at the city level. Results were reported for one outcome measure at a time, and cross outcome patterns were discussed afterward.

Table 3

True City Average Behavioral and Emotional Problems of Immigrant Children

	Conduct disorder	SE	Indirect aggression	SE	Property offences	SE	Hyperactivity	SE	Prosocial behavior	SE	Emotional disorder	SE
Unconditional true city average behavioral and emotional problems												
	0.12	0.08	-0.01	0.06	0.06	0.06	0.10	0.10	-0.08	0.11	0.24*	0.11
Adjusted true city average behavioral and emotional problems												
	0.15	0.08	-0.02	0.06	0.07	0.05	0.17	0.09	-0.06	0.09	0.41**	0.11

Note. \*  $p < 0.05$ . \*\*  $p < 0.01$ .

Table 4

Multilevel Models Estimating the Effects of Child-Level Characteristics and City-Level Characteristics on Behavioral and Emotional Problems of Immigrant Children

	Conduct disorder	Indirect aggression	Property offences	Hyperactivity	Prosocial behavior	Emotional disorder
	Effect	SE	Effect	SE	Effect	SE
Effects of children-level characteristics (a)						
Gender	-0.52***	0.11		-0.30*	0.12	-0.42** 0.13 0.32* 0.13
Age			-0.08**	0.03		-0.16*** 0.04
Family structure	-0.52*	0.24		-0.68*	0.27	-0.75** 0.18 -0.51* 0.20
Family size					0.10***	0.03
Years in Canada			0.05**	0.02	0.05*	0.02 0.07** 0.02
Effects of city-level characteristics (population characteristics) (b)						
Population size					0.53**	0.15 1.13*** 0.22
Population density					-0.62*	0.22 1.03** 0.26
Population age					-0.57***	0.13 0.48** 0.16
Population without high school education					-0.25***	0.06 -0.36* 0.14 -0.72** 0.22
Effects of city-level characteristics (socioeconomic conditions) (b)						
Median family income					0.77**	0.23 0.61* 0.21
Incidence of family low income						-0.86*** 0.20
Housing					-1.19**	0.37

Effects of city-level characteristics (social mobility)					
Migration			-0.16***	0.04	
Immigration					0.51** 0.17
Effects of city-level characteristics (social climate)					
Divorce			-0.35*	0.14	
Social support for students					0.71*** 0.15
Effects of city-level characteristics (social services conditions)					
Social work professionals					-1.59** 0.41
Health care professionals			-1.15**	0.30	
Health care work force			1.13**	0.29	
Education work force					1.21** 0.33
Proportion of variance explained (c)					
Between children	0.10	0.01	0.09	0.11	0.04 0.13
Between cities				0.99	0.91 0.98

Note. \*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ . (a) at the child level, socioeconomic status (SES) is not statistically significant. (b) at the city level, population with post-secondary education (population characteristics) and unemployment rate (socioeconomic conditions) are not statistically significant. (c) proportion of variance explained at the city level is not calculated for conduct disorder, indirect aggression, and property offenses because these outcomes do not have statistically significant variance between cities.

Recall that females were coded as 1 for the dichotomous variable of gender. The gender effect was then the female effect. A negative gender effect in conduct disorder indicated that males demonstrated significantly more incidents of conduct disorder than females. The effect was quite sizable with a magnitude of more than half of a standard deviation. Therefore, on the scale of conduct disorder (from 0 to 12 points), male immigrant children were 0.74 points ( $0.52 \times 1.42$ ) higher than female immigrant children.

Both parents were coded as 1 for the dichotomous variable of family structure. The effect of family structure was then the effect of double-parent households. A negative effect of family structure indicated that children from single-parent households demonstrated significantly more incidents of conduct disorder. The effect size was the same as the one for gender. Therefore, on the scale of conduct disorder (from 0 to 12 points), immigrant children from single-parent families were 0.74 points higher than immigrant children from both-parent families.

Because each effect was estimated with other effects statistically removed, the combined or joint effects of variables might be interesting to researchers. In the case of conduct disorder, being a male immigrant child from a single-parent household would put him 1.48 points ( $0.74 + 0.74$ ) higher on a scale from 0 to 12 points than a female immigrant child from a double-parent household (similar procedures could be applied in other cases where joint effects were of interest). Age, family size, and years in Canada did not have significant effects on conduct disorder among immigrant children.

For the economics of expression, other upcoming significant effect sizes at the child level were not fully interpreted. Given that a similar interpretation to those above could be applied to each of them, only points in difference (derived from the product of effect size and standard deviation) were reported in parentheses. Overall, effects associated with indirect aggression were

quite small. Younger immigrant children demonstrated significantly more incidents of indirect aggression than older immigrant children (0.13 points in difference on a scale from 0 to 10 points). Immigrant children who lived in Canada longer demonstrated significantly more incidents of indirect aggression than immigrant children who lived in Canada shorter (0.08 points in difference). Gender and family characteristics did not have significant effects on indirect aggression.

Male immigrant children demonstrated significantly more incidents of property offences than female immigrant children (0.31 points in difference on a scale from 0 to 12 points). Immigrant children from single-parent families demonstrated significantly more incidents of property offences than immigrant children from both-parent families (0.69 points in difference). Immigrant children living in Canada longer demonstrated significantly more incidents of property offences than immigrant children living in Canada shorter (0.05 points in difference). Age and family size did not have statistically significant effects on property offences.

Hyperactivity was associated with all child characteristics included in the current study. Male immigrant children demonstrated significantly more incidents of hyperactivity than female immigrant children (1.35 points in difference on a scale from 0 to 16 points). Younger immigrant children demonstrated significantly more incidents of hyperactivity than older immigrant children (0.51 points in difference). Immigrant children from single-parent households demonstrated significantly more incidents of hyperactivity than immigrant children from both-parent households (2.41 points in difference). Immigrant children from large families demonstrated significantly more incidents of hyperactivity than immigrant children from small families (0.32 points in difference). Immigrant children who lived in Canada longer

demonstrated significantly more incidents of hyperactivity than immigrant children who lived in Canada shorter (0.22 points in difference).

Cities had statistically significant effects on hyperactivity (also on prosocial behavior and emotional disorder). In the following interpretation, for each outcome measure (hyperactivity, prosocial behavior, and emotional disorder), the first city-level effect was fully interpreted. A similar interpretation could be applied to all other statistically significant city-level variables. To save space, only points in difference (derived from the product of effect size and standard deviation) were reported in parentheses.

Population characteristics and social mobility of the city had statistically significant effects on hyperactivity. Children demonstrated significantly more incidents of hyperactivity in cities with a lower proportion of the population without high school education. The magnitude of this effect was a quarter of a standard deviation. Consider two cities with one percentage in difference in proportion of the population without high school education. On the scale of hyperactivity (from 0 to 16 points), immigrant children in the city with the lower percentage were 0.07 points higher than immigrant children in the city with the higher percentage. Immigrant children in cities with a lower rate of migration also demonstrated significantly more incidents of hyperactivity than immigrant children in cities with a higher rate of migration (0.05 points in difference).

Female immigrant children demonstrated significantly more incidents of prosocial behavior than male immigrant children (1.25 points in difference on a scale from 0 to 20 points). As the only statistically significant variable at the child level, it appeared that prosocial behavior was associated more with city characteristics than child characteristics. There were statistically significant effects in every category descriptive of city characteristics. Population characteristics

of the city affected prosocial behavior of immigrant children. Children living in large cities demonstrated significantly more incidents of prosocial behavior than children living in small cities. Consider two cities with 10,000 persons in difference in population size. On the scale of prosocial behavior (from 0 to 20 points), immigrant children living in the larger city were 0.19 points higher than immigrant children living in the smaller city.

Immigrant children living in cities with a lower population density demonstrated significantly more incidents of prosocial behavior than immigrant children living in cities with a higher population density (0.22 points in difference). Immigrant children living in cities with a younger population demonstrated significantly more incidents of prosocial behavior than immigrant children living in cities with an older population (0.20 points in difference). Immigrant children living in cities with a lower proportion of the population without high school education demonstrated significantly more incidents of prosocial behavior than immigrant children living in cities with a higher proportion of the population without high school education (0.13 points in difference).

Socioeconomic conditions of the city affected immigrant children's prosocial behavior. Immigrant children living in cities with a higher median family income demonstrated significantly more incidents of prosocial behavior than immigrant children living in cities with a lower median family income (0.27 points in difference). Immigrant children living in cities with a lower cost in housing demonstrated significantly more incidents of prosocial behavior than immigrant children living in cities with a higher cost in housing (0.42 points in difference).

Prosocial behavior of immigrant children was influenced by social climate of the city. Immigrant children living in cities with a lower divorce rate demonstrated significantly more incidents of prosocial behavior than immigrant children living in cities with a higher divorce rate

(0.12 points in difference). Social services conditions of the city also influenced prosocial behavior among immigrant children. Immigrant children living in cities with a smaller number of health professionals demonstrated significantly more incidents of prosocial behavior than immigrant children living in cities with a larger number of health professionals (0.40 points in difference). Immigrant children living in cities with a larger health care workforce demonstrated significantly more incidents of prosocial behavior than immigrant children living in cities with a smaller health care workforce (0.40 points in difference).

Similar to prosocial behavior, emotional disorder was associated more with city characteristics than child characteristics. At the child level, immigrant children from single-parent families demonstrated significantly more incidents of emotional disorder than immigrant children from both-parent families (1.18 points in difference on a scale from 0 to 16). Statistically significant effects were found in every category descriptive of city characteristics. Emotional disorder of immigrant children was a function of population characteristics of the city. Children living in large cities demonstrated significantly more incidents of emotional disorder than children living in small cities. Consider two cities with 10,000 persons in difference in population size. On the scale of emotional disorder (from 0 to 16 points), immigrant children living in the larger city were 0.34 points higher than immigrant children living in the smaller city.

Immigrant children living in cities with a higher population density demonstrated significantly more incidents of emotional disorder than immigrant children living in cities with a lower population density (0.31 points in difference). Immigrant children living in cities with an older population demonstrated significantly more incidents of emotional disorder than children living in cities with a younger population (0.14 points in difference). Immigrant children living

in cities with a lower proportion of the population without high school education demonstrated significantly more incidents of emotional disorder than immigrant children living in cities with a higher proportion of the population without high school education (0.22 points in difference).

Immigrant children's prosocial behavior was a function of socioeconomic conditions of the city. Immigrant children living in cities with a higher median family income demonstrated significantly more incidents of emotional disorder than immigrant children living in cities with a lower median family income (0.18 points in difference). Immigrant children living in cities with lower incidence of family low income demonstrated significantly more incidents of emotional disorder than immigrant children living in cities with higher incidence of family low income (0.26 points in difference).

Emotional disorder among immigrant children was a function of social mobility of the city. Immigrant children living in cities with a higher rate of migration demonstrated significantly more incidents of emotional disorder than immigrant children living in cities with a lower rate of migration (0.15 points in difference). Immigrant children living in cities with a lower rate of immigration demonstrated significantly more incidents of emotional disorder than immigrant children living in cities with a higher rate of immigration (0.26 points in difference). Emotional disorder among immigrant children was also a function of social climate of the city. Immigrant children living in cities with more social support for students demonstrated significantly more incidents of emotional disorder than immigrant children living in cities with less social support for students (0.21 points in difference).

Finally, emotional disorder among immigrant children was a function of social services conditions of the city. Immigrant children living in cities with a smaller number of social work professionals demonstrated significantly more incidents of emotional disorder than immigrant

children living in cities with a larger number of social work professionals (0.48 points in difference). Immigrant children living in cities with a larger education workforce demonstrated significantly more incidents of prosocial behavior than immigrant children living in cities with a smaller education workforce (0.36 points in difference).

In general, gender and family structure appeared to be the most important variables at the child level. They were statistically significant in four out of six outcome measures, and they had the largest effect sizes among child characteristics. At the city level, population characteristics were important across the three outcome measures of hyperactivity, prosocial behavior, and emotional disorder (the other three outcome measures had no variation at the city level). Socioeconomic conditions, social mobility, social climate, and social services conditions were important in two out of three outcome measures. The largest effect sizes appeared in population characteristics for hyperactivity, in socioeconomic conditions and social services conditions for prosocial behavior, and in population characteristics and social services conditions for emotional disorder.

Table 4 also indicates the proportion of variance accounted for at the child and city levels, a measure of the effectiveness of the multilevel models in explaining variation in outcome measures among children and among cities. These multilevel models did not explain much variance at the child level (ranging from 1% to 13%). Therefore, these multilevel models specified in the current study were not very effective in accounting for variation among children. When there was no variation at the city level (for three outcome measures), the proportion of variance explained at the city level was disused. For the other three outcome measures with significant variation at the city level, from 91% to 99% of the variance in the outcome measures

across cities were explained. Therefore, these multilevel models specified in the current study were extremely effective in explaining variation among cities.

## **Discussion**

The current study identified a number of child and city characteristics that were significantly associated with behavioral and emotional problems of immigrant children, thus providing empirical evidence on individual and societal conditions underlining immigrant children's behavior and emotion. This section focuses on the most important findings and derives implications for social policy related to immigrant children.

### **The Status of Behavioral and Emotional Problems of Immigrant Children**

From a national perspective, the major concern about immigrant children is their emotional disorder. Among the six outcome measures (conduct disorder, indirect aggression, property offences, hyperactivity, prosocial behavior, and emotional disorder), emotional disorder was the only outcome with a significant effect at the national level. The adjusted measure of emotional disorder in Table 3 described the typical immigrant child as discussed in the method section. This typical immigrant child with nationally average characteristics of immigrant children demonstrated significant emotional disorder. The fact that the measure for the typical immigrant child was adjusted for child and city characteristics further illustrated the significance of emotional disorder among immigrant children. Moreover, the degree of emotional disorder among immigrant children varied significantly across cities. Societal conditions of the city did make a difference in emotional disorder among immigrant children. Both the significant national effect of emotional disorder and the significant unbalance of the problem across cities demand attention from policymakers.

The degree of hyperactivity and prosocial behavior of immigrant children varied significantly from city to city. Therefore, although nationally they were not social problems

among immigrant children, they were indeed social problems locally in some cities. From a national perspective, conduct disorder, indirect aggression, and property offences were quite minor as social problems among immigrant children (neither significant national effects nor significant variations across cities).

### **The Role of Child Characteristics**

The structure of immigrant families played the single most important role in determining behavioral and emotional problems of immigrant children. The disadvantage of immigrant children from single-parent households over immigrant children from double-parent households were clearly shown in four out of six outcome measures (conduct disorder, property offences, hyperactivity, and emotional disorder). It is interesting to note that, in the general literature on children's behavior and emotion, SES often plays a significant role in determining the status of children's behavioral and emotional problems. This is not the case for immigrant children, however. SES of immigrant children was insignificant across all six outcome measures. This situation may be due to the relatively homogeneous socioeconomic conditions among the vast majority of immigrants. In this case, therefore, unbalance in SES is merely a reflection of unbalance in family structure (number of parents).

Gender is the next most important child characteristic directly affecting behavioral and emotional problems of immigrant children. Male immigrant children demonstrated significantly worse records than female immigrant children in four out of six outcome measures (conduct disorder, property offences, hyperactivity, and prosocial behavior). Reasons for these gender differences can only be speculated at this stage. For example, at the age of 7 to 11 years, male immigrant children might be more active than female immigrant children, thus having more chances to be hyperactive and show conduct disorder, property offences, and antisocial behavior.

It is interesting to find that immigrant children did not show differential patterns of behavioral and emotional problems conditional on where they came from (the United States, Europe, Asia, and others), and it was true across all six outcome measures. This situation indicates the success of Canadian immigration policies in non-discriminative selection of immigrants into Canada. Single-parent status and gender of immigrant children are far more predictive of their behavioral and emotional problems than where they came from.

### **The Role of City Characteristics**

The current study did show a harvest of significant city effects on the three significant outcome measures of behavioral and emotional problems (hyperactivity, prosocial behavior, and emotional disorder). However, quite a few effects were found to be marginal, and they did not bear practical implications in a fruitful manner. The discussion here focuses only on those city-level variables that showed practically substantial effects (with effect sizes larger than 1).

Population characteristics had major effects on emotional disorder of immigrant children. While other population characteristics were marginal in effect, population size and density had substantial effects on emotional disorder among immigrant children. Immigrant children living in larger cities and in cities with higher population density showed more incidents of emotional disorder. One may speculate that immigrant children, particularly new immigrant children, may have difficulties in adapting the pace of life in large cities and the frequent social interaction among people in highly populated cities. These ill adaptations in the early days of immigration may cause immigrant children to develop emotional disorder.

Socioeconomic conditions influenced prosocial behavior of immigrant children in a substantial way. The variable descriptive of housing cost turned out to have a sizable effect on prosocial behavior of immigrant children. Immigrant children living in cities with a lower cost

for housing showed more incidents of prosocial behavior. Therefore, decent housing conditions appear to help immigrant children to develop prosocial behavior.

Social services conditions were influential of behavioral and emotional problems of immigrant children (significant in two out of three outcome measures). In the case of emotional disorder, immigrant children living in cities with a larger number of social work professionals showed fewer incidents of emotional disorder. In general, an adequate number of social work professionals is critical in providing professional care and support to children in need. This general benefit appeared to extend to emotional disorder among immigrant children. The finding that immigrant children living in cities with a larger education workforce showed more incidents of emotional disorder indicates that cities with a large education workforce may expect more problems of emotional disorder among immigrant children in the student population. This finding does imply that schools should be a part of the social effort in identifying and remedying immigrant children with emotional disorder.

In the case of prosocial behavior, immigrant children living in cities with a larger number of health care professionals showed fewer incidents of prosocial behavior. Meanwhile, immigrant children living in cities with a larger health care workforce showed more incidents of prosocial behavior. These findings indicate that the adequate presence of a general workforce in health care, rather than the adequate presence of a team of professionals in health care, have a positive impact on prosocial behavior of immigrant children. One may speculate that it is the presence of a full health care workforce that creates a social atmosphere of care, support, and friendliness, which is more appealing to immigrant children.

### **Policy Implications**

It is worth of noting first that policy implications in the current study are supported not only by the significant effects at the city level but also by the almost full explanation of city-level

variances by selected city characteristics descriptive of different aspects of city life. Overall, immigrant children appeared to be healthy in terms of behavior and emotion. Five out of six outcome measures did not show any significant effects at the national level, and three of them also did not vary significantly across cities. In the first ten years of immigration, many immigrant children appeared to be adapting to the new social and cultural environment uneventfully.

The only, but serious concern about immigrant children is emotional disorder. There needs to be a recognition that from the national perspective there is significant emotional disorder among immigrant children and this problem varies significantly from city to city. Cities, particularly large cities, cities with high population density, and cities in lack of adequate social work professionals, need to develop programs to identify immigrant children with emotional disorder and offer medical and counseling services to them. Delayed treatment measures due to the common misconception that new immigrant children should normally experience uncertainty and anxiety in the early days of immigration may bear serious social consequences.

Policymakers at different levels need to pay close attention to the housing conditions of immigrants. Social support programs that assist new immigrants to obtain decent housing conditions may help create a second generation of immigrants who are fruitful in prosocial behavior. Housing aid programs may turn out to be much less expensive than counseling and correction measures for victims and offenders.

In the area of policy research, it is rare for researchers to link prosocial behavior and health care conditions. The current study suggests that health care may bear social meanings far beyond saving people's life. The presence of adequate health care services may create a warm social atmosphere of care and support. As a result, people living in this environment may feel

secure and valued in a social sense. This situation in return may help people to develop prosocial behavior of caring for and sharing with others. This appears to be the case for immigrant children.

Hyperactivity was not much influenced by city characteristics although it varied significantly from city to city. Instead, hyperactivity was more a personal problem (note that all child characteristics were significant in predicting hyperactivity, the only case among the six outcome measures of behavioral and emotional problems). This probably makes sense in that hyperactivity is more symptomatic of a medical problem rather than a social problem. Although social environment of the city is not important in determining hyperactivity, cities need to make sure that adequate medical attention is paid to identify and treat immigrant children with hyperactivity.

Finally, the current study identified that male immigrant children and immigrant children from single-parent families may have difficulties in integrating into the mainstream culture. In particular, among immigrant children, male immigrant children from single-parent households are at the highest risk of unsuccessful integration. When they live in cities with undesirable characteristics as identified above, their chance of successful integration may become even slimmer. Cities need to be prepared to help this group of male immigrant children.

## **Appendix: Description of Outcome Variables, Child-level Variables, and City-level Variables**

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### **Outcome variables**

Conduct disorder. How often would you say that your child: (a) Gets into many fights? (b) When another child accidentally hurts him/her (such as by bumping into him/her), assumes that the other child meant to do it, and then reacts with anger and fighting? (c) Physically attacks people? (d) Threatens people? (e) Is cruel, bullies or is mean to others? (f) Kicks, bites, hits other children? (1 = Never or not true, 2 = Sometimes or somewhat true, 3 = Often or very true)

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Indirect aggression. How often would you say that your child, when mad at someone (a) Tries to get others to dislike that person? (b) Becomes friends with another as revenge? (c) Say bad things behind the other's back? (d) Say to others: Let's not be with him/her? (e) Tell the other one's secrets to a third person? (1 = Never or not true, 2 = Sometimes or somewhat true, 3 = Often or very true)

Property offences. How often would you say that your child: (a) Destroys his/her own things? (b) Steals at home? (c) Destroys things belonging to his/her family or other children? (d) Tells lies or cheats? (e) Vandalizes? (f) Steals outside the home? (1 = Never or not true, 2 = Sometimes or somewhat true, 3 = Often or very true)

Hyperactivity. How often would you say that your child: (a) Can't sit still, is restless or hyperactive? (b) Is distractible, has trouble sticking to any activity? (c) fidgets? (d) Can't concentrate, can't pay attention for long? (e) Is impulsive, acts without thinking? (f) Has difficulty awaiting turn in games or groups? (g) Can't settle to anything for more than a few moments? (h) Is inattentive? (1 = Never or not true, 2 = Sometimes or somewhat true, 3 = Often or very true)

Prosocial behavior. How often would you say that your child: (a) Shows sympathy to someone who has made a mistake? (b) Will try to help someone who has been hurt? (c) Volunteer to help clear up a mess someone else has made? (d) If there is a quarrel or dispute, will try to stop it? (e) Offers to help other children who are having difficulty with a task? (f) Comforts a child who is crying or upset? (g) Spontaneously helps to pick up objects which another child has dropped? (h) Will invite bystanders to join in a game? (i) Helps other children who are feeling sick? (j) Takes the opportunity to praise the work of less able children? (1 = Never or not true, 2 = Sometimes or somewhat true, 3 = Often or very true)

Emotional disorder. How often would you say that your child: (a) Seems to be unhappy, sad or depressed? (b) Is not as happy as other children? (c) Is too fearful or anxious? (d) Is worried? (e) Cries a lot? (f) Appears miserable, unhappy, tearful, or distressed? (g) Is nervous, high-strung or tense? (h) Has trouble enjoying himself/herself? (1 = Never or not true, 2 = Sometimes or somewhat true, 3 = Often or very true)

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#### **Child-level variables**

Gender. Dummy coded as 1 = female and 0 = male. Male is the base-line effect.

Age.

Socioeconomic status (SES). Composite of parental education, occupation, and income.

Family structure. Number of parents. Dummy coded as 1 = both parents and 0 = single parent.

Family size. Number of people living the household.

Years in Canada. Number of years since immigration to Canada.

Immigration from the United States. Dummy coded as 1 = from US and 0 = from other countries.

Immigration from Europe. Dummy coded as 1 = from Europe and 0 = from other countries.

Immigration from Asia. Dummy coded as 1 = from Asia and 0 = from other countries.

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#### **City-level variables (population characteristics)**

Population size. Number of population.

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Population density. Population size divided by geographic area.

Population age. Number of adults over age 65 divided by population size.

Population without high school education. Percent of population without high school education.

Population with post-secondary education. Percent of population with post-secondary education.

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**City-level variables (socioeconomic conditions)**

Median family income.

Incidence of family low income. Percent of low income families based on low income cut-off.

Unemployment rate.

Housing. Average monthly cost of housing weighted by the proportions of renters and owners.

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**City-level variables (social mobility)**

Migration. Number of migrants divided by population size.

Immigration. Number of immigrants divided by population size.

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**City-level variables (social climate)**

Divorce. Number of divorced population divided by population size.

Social support for students. Social support from various social sectors perceived by students.

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**City-level variables (social services conditions)**

Social work professionals. Proportion of labor force that are social service professionals.

Health care professionals. Proportion of labor force that are health service professionals

Health care work force. Proportion of labor force working in health service.

Education work force. Proportion of labor force working in education.

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**Reference**

Aronowitz, M. (1984). The social and emotional adjustment of immigrant children: A review of the literature. International Migration Review, 18, 237-257.

Bagley, C. (1972). Deviant behavior in English and West Indian school children. Research in Education, 8, 47-55.

Barankin, T., Konstantareas, M., & DeBosset, F. (1989). Adaptation of recent Soviet Jewish immigrants and their children to Toronto. Canadian Journal of Psychiatry, 34, 512-518.

Beiser, M., Dion, R., Gotowiec, A., Hyman, I., & Vu, N. (1995). Immigrant and refugee children in Canada. Canadian Journal of Psychiatry, 40, 67-72.

Beiser, M., Hou, F., Hyman, I., & Tousignant, M. (1998). Growing up Canadian: A study of new immigrant children. Ottawa: Human Resources Development Canada.

Boyle, M., & Lipman, E. (1998). Do places matter? A multilevel analysis of geographic variations in child behavior in Canada. Ottawa: Human Resources Development Canada.

Bronfenbrenner, U. (1992). Ecological systems theory. In R. Vasta (Ed), Six theories of child development: Revised formulations and current issues (pp. 187-249). London: Jessica Kingsley.

Bryk, A. S., & Raudenbush, S. W. (1992). Hierarchical linear models. Newbury Park, CA: Sage.

Canadian Council on Social Development. (1998). The progress of Canada' children: Focus on youth. Ottawa: Author.

Gaetner-Harnach, V. (1981). In educating immigrants. Paper presented at the annual congress of the German Psychological Association.

Harrison, A., Harrison, H., & Park, S. (1997). Place of birth, place of residence, and concentration in social occupations. Journal of Applied Social Psychology, 27, 2032-2045.

Hyman, I., Beiser, M., & Vu, N. (1996). The mental health of refugee children in Canada. Refuge, 15(5), 4-8.

Jacob, A. G., & Blais, D. (1991). Social interaction of Salvadoran refugees. Journal of the National Association of Social Workers, 39, 307-312.

Kinnon, D. (1999). Canadian research on immigration and health: An overview. Ottawa: Health Canada.

Mirsky, J., Ginath, Y., Perl, E., & Ritsner, M. (1992). The psychological profile of Jewish late adolescents in the USSR: A pre-immigration study. Israel Journal of Psychiatry and Related Sciences, 29, 150-158.

Osborn, W. P. (1971). Adjustment differences of selected foreign-born pupils. California Journal of Educational Research, 22, 131-139.

Pepler, D. J., & Lessa, I. (1993). The mental health of Portuguese children. Canadian Journal of Psychiatry, 38, 46-50.

Reitz, J. G., & Sklar, S. M. (1997). Culture, race, and the economic assimilation of immigrants. Sociological Forum, 12, 233-277.

Rutter, M., Yule, W., Berger, M., Yule, B., Morton, J., & Bagley, C. (1974). Children of West Indian immigrants: Rates of behavioral deviance and psychiatric disorder. Journal of Child Psychology and Psychiatry, 15, 241-62.

Samuel, T. J. (1994). Asian and Pacific migration: The Canadian experience. Asian and Pacific Migration Journal, 3, 465-95.

Statistics Canada. (1995). National Longitudinal Survey of Children: Overview of survey instruments for 1994-95 data collection. Ottawa: Author.

Touliatos, J., & Lindholm, B. (1980). Behavior disturbance of children of native-born and immigrant parents. Journal of Community Psychology, 8, 28-33.

Williams, C. L., & Berry, J. W. (1991). Primary prevention of acculturative stress among refugees: Application of psychological theory and practice. American Psychologist, 46, 632-641.