Applied Research Branch
Strategic Policy
Human Resources Development Canada

Direction générale de la recherche appliquée
Politique stratégique
Développement des ressources humaines Canada

The Relationship Between Geographic Relocation and Childhood Problem Behaviour

W-98-17E

by

David J. DeWit, David R. Offord and Kathy Braun

October 1998

■

The Working Paper Series includes analytical studies and research conducted under the auspices of the Applied Research Branch of Strategic Policy. Papers included in this series incorporate primary research with an empirical or original conceptual orientation, generally forming part of a broader or longer-term program of research in progress. Readers of the series are encouraged to contact the authors with comments and suggestions.

La série des documents de travail comprend des études analytiques et des travaux de recherche réalisés sous l'égide de la Direction générale de la recherche appliquée, Politique stratégique. Il s'agit notamment de recherches primaires, soit empiriques ou originales et parfois conceptuelles, généralement menées dans le cadre de d'un programme de recherche plus vaste ou de plus longue durée. Les lecteurs de cette série sont encouragés à faire part de leurs observations et de leurs suggestions aux auteurs.

■

First edition/Première édition - Internet 1998

ARB publishes papers within the following thematic areas:
Changing Nature of Work; Employment Insurance Renewal; Exclusion, Marginalization and Overcoming Barriers; Investing in Children and Families; Labour Market Adjustment; Lifelong Learning; Macroeconomic/Labour Market Adjustment; Lifelong Learning; Macroeconomic/Labour Market Analysis Services; Skills Requirements in the Knowledge-Based Economy; Social Union: The Knowledge and Information Aspects; and Youth Transitions.

A complete list of publications is available upon request, or by visiting our Web site as listed below.

La DGRA publie les documents selon les domaines thématiques suivants :
Adaptation au marché du travail; Apprentissage continu; Compétences requises dans l'économie axée sur le savoir; Exclusion, marginalization et obstacles à surmonter; Investir dans les enfants et les familles; L'union sociale : connaisances et information; Nature changeante du travail; Renouvellement de l'assurance-emploi; Services d'analyse macroéconomique/du marché du travail; et Transitions chez les jeunes.

Une liste complète des publications est disponible sur demande, ou en visitant notre site Web à l'adresse ci-dessous.

■

General enquiries regarding the documents published by the Applied Research Branch should be addressed to:

Publications Coordinator
Applied Research Branch
Strategic Policy
Human Resources Development Canada
140 Promenade du Portage IV, 4th Floor
Hull, Quebec, Canada
K1A 0J9

Telephone: (819) 994-3304
Facsimile: (819) 953-8584
E-mail: research@spg.org
http://www.hrdc-drhc.gc.ca/arb/

Si vous avez des questions concernant les documents publiés par la Direction générale de la recherche appliquée, veuillez communiquer avec :

Coordinatrice des publications
Direction générale de la recherche appliquée
Politique stratégique
Développement des ressources humaines Canada
140, Promenade du Portage IV, 4e étage
Hull (Québec) Canada
K1A 0J9

Téléphone : (819) 994-3304
Télécopieur : (819) 953-8584
Courrier électronique : research@spg.org
http://www.hrdc-drhc.gc.ca/dgra/

Executive Summary

Researchers studying problem behaviour in children are looking to family relocation as a possible cause. It is thought that as a family relocates to a new community, a child's behaviour can become problematic due to the breakdown in the social network, such as the extended family, friends and neighbours, who have helped to regulate the child's behaviour.

Changing residence is a common experience for many Canadian children. Between 1986 and 1991, census figures indicated that almost half the population aged five and over moved. The NLSCY estimates that only one in four children ages 10 to 11 have never moved but 32 percent has moved three or more times. Some evidence suggests that young people who move frequently or have relocated recently are more likely to have problems in school, exhibit difficult behaviour and abuse substances as a result of weakened parental supervisory capacity and disciplinary practices and child emotional attachments to family, school, church and community.

This study compared the strength of the effect on childhood problems between the length of time since the last move to the total number of moves. The total number of moves had a larger effect on childhood problems. Compared with nonmovers, children who reported three or more moves were more likely to engage in problem behaviour. In contrast, little difference in behaviour was observed between nonmovers and children who moved once or twice. Children were less likely to encounter problems if they had high attachment to family (i.e., parent/child attachment and family harmony) and attachment to school (i.e., positive school attitudes). They were more likely to have problems if they experienced inconsistent and punitive parenting practices. There were more harmful effects of moving (in terms of heightened risk of problem behaviour) among children low on family harmony, children exposed to inconsistent disciplinary practices, and children having weak attachments to parents. In some instances, greater vulnerability to the effects of moving was also observed among children low on academic achievement, those possessing negative attitudes towards school, and those having infrequent involvement in out-of-school sports or other community activities (i.e., attending church or participating in clubs).

Overall, moving is not an inherently stressful process for many children. These results tend to support the commonly held view that moving contributes to aberrant child behaviour by intensifying problems (i.e., problem behaviour risk factors) which already exist in the family.

Sommaire

Les chercheurs qui étudient les problèmes de comportement chez les enfants considèrent la réinstallation familiale comme une cause possible. Il y a lieu de croire que la réinstallation d'une famille dans une nouvelle collectivité peut entraîner des problèmes de comportement chez un enfant en raison de la rupture du réseau social, soit la famille élargie, les amis et les voisins, ayant contribué à régulariser son comportement.

Le changement de résidence est une expérience commune pour bien des enfants canadiens. De 1986 à 1991, les chiffres du recensement indiquent que près de la moitié de la population âgée de cinq ans ou plus a déménagé. D'après les estimations de l'ELNEJ, seulement le quart des enfants âgés de 10 ou de 11 ans n'ont jamais déménagé, alors que 32 % ont déménagé trois fois ou plus. Il y a des indications selon lesquelles les jeunes qui déménagent fréquemment ou qui ont déménagé récemment sont plus susceptibles d'éprouver des difficultés à l'école, d'afficher un comportement difficile et de consommer de l'alcool ou des drogues, étant donné l'affaiblissement de la capacité de surveillance et des pratiques disciplinaires des parents et l'amoindrissement des attaches affectives de l'enfant avec la famille, l'école, l'église et la collectivité.

Dans cette étude, on a comparé la récence du dernier déménagement et le nombre total de déménagements du point de vue de l'importance de leurs répercussions sur les problèmes survenant durant l'enfance. Il est ressorti que le nombre total de déménagements avait de plus grandes répercussions à cet égard. Les enfants qui ont déclaré avoir déménagé trois fois ou plus étaient plus susceptibles de manifester des problèmes de comportement que ceux qui n'avaient jamais déménagé. Par contraste, peu de différences comportementales ont été observées entre les enfants n'ayant jamais déménagé et ceux qui ont déménagé une fois ou deux. Les enfants étaient moins susceptibles d'éprouver des problèmes s'ils avaient un grand attachement à la famille (p. ex., un attachement parent-enfant et une harmonie familiale) et à l'école (p. ex., des attitudes positives vis-à-vis de l'école). Ils étaient plus susceptibles d'afficher des problèmes s'ils étaient assujettis à des pratiques parentales inégales et punitives. Les effets du déménagement étaient plus néfastes (c.-à-d. qu'il y avait un risque accru de problèmes de comportement) chez les enfants vivant dans une situation familiale peu harmonieuse, les enfants assujettis à des pratiques parentales inégales, et les enfants ayant un faible attachement à leurs parents. Dans certains cas, une plus grande vulnérabilité aux effets du déménagement a également été observée chez les enfants ayant un faible rendement scolaire, les enfants entretenant des attitudes négatives à l'égard de l'école et les enfants participant peu à des sports extrascolaires ou à d'autres activités communautaires (comme aller à l'église ou faire partie de clubs).

Dans l'ensemble, le déménagement n'est pas un processus qui est stressant en soi pour beaucoup d'enfants. Les constats tendent à appuyer l'opinion générale selon laquelle le déménagement contribue à un comportement déviant chez l'enfant en intensifiant les problèmes (c.-à-d., les facteurs de risque de problèmes de comportement) déjà présents dans la famille.

Table of Contents

1. Introduction

Changing residence is a common experience for many North American children. According to the 1990 Bureau of the Census, approximately one in five American families moves each year; well above rates found in Great Britain, Germany, Japan and other industrialized nations (Long, 1992). In Canada, between 1986 and 1991, census figures indicated that almost half the population aged five and over moved. Among movers, 17 percent were children ages 5 to 14 (Statistics Canada, 1993).

Previous studies of geographic relocation as a risk factor for problem behaviour[1] in children have produced inconsistent results. Some evidence suggests that young people who move frequently or have relocated recently are more likely than others to rank low on academic achievement (Audette, Algozzine, & Warden, 1993; Ingersoll, Scamman, & Eckerling, 1989; Johnson & Lindblad, 1991; Reynolds, 1991), experience school failure or drop out (Haveman, Wolfe, & Spaulding, 1991; Straits, 1987; Wood, Halfon, Scarlata, Newacheck, & Nessim, 1993), commit violent and delinquent acts (e.g., theft, vandalism, sexual promiscuity, and drug use/abuse) (Cohen, Johnson, Struening, & Brook, 1989; DeWit, 1998; Fergusson, Lynskey, & Horwood, 1993; Sampson & Laub, 1993; Stack, 1994), and misbehave toward teachers and classmates (Simpson & Fowler, 1994; Wood, et al., 1993). However, at least two studies of the post-move adjustment problems among children have found that frequent moving sometimes leads to actual improvements in behaviour, enhancements in the quality of parent-child relations, and more effective coping mechanisms (Kroger, 1980; Stroh, 1990).

A review of the empirical literature on geographic relocation and its affects on child well-being reveal a number of limitations. First, although evidence suggests the effect of moves on behaviour may be indirect, little attention is given to identifying the specific mechanisms or mediators linking mobility with childhood problems. For example, Sampson and Laub (1993) in their longitudinal study of the effects of distal family structural factors (e.g., family size, crowding, family disruption) on the official and unofficial delinquency reports of 1,000 boys, discovered that frequent relocation was positively related to delinquency through its effect on weakening the

[1] For the sake of convenience, the term “problem behaviour” is used throughout this report to broadly refer to child externalizing behavioural problems, negative school outcomes, and use of alcohol and tobacco.

child's attachment to school and the supervisory capacity of parents. Others studies have also found a positive association between frequent and/or long-distance moves (i.e., moves across state or international boundaries) and various risk factors for childhood maladaptive behaviour such as low self-esteem, alienation, and a weakened sense of mastery over the environment (Calabrese, 1989; Hendershott, 1989; Kroger, 1980).

Secondly, much of the research on the relationship between geographic relocation and child problem behaviour has not tested for moderation or interaction effects. Evidence suggests that the acceptance of newcomers varies by sex. For example, Feshbach and Sones (1969) found that girls displayed less friendly reactions toward same sex newcomers than boys. Likewise, Brown & Orthner (1990) found that boys were subjected to fewer instances of rejection than girls. Conversely, other studies have found that boys fared less well making friends following a move (Brett & Werbel; 1980; Vernberg, 1990; Vernberg, Abwender, Ewell, & Beery, 1992), which may indicate the use of ineffective coping strategies in the adjustment process (Donohue & Gullotta, 1983).

In addition to sex, previous studies suggest that the circumstances surrounding a move may interact with the number of moves to influence childhood behaviour. Moves have the potential to increase the risk of adverse outcomes when they coincide with potentially stressful *normative* life events and changes such as a move to a new school or the onset of adolescence. Studies show that entering a new school is linked with academic and behavioural problems, increased anxiety over meeting school expectations, and problems gaining acceptance among peers (Crockett, Peterson, Graber, Schulenberg, & Ebata, 1989; Elias, Gara, & Ubriaco, 1985; Felner, Ginter, & Primarvera, 1982; Seidman, Allen, Aber, Mitchell, & Feinman, 1994; Simmons, Burgeson, Carlton-Ford, & Blyth 1987). Dowd (1987) contends that adolescents are most vulnerable to the effects of moving because it often dissolves or weakens close friendships and relationships with opposite sex partners. Since the peer group is an important element in the development of adolescent self-worth, the severing of ties with peers resulting from a move may lead to a sense of lost identity and insecurity.

Moves may also interact with other life events such as changes in family structure or economic status. A child whose family moves in response to economic opportunity or the arrival of a new

sibling may be less adversely affected than one whose family is forced to move out of economic necessity or in response to an involuntary corporate transfer or family breakdown (Glick, 1993). One reason is that parents who are forced to move often transmit their negative attitudes to their children (Barrett & Noble, 1973; Haour-Knipe, 1989). For forced moves, children are less likely to be involved in the decision-making process, which may lead to a strong sense of helplessness, alienation, and frustration. Life events theorists consider "degree of personal control" over a particular event to be an important determinant of healthy psychological functioning in young people (Newcomb & Harlow, 1986).

The characteristics of a move (i.e., recency and distance) may interact with relocation to influence childhood behaviour. Moves involving great distances (e.g., across provincial or state lines) may have detrimental consequences because the relocated child has a greater chance of arriving in unfamiliar territory and experiencing a permanent loss of friendships. Kroger (1980) found that frequency of moving and moving in the recent past did not adversely affect adolescent self-concept, but significant reductions in self-concept were observed for moves involving great distances. In another study, Hendershott (1989) found that moving once or twice or five or more times had a negative impact on children's self-esteem and their sense of mastery over the environment if it occurred in the current year compared to the previous year.

Third, studies of geographic relocation are often limited due to an absence of appropriate controls. Specifically, relocation may be linked to negative childhood outcomes as an artifact of common causes. One potential confounder consists of changes in family composition. Children from large families (many siblings) may be more prone to move because of changing family requirements for additional living space (Long, 1992). Family size in turn has been positively associated with poor academic performance (Haveman, Wolfe, & Spaulding, 1991) and delinquent activities (Sampson & Laub, 1993). Other studies have shown that in the aftermath of a divorce, the custodial parent (usually the mother) often moves her family closer to her biological parents to obtain the financial and social support lost in the marriage breakup (Asher & Bloom, 1982; Astone & McLanahan, 1994). Divorce has been implicated as a risk factor for adolescent drug use (Needle, Su, & Doherty, 1990), school drop out (Astone & McLanahan, 1994), and deviant behaviour (Frost & Pakiz, 1990).

Family socioeconomic status and various physical, social, and economic characteristics of the community may also operate as a confounding influence. Studies indicate that a disproportionate number of frequently mobile children come from poverty-stricken families where low parental incomes and unstable employment histories make owning a home unattainable (Long, 1992). In the United States it has been estimated that poor families move 50 to 100 percent more frequently than families that are not poor (U.S. Bureau of the Census, 1989). Frequent relocation has also been observed among children residing in economically and socially disadvantaged neighbourhoods (Cohen, Johnson, Struening, & Brook, 1989; Lee, Oropesa, & Kanan, 1994). Child poverty and neighbourhood social and economic decay are well established risk factors for child academic difficulties and behavioural problems at school, violence, and a range of delinquent activities (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993; Duncan & Brooks-Gunn, 1997; Simcha-Fagan & Schwartz, 1986; Simons, Johnson, Beaman, Conger, & Whitbeck, 1996).

The relationship between geographic relocation and childhood behavioural problems may also be confounded by family dysfunction and discord. Some evidence suggests that children growing up in families where one or both parents have been physically or sexually abusive, or have had a history of mental illness or substance abuse are at greater risk of a domicile shift (i.e., a move to foster or group home) than children from functional families (Mundy, Roberston, Greenblatt, & Robertson, 1989). Children exposed to these negative family influences are also at risk for conduct problems, substance abuse, and negative school outcomes (Irvin & Maag, 1993; Swaim, 1991; Robins & Rutter, 1990; Sampson & Laub, 1993). Eckenrode et al.'s (1995) study of maltreated children in New York State found that childhood maltreatment in the from of neglect and sexual and physical abuse was associated with frequent moves and poor academic performance.

Finally, studies of relocation and maladaptive behaviour in children are limited by the use of cross-sectional data. To make a proper judgement of cause and effect requires longitudinal data that permit an assessment of a child's mental and physical state just prior to and following a move. For example, it is possible that moving does not lead to significant increases in psychosocial problems but simply aggravates a problem that existed before its occurrence. In her study of over 800 school-age children, Kantor (1965) found that symptom levels of mental health remained virtually

unchanged after a geographic move. She concluded that after a move, well-adjusted children remain well-adjusted and troubled children remain troubled.

2. Theoretical Framework

Several theories have been offered to explain the potentially harmful impact of frequent moving on child and adolescent behaviour. Our choice of a guiding theoretical framework in the study of childhood relocation is Travis Hirschi's (1969) Social Control Theory (also known as Social Bonding Theory).

Social Control Theory posits that social constraints (e.g., child attachment or bonds to family, school and church) function to prevent or inhibit the occurrence of problem behaviour. Problem behaviour occurs when emotional attachments to important agents of socialization such as the family, church, and school, attenuate or disappear. These weakened social bonds signify a loss of commitment by the young person to the conventional social order (society) and a lack of response to the sanctions of significant others (e.g., parents, teachers) on inhibiting problem behaviour. Within this framework, geographic relocation is viewed as a force that threatens to weaken bonds to the conventional social order.

Social Control Theory identifies three elements that bond individuals to society, thereby preventing the occurrence of problem behaviour. They are: 1) attachment to significant others (e.g., parents, teachers, and religious leaders); 2) commitment to and involvement in conventional goals and activities (e.g., school and school-related activities); and, 3) belief in shared norms and standards of conduct.

Proponents of Social Control Theory (e.g., Agnew, 1991; Krohn, Massey, Skinner & Lauer, 1983; Paternoster & Iovanni, 1986) argue that "attached" young people are hesitant to engage in problem behaviour because such activities risk invoking a negative response from significant others whose opinions are valued. Commitment to and involvement in conventional activities (e.g., school work, athletics, church, and youth clubs) lessens the likelihood of problem behaviour because the young person is well-integrated into the conventional social order (i.e., the committed person has less time to engage in problem behaviour) and is committed to the pursuit of socially-approved goals (e.g., educational attainment) (i.e., the committed person has a stake in conformity). Finally, the occurrence of problem behaviour is expected to be low among young people who espouse strong beliefs in the conventional values, norms, and expectations of society.

Traditional Social Control Theory placed heavy emphasis on attachment to agents of socialization as "mechanisms of control". Borrowing from Patterson's coercion model of deviant behaviour, current reformulations of the theory (see Gottfredson & Hirschi, 1990; Sampson & Laub, 1993) have broadened the concept of control to include measures of parental disciplinary practices and supervision. These include: 1) frequent monitoring or supervision of children's activities; 2) parental acceptance of children; and 3) the use of punitive measures to correct misbehaviour in a consistent and loving manner. Together, these categories capture Stack's (1994) distinction between demand measures of social control (the idea that the demand to control children may increase with moving) and the supply of social control (the idea that moving may erode parental emotional resources).

2.1 Study Objectives

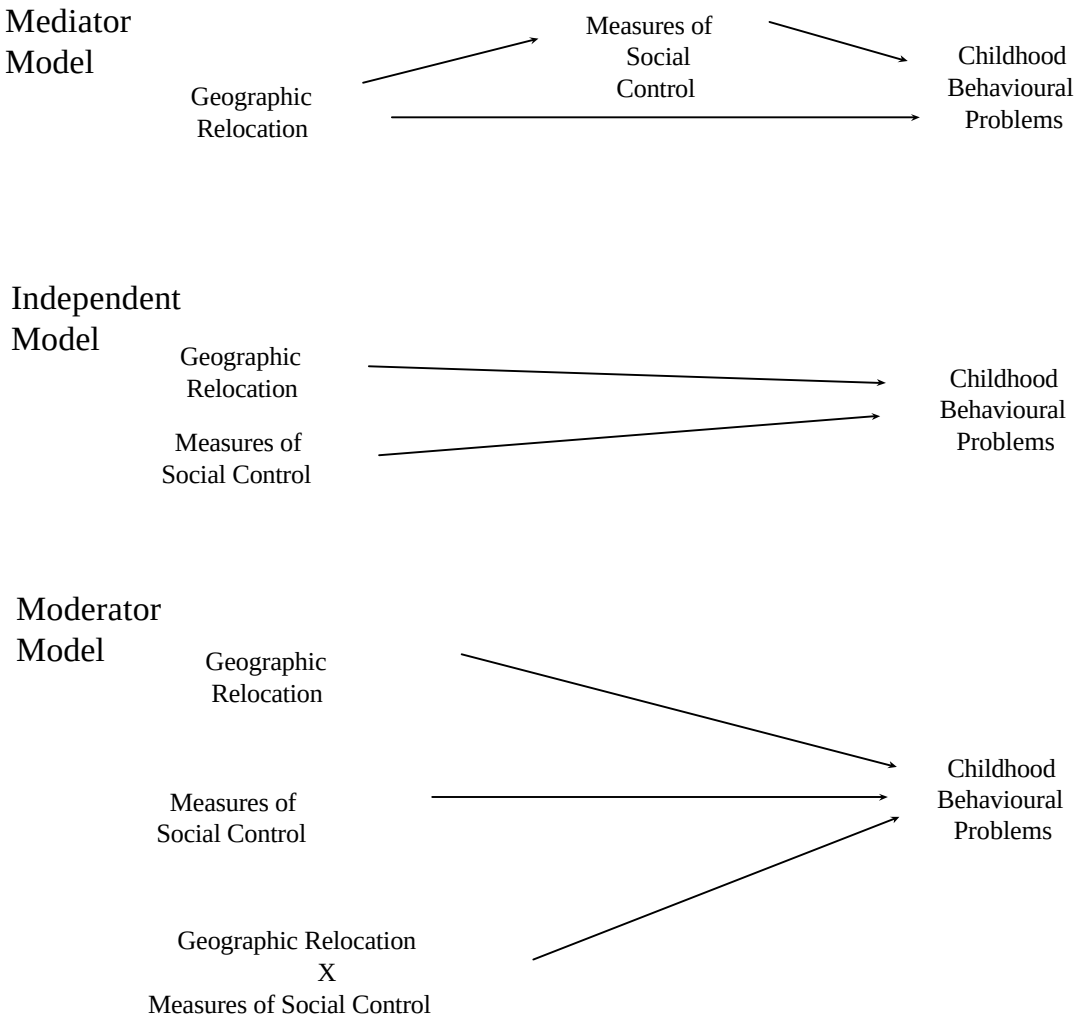
Based on a review of the literature and Hirschi's Social Control Theory, a test of the following hypothesis is proposed: geographic relocation (frequent and recent moves) increases the probability of problem behaviour[1] among children by weakening parental supervisory capacity and disciplinary practices and child emotional attachments to family, school, church, and community. Two primary study objectives include: 1) to advance our understanding of the underlying mechanisms linking the number and recency of childhood geographic moves with problem behaviour; and (2) to identify the conditions under which frequent and recent moving is associated with problem behaviour. Previous studies have shown that environmental change for children is sufficiently potent to generate formal and informal referrals to special services (Elias, Gara, & Ubriaco, 1985). Identifying the mechanisms through which relocation may influence childhood behaviour (i.e., mediators) and the circumstances under which harmful effects occur (i.e., moderating influences) will facilitate the development of effective school and community programming for relocated youth.

2.2 Models Tested

Based on the work of Baron and Kenny (1986), illustrations of the hypothesized models are presented in Figure 1. For the mediator model, the left-hand construct is the independent variable, which consists of total moves and recency of the last move. The middle construct consists of the proposed mediators which include measures of social control. The right-hand construct (i.e., the dependent variable) represents childhood problem behaviour.

Mediation is demonstrated when a statistically significant relationship between geographic relocation and the dependent variable is substantially reduced or eliminated after the addition of mediators to the model. The independence model assumes that geographic relocation and social control each have a direct and unique influence on childhood problem behaviour. This is demonstrated when geographic relocation and social control measures yield statistically significant relationships with study outcomes when the effects of each set of variables are partialled out. A moderator or interaction effect is shown when the relationship between the independent and dependent variables differs significantly across levels of social control/bonding (i.e., hypothesized mediators).

Figure 1
Models Testing the Contribution of
Relocation on Behavioural Outcomes



3. Method

3.1 Data Source

Data for this study were obtained from the 1994-95 National Longitudinal Survey of Children and Youth (NLSCY), a random probability sample of Canadian residential households containing children aged 0 to 11 years (NLSCY, 1998). Excluded were households in remote areas, those on First Nations Peoples' reserves, and institutional settings. Sampling frames for Cycle One of the NLSCY included a main component based on households participating in Statistics Canada's Monthly Labour Force Survey (excluding the Territories) and an integrated component based on households participating in the 1994 National Population and Health Survey. In total, 15,579 households were selected to participate, 12,879 for the main component and 2,700 for the integrated component. Out of this number, 13,439 participated, resulting in an overall response rate of 86.3 percent. An analysis of responding versus non-responding households revealed a slight underrepresentation of households in Census Metropolitan Areas (CMAs), households with a parent age 40 and older, and households with a parent having 8 or fewer years of education. Sample weights were applied to the data to take into account all relevant features of the sampling design including unequal probabilities of selection, non-response (i.e., person and household levels), and an adjustment to bring the age and sex distribution of the sample into agreement with the age and sex distribution of the population.

Data collection occurred on four separate occasions in 1994 and 1995. A roster was completed for each eligible household in order to collect basic demographic and socioeconomic information about each member. For each participating household, one child aged 0 to 11 years was randomly selected. Information was then obtained on the Person Most Knowledgeable (PMK) about that child. Other children were then selected at random up to a maximum of four per household. The PMK was asked to complete three questionnaires: a general questionnaire, a parent questionnaire, and a child questionnaire. Children ages 10 and 11 years were asked to complete a separate self-report questionnaire. The current study focuses on 3,224 children aged 10 and 11 years participating in Cycle One of the NLSCY for whom self-reports and PMK reports were collected.[2]

[2] Results of this study are based on the NLSCY shared file located at each of the Statistics Canada regional offices. The file excluded five percent of sampled respondents.

3.2 Measures

Detailed information on all study constructs and corresponding measures is described in Appendix A. Measures were coded so that the highest value represented the "poorest" or "least desirable" outcome.

3.2.1 Dependent Variables

In the NLSCY, child externalizing behavioural problems was measured using a combination of preexisting scales and behavioural disorder symptom checklists (NLSCY, 1998). Outcomes included conduct problems, aggressive behaviour (items purportedly tapping indirect and direct physical aggression), and antisocial behaviour (i.e., an absence of prosocial behaviour). Response categories included: "never or not true", "sometimes or somewhat true", and "often or very true". Previous evidence has shown that the prevalence and correlates of childhood behavioural problems differ between child self-reports and those obtained from informants such as parents and teachers (Offord, Boyle, & Racine, 1989; Stanger & Lewis, 1993). Consequently, information on each child was obtained from PMK reports and child self-reports.

Principal Components factor analysis (with varimax rotation) was performed on all PMK externalizing behaviour measures yielding an underlying factor structure with four distinct dimensions: antisocial behaviour, physical aggression-conduct problems, indirect aggression, and property offenses. Factor analysis of the corresponding child self-report items yielded a similar factor structure. Thus, for comparative purposes, the same set of items obtained from the factor structure for PMK reports were retained for self-report data. Other outcome measures included school failure (assessed through PMK reports only) and lifetime substance use (assessed through child self-reports only). In the NLSCY, the PMK was asked if the child had ever repeated a school grade (yes/no response). Based on separate questions, children ages 10-11 were asked if they had ever drank alcohol or tried cigarette smoking, even just a few puffs (yes/no responses).

For each externalizing behavioural outcome (excluding school failure and substance use), items with a factor loading of .40 or greater were summed to arrive at a single score. A threshold value corresponding to the top 10 percent of cases on each summated score was chosen to distinguish between children positive on a given behavioural outcome versus all others. Although arbitrary, this method of assigning cases was adopted to identify a population of children with a high level

of dysfunction as measured by frequently occurring behavioural problems. The resulting dichotomous outcomes were used as dependent variables in all analyses. The focus on dysfunctional children is important to the extent that it informs the development of programs and policies pertaining to the effects of geographic relocation aimed at preventing problem behaviour.

3.2.2 Independent Variables

Major independent variables of interest (reported by the PMK) included the number of family moves experienced by the child and the recency of the last move (derived from length of time in current residence). In the NLSCY, no distinction was made between short-distance moves (e.g., a move within the same neighbourhood) and moves across municipal or provincial boundaries. A recent move was defined as a move occurring within the past two years. This definition conforms with evidence which suggests that the average time to settle and adjust following a move is 6 to 18 months (Carlisle-Frank, 1992). Prior to its inclusion in the multiple logistic regression models, the variable “recency of the last move” (measured as length of time in current residence--in years) was reverse coded so that the highest value corresponded to the shortest length of time since the last move.

3.2.3 Hypothesized Mediating Variables

Measures of social control hypothesized to mediate the effect of geographic relocation on child behaviour problems were grouped under three headings: family, school, and community. Measures were factor analyzed using Principal Components analysis with varimax rotation. Items with a value of .40 or greater on meaningful dimensions were summed to from a single composite index with the highest value indicating the least desirable outcome (e.g., the poorest level of school performance).

Measures within the context of the family included items tapping parent/child attachments and parenting practices/techniques. For PMK reports, factor analysis of the family items yielded three distinct sub-dimensions: a positive-interaction scale reflecting the degree of emotional attachment/bonding between parents and children, inconsistent disciplinary practices, and punitive or aversive parenting. For child self-reports, results supported four factors: a positive-interaction scale reflecting the degree of emotional attachment/bonding between parents and children, inconsistent disciplinary practices, punitive or aversive parenting, and level of parental monitoring

of child's activities (available for self-reports only). An additional measure of social control within the family context included how well the child got along with family members (e.g., mother, father, and siblings). The NLSCY did not ask informants (i.e., PMK and child) identical questions pertaining to certain family-related constructs. These included: degree of emotional attachment/bonding between parents and children, inconsistent disciplinary practices, and punitive or aversive parenting. (For details, see Appendix A.)

Measures of attachment to school included child attitudes toward school, level of academic achievement, and the number of times the child changed schools. Social control theorists have identified academic performance as an important dimension of the concept "school attachment" (Sampson & Laub, 1993). The inclusion of the variable "times changed schools" was based on the premise that children who are displaced from their school environment on a frequent basis will find it difficult to develop an intimate knowledge of their settings and to develop trusting relationships (Fullilove, 1996). Measures of child attitudes toward school and academic achievement differed slightly in content between informants (PMK and child). (See Appendix A for details.)

Measures of attachment to community included: child attendance of church services and participation in clubs/art/dance/music and participation in after school sports (with and without a coach).

3.2.4 Controls

Demographic and socioeconomic controls were selected based on a review of the literature on child geographic relocation. Controls obtained from the household roster and relationship grid included: sex of child, age, place of residence (rural vs. urban), region (B.C., Prairies, Ontario, Quebec, Maritimes), family structure or living arrangements (living with both natural parents versus other), number of siblings living in the household, and family socioeconomic status. Controls measuring various aspects of family well-being (asked only of the PMK) included: family functioning, parental depression, parental drinking and smoking behaviour and parental social support. Other relevant controls included: child self-esteem, peer drug involvement, child involvement with deviant peers, parental interest in child's education, frequency of doing things with friends, school climate, and neighbourhood/community climate. Information on child self-

esteem, peer drug involvement, and involvement with deviant peers was restricted to child self-reports. Information on neighbourhood/community climate was restricted to PMK reports. PMK and child self-report measures pertaining to school climate and parental interest in child's education differed slightly in content. (For details, see Appendix A.)

3.3 Data Analysis

All analyses were conducted on PMK and child self-report data. Descriptive analysis of the data consisted of two parts: 1) Chi-Square tests of independence relating the independent variables "total moves" (collapsed as: 0, 1, 2, 3, 4+) and recency of the last move (collapsed as: <2 years, 2-4 years, 5+) with the dependent variables (childhood problem behaviours); and 2) unadjusted odds ratios assessing the odds of problem behaviour occurrence for each level of the geographic relocation variables.[3]

Mediator, independent, and moderator effects were tested using multiple logistic regression. As stated earlier, mediation is demonstrated when a statistically significant relationship between geographic relocation and the dependent variable is substantially reduced or eliminated after the addition of mediators to the model. Independence is demonstrated when geographic relocation and social control measures yield statistically significant relationships with study outcomes when the effects of each set of variables are partialled out. A moderator or interaction effect is shown when the relationship between the independent and dependent variables differs significantly across levels of social control (i.e., hypothesized mediators).

[3] The use of clustering in complex surveys such as the NLSCY typically results in a reduction in variance given that individuals within aggregate units such as households or enumeration areas tend to be alike on certain characteristics or traits. This underestimation of the true variance leads to reduced standard errors and thus significance tests that are overly liberal. In the NLSCY the overall design effect was 3.6. Adjustments for design effects have not been made in this report. For details on the calculation of study design effects, see the NLSCY User's Handbook (NLSCY, 1998).

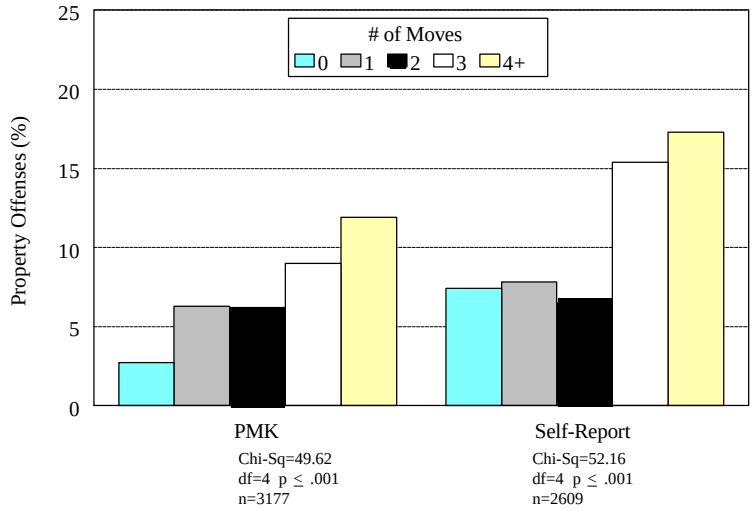
4. Results

4.1 Descriptive

The NLSCY data revealed that approximately one in four children ages 10-11 had never moved; 32 percent had moved three or more times. Fifteen percent of the sample were classified as "recent movers" (i.e., children who last moved within two years of the time of the survey). Twenty-five percent had last moved two to four years prior to the survey date.

With the exception of antisocial behaviour, results for child self-reports[4] showed that moving three or more times was associated with all outcomes including physical aggression-conduct problems (χ^2=14.1, p≤.01), property offenses (χ^2=52.2, p≤.001), indirect aggression (χ^2=27.6, p≤.001), lifetime tobacco use (χ^2=20.8 p≤.001), and lifetime alcohol use (χ^2=13.1, p≤.05). Similar results were obtained for PMK reports and included physical aggression-conduct problems (χ^2=39.3, p≤.001), property offenses (χ^2=49.6, p≤.001), indirect aggression (χ^2=61, p≤.001), and school failure (χ^2=49.7, p≤.001).

Figure 2
Property Offenses by Number of Lifetime Moves,
PMK and Self-Reports, Children Ages 10-11 (NLSCY)



[4] For the child self-reports, missing values ranged from 15 to 20 percent. To assess possible bias related to non-response, the outcome variables (coded "1" for missing responses and "0" for valid responses) were regressed on a set of demographic variables including child sex, age, region of residence (i.e., Prairies, Ontario, Maritimes, etc.), living arrangements, urban-rural residence, number of siblings and family SES. In general, males, 10 year olds, children living in Quebec or the Prairies (versus Ontario) and children with low family SES were more likely to be nonrespondents.

Figure 2 illustrates the relationship between number of moves and property offenses. For child self-reports, over 15 percent of sampled children who moved three or more times in their life reported serious involvement in the commission of property offenses. This is twice the rate for those moving fewer than three times.

For PMK reports, moving within the last two years resulted in a statistically significant relationship with most outcomes. Specifically, the prevalence of childhood problems for recent movers was significantly higher compared to rates observed for earlier movers. This result was obtained for physical aggression-conduct problems (χ^2=32.1, p≤.001), property offenses (χ^2=53, p≤.001), indirect aggression (χ^2=30.3, p≤.001), and school failure (χ^2=15.6, p≤.001). In contrast, results for child self-reports showed an absence of significant relationships for most behaviour problems except for property offenses (χ^2=9.3, p≤.01). The relationship between property offenses and recency of moving is shown in Figure 3.

Figure 3
Property Offenses by Recency of Last Move (Years),
PMK and Self-Reports, Children Ages 10-11 (NLSCY)

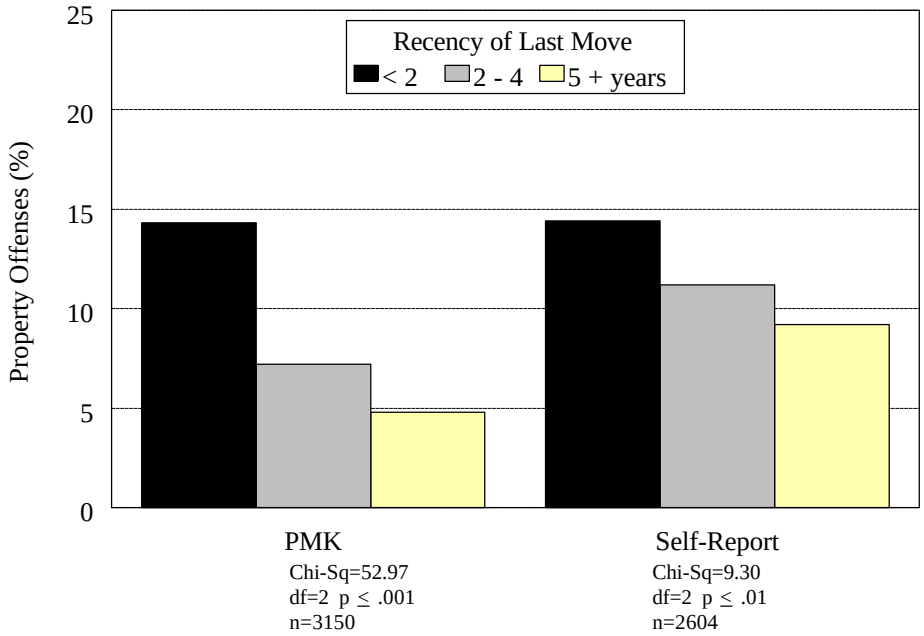


Table 1 presents unadjusted odds ratios relating total moves and recency of the last move to each problem behaviour. For total moves, estimated effects are compared to the reference group of nonmovers. For recency of the last move, the reference group consists of children belonging to families who last moved five or more years prior to the survey.[5]

For PMK reports, results generally showed that children classified as frequent movers (three or more moves) were two to four times more likely than nonmovers to be positive on physical aggression-conduct problems, indirect aggression, property offenses, and school failure. No relationship was observed between moving and antisocial behaviour. Similar findings based on PMK reports occurred for recency of the last move with children classified as recent movers (i.e., last move within the past two years) roughly two to three times more likely to score positive on each outcome.

The results based on child self-reports indicated slightly weaker but still significant relationships between number and recency of moves and a range of childhood problems. Generally, children moving three or more times were 1.5 to 2 times more likely than nonmovers to score positive on problems. Exceptions included physical aggression-conduct problems, antisocial behaviour, and lifetime alcohol use. Less consistent relationships were found between recency of moving and childhood problems.

To summarize, the descriptive analysis of the bivariate relationships between geographic relocation and childhood problem behaviour yielded several findings. First, total moves was positively correlated with a broad range of behavioural outcomes. The only exception was antisocial behaviour. Specifically, we find that compared with nonmovers, children who reported three or more moves were more likely to engage in problem behaviour. In contrast, little difference in behaviour was observed between nonmovers and children who moved once or twice.

[5] To establish significant positive relationships between geographic relocation and measures of social control (as specified in our mediation model depicted in Figure 1), we estimated OLS regression equations for PMK and self-reports. Predictor variables included theoretically important controls and geographic relocation (total moves and recency of the last move) as the independent variable of interest. Dependent variables included each of the hypothesized mediators. Results (not shown) indicated statistically significant positive relationships between moving and several measures of ineffective parental disciplinary practices and weak child attachments to family and school. Non-significant relationships were obtained between moving and measures of community attachment.

Table 1

Bivariate Relationships Between Number and Recency of Moves and Childhood Outcomes, PMK and Self-Reports (Unadjusted odds ratios). Children Ages 10-11 NLSCY

	Property Offenses		Physical Aggression-Conduct Problems	
	PMK (n=3177)	Self-Reports (n=2605)	PMK (n=3159)	Self-Reports (n=2630)
Number of Moves				
0	1.00	1.00	1.00	1.00
1	2.44**	0.91	1.07	0.86
2	2.39*	0.74	1.11	0.66
3	3.58**	1.93*	1.06	0.74
4+	4.94**	2.24**	2.31**	1.29
Recency of Last Move				
<2 years	3.34**	1.63*	2.26**	1.36
2-4	1.54*	1.22	1.21	1.20
5+	1.00	1.00	1.00	1.00

* p≤.01; ** p≤.001

	Indirect Aggression		Antisocial Behaviour	
	PMK (n=3014)	Self-Reports (n=2694)	PMK (n=3092)	Self-Reports (n=2599)
Number of Moves				
0	1.00	1.00	1.00	1.00
1	1.73*	0.89	1.21	1.31
2	1.37	0.53*	1.16	0.72
3	2.40**	1.44	1.32	1.02
4+	3.62**	1.47	1.03	1.12
Recency of Last Move				
<2 years	2.47**	1.09	1.19	0.96
2-4	1.56	1.13	1.22	1.20
5+	1.00	1.00	1.00	1.00

* p≤.01; ** p≤.001

Table 1 (continued)

	School Failure		Lifetime Tobacco Use		Lifetime Alcohol Use	
	PMK (n=3166)	Self-Reports	PMK	Self-Reports (n=2741)	PMK	Self-Reports (n=2687)
Number of Moves						
0	1.00	--	--	1.00	--	1.00
1	1.53	--	--	0.86	--	0.76
2	1.29	--	--	1.04	--	0.70
3	0.90	--	--	0.90	--	0.81
4+	2.93**	--	--	1.65*	--	1.13
Recency of Last Move						
<2 years	1.72**	--	--	1.39	--	1.01
2-4	1.53*	--	--	1.37	--	1.02
5+	1.00	--	--	1.00	--	1.00

* $p \leq .01$; ** $p \leq .001$ Source: NLSCY

Secondly, more recent moves were positively associated with several behavioural problems but the magnitude of the relationships was much smaller compared with those obtained for number of moves. Thus, in the bivariate case, recency of the last move was a less important correlate of negative child behaviour compared to number of moves. Third, while the bivariate logistic regression results indicated a high degree of consistency of results between PMK and child self-reports across most childhood problems, PMK reports generally yielded larger odds ratios.

4.2 Multivariate Analyses

Univariate statistics (i.e., mean, standard deviations, minimum and maximum values) associated with study control measures, proposed mediators, and childhood behavioural outcomes are presented in Appendix B. All predictor variables were recoded so that the highest value indicated the poorest or least desirable outcome. Mean values on the dependent variables indicate the proportion of sampled respondents scoring positive on a particular problem. Correlation results showed little evidence of severe multicollinearity (r values exceeding .70) between hypothesized predictors. The highest correlation existed between total moves and recency of the last move (r=.60).

4.2.1 Mediator and Independent Effects

To provide a formal test of our hypothesis, separate logistic regression models were estimated for each outcome measure. Models were estimated separately for both PMK and self-reports. Model A included the geographic relocation variables only (number of moves and recency of the last move). Model B (reduced model) included measures of geographic relocation plus controls. Model C (reduced model) included measures of social control plus controls. Model D (full model) included all controls, measures of social control and geographic relocation measures.

Recall that mediation is demonstrated when observed significant effects of geographic relocation on childhood problems (in the presence of controls) (Model B) attenuate or disappear with the addition of hypothesized mediators (Model D). In the full model, control and independent variables were forced into the equations at step one. In the second step, backward elimination of hypothesized mediators (criterion set at .01 significance) was used to retain only those having statistically significant relationships with the dependent variables.[6] This procedure permitted a straightforward test of the social control measures as possible mediating mechanisms. Comparisons of Model B with Model D and Model C with Model D provide a formal test of the independence hypothesis (that geographic relocation and measures of social control each have unique direct effects on childhood problems). For comparative purposes, backward elimination of mediators was also used in Model C.

Results of the multivariate analyses are summarized in Table 2. Presented are odds ratios with asterisks indicating the corresponding level of statistical significance (based on two-tailed tests). An odds ratio above one signifies a positive relationship while a value below one signifies a negative relationship. Odds ratios for dummy coded variables represent the standardized effect on each behavioural outcome. Odds ratios for continuous predictors are standardized by exponentiating the product of the unstandardized regression coefficient and the standard deviation of the predictor variable. The resulting standardized effect provides an indication of the magnitude of the regression coefficient and is interpreted as the expected change in the dependent variable for each one standard deviation change in the predictor variable. In the interest of parsimony, effects

[6] Given the large sample size and the issue of multiple testing (i.e., the likelihood of finding significant effects by chance alone as a result of performing a large number of tests), a criterion of .01 was used to judge statistical significance in the backward elimination procedure.

for controls are not shown. To test for non-linearity in the relationship between moving and childhood problems, transformations were initially performed on the independent variables of interest (number of moves and recency of the last move). Only statistically significant quadratic effects are shown. A complete listing of results (including estimated effects for each measure of social control) is presented in a series of tables in Appendix C.

Table 2 shows the relationship between geographic relocation and child property offenses. Evident was a unique nonlinear effect of number of moves but only for self-reports. In Model B number of moves was associated with a highly significant increased risk of offenses (linear term, OR=2.56, $p \leq .001$) followed by a slight decreased risk (quadratic term, OR=.93, $p \leq .01$). The nonlinear effect of number of moves on property offenses still remained highly significant in the full model (Model D) providing strong support for the independence model (i.e., a unique direct effect of moving on property offenses). PMK and self-reports of childhood physical aggression-conduct problems revealed an absence of a statistically significant effect of moving.

For both PMK and self-reports, statistically significant positive relationships were found in Model B between total moves and indirect aggression (PMK OR=1.26, $p \leq .01$; self-report OR=1.26, $p \leq .01$). The addition of social control measures in Model D resulted in non-significant effects. These measures (shown in Model C of Table C.2 of Appendix C) included: low family harmony, inconsistent parenting, and punitive parenting practices. For PMK reports, Model B also showed a statistically significant positive relationship between recency of the last move and indirect aggression (OR=1.27, $p \leq .01$). However, in contrast to number of moves, this relationship held with the addition of social control measures (Model D), an indication of a unique direct effect (in support of the independence model) of recency of moving on aggression.

For child antisocial behaviour, evidence of mediation only occurred for self-reports. In Model B a significant positive relationship was found between number of moves and antisocial behaviour (OR=1.28, $p \leq .01$). The addition of measures of social control in Model D resulted in a non-significant positive effect (OR=1.23, ns). These measures (shown in Model C of Table C.3 of Appendix C) included: weak parent/child attachments and negative school attitudes.

Table 2

Logistic Regression Analysis for Predictors of Childhood Behaviour Problems
(standardized odds ratios)

Outcomes	Number of Moves				Recency of Last Move			
	Model				Model			
	A	B	C	D	A	B	C	D
PMK Reports								
Physical aggression-conduct problems	1.41**	1.19	-	1.07	1.31**	1.00	-	.97
Indirect aggression	1.58**	1.26*	-	1.21	1.59**	1.27*	-	1.36*
Antisocial behaviour	1.04	.87	-	.83	1.11	1.04	-	1.07
Property offenses	1.52**	1.16	-	1.19	1.64**	1.04	-	1.07
Lifetime cigarette use [a]	+	+	+	+	+	+	+	+
Lifetime alcohol use [a]	+	+	+	+	+	+	+	+
School failure [b]	1.36**	1.16	-	1.04	1.36**	1.00	-	.93
Self-Reports								
Physical aggression-conduct problems	1.09	1.07	-	1.02	1.11	.83	-	.83
Indirect aggression	1.21**	1.26*	-	1.23	1.07	.80	-	.83
Antisocial behaviour	1.09	1.28*	-	1.23	1.00	.87	-	.90
Property offenses	-	-	-	-	1.27**	.90	-	.93
Linear	1.97**	2.56**	-	3.71**	-	-	-	-
Quadratic	.96*	.93*	-	.96*	-	-	-	-
Lifetime cigarette use [a]	1.34**	1.21	-	1.21	1.19*	.97	-	.97
Lifetime alcohol use [a]	1.07	1.23*	-	1.21	.97	.77*	-	.77*
School failure [b]	+	+	+	+	+	+	+	+

Model A: Independent variables.
Model B: Independent variables with controls.
Model C: Controls with mediators (results not presented in Table; see Appendix C).
Model D: Independent variables with controls and mediators.

[a] Measures available for self-report only.
[b] Measure available for PMK only.
* $p \leq .01$, ** $p \leq .001$

Source: NLSCY

The data on child substance use indicated some support for mediation. For alcohol, Model B showed a significant positive relationship between number of moves and self-reported use (OR=1.23, $p \leq .01$). The effect became non-significant in Model D with the addition of measures of social control (OR=1.21, ns). These measures (shown in Model C of Table C.5 of Appendix C) included: punitive parenting practices and negative attitudes toward school.Unexpectedly, we found a significant negative relationship between recency of the last move and lifetime alcohol use.

Finally, non-significant effects of moving in the presence of controls were observed for several outcomes including: physical aggression-conduct problems, property offenses (PMK reports), antisocial behaviour (PMK reports), school failure, and use of cigarettes.

In summary, the logistic regression analysis provided partial support for the hypothesis that measures of social control mediate the effects of geographic relocation on behavioural problems. For number of moves, the strongest evidence in support of mediation occurred with indirect aggression (PMK and self-reports). For this outcome, relevant mediators (i.e., measures of social control) included: low family harmony, punitive parenting, and inconsistent disciplinary practices. Moderate support for mediation occurred for self-reports of antisocial behaviour and alcohol use. For antisocial behaviour, relevant mediators included: weak parent/child attachment and negative attitudes toward school. For alcohol use, relevant mediators included: punitive parenting practices and negative attitudes toward school. Strong support for a direct unique effect of number of moves occurred for self-reports of property offences. Increments in the number of moves were associated with an increased risk of offences followed by a decreased risk (i.e., a significant quadratic effect). In contrast to number of moves, recency of the last move did not emerge as a significant predictor in most models. A notable exception was the positive unique effect (in support of the independence model) of recency on indirect aggression.

4.2.2 Moderator Effects - Measures of Social Control

Previous research suggests that the effects of geographic relocation may vary depending on the level of child attachment to significant others (e.g., family, school), level of parental supervision of child activities, and type of parenting style or practice. To test for these moderating effects, logistic regression analyses were performed for each problem behaviour in which the cross-

products of geographic relocation (total moves and recency of the last move) and the hypothesized mediators (i.e., measures of social control) were added as separate terms in the equations. Included in each model were theoretically relevant controls. Because of the large number of models tested, only interaction effects statistically significant at $p \leq .01$ were reported. Results are summarized in Table 3.

Results showed that children low on family harmony were much more vulnerable to the negative effects of recent moves compared to children from families with moderate to high levels of harmony. This was true for PMK reports of property offenses.

In addition to family harmony, significant moderator effects were found for inconsistent parenting practices and low parent/child attachment. Among children exposed to inconsistent parenting practices, results revealed an elevated risk of antisocial behaviour (PMK reports) associated with recent moves. In contrast, the risk of problem behaviour remained the same for moderate to high levels of consistency. Results for parent/child attachment showed an increased risk of school failure at four or more moves only among children low on attachment.

Significant interactions involving relocation and use of punitive parenting practices produced unexpected results. Children exposed to punitive parenting experienced an elevated risk of property offenses and physical aggression-conduct problems (PMK reports) regardless of the recency of the last move. In contrast, at low to moderate punitive practices, the more recent the move, the greater the likelihood of problems.

Only one interaction effect was obtained involving geographic relocation and parental monitoring of child activities. Among children reporting low levels of monitoring, an increase in total moves was associated with a steady increase in the proportion of self-reported alcohol use. A high number of moves did not adversely affect drinking among those reporting moderate to high levels of monitoring. The moderating effect of parental monitoring of child activities on lifetime alcohol use for total moves is presented in Figure 4.

Table 3

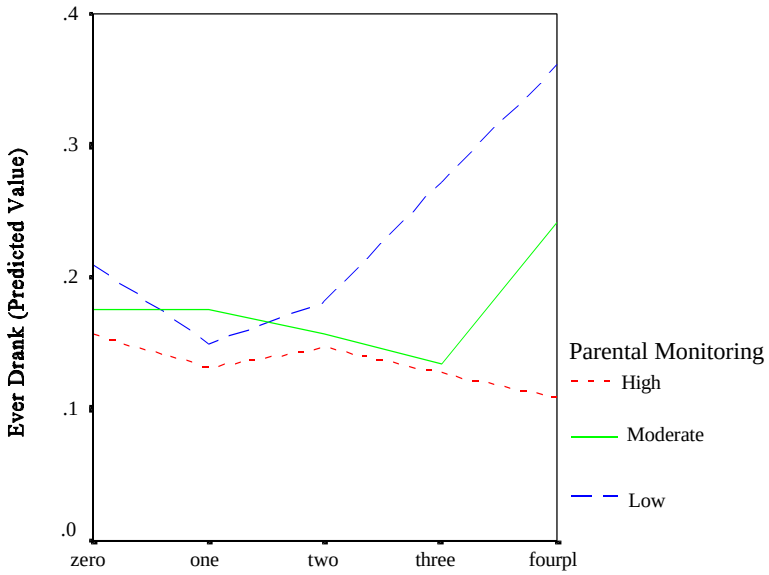
Results for Moderating Effects of Study Mediators & Controls on Childhood Problem Behaviours[a]

	Number of Moves		Recency of Last Move	
Outcomes	Social Control	Background Characteristics	Social Control	Background Characteristics
Physical aggression-conduct problems	--	--	--	--
Indirect aggression	--	--	--	Females
Antisocial behaviour	--	--	High inconsistent parenting Low academic achievement Negative school attitudes	--
Property offenses	--		Low family harmony Low participation in clubs/church	High family dysfunction Living in single-parent, blended or adoptive family
Lifetime tobacco use [b]	--	--	--	--
Lifetime alcohol use [b]	Low parental monitoring	--	--	--
School failure [c]	Low parent/child attachment Low involvement in sports	--	--	--

[a] Interaction effects significant at $p< =.01$
[b] Measure available for self-report only.
[c] Measure available for PMK only.

Source: NLSCY

Figure 4
Moderation Effects of Parental Monitoring of Child Activities
on Lifetime Alcohol Use for Total Moves (Self-Reports)



Number of Lifetime Moves

Source: NLSCY

Finally, our analysis of moderator effects identified a small number of significant interactions between moving and measures of child attachment to school and community. Among children low on academic achievement and possessing negative attitudes toward school, results showed an elevated risk of antisocial behaviour. The highest risk occurred for children who last moved within four years of the survey. We also found a positive relationship between recent moves and self-reports of property offenses but only among children reporting low attendance of clubs/church. Similarly, moving four or more times was associated with school failure only among children low on involvement in sports. The moderating effects of school attitudes on antisocial behaviour for recency of moving is presented in Figure 5. Figure 6 presents the moderating effects of attendance of clubs/church on property offenses for recency of moving.

Figure 5
Moderation Effects of School Attitudes on Antisocial Behaviour for Recency of Moving (PMK Reports)

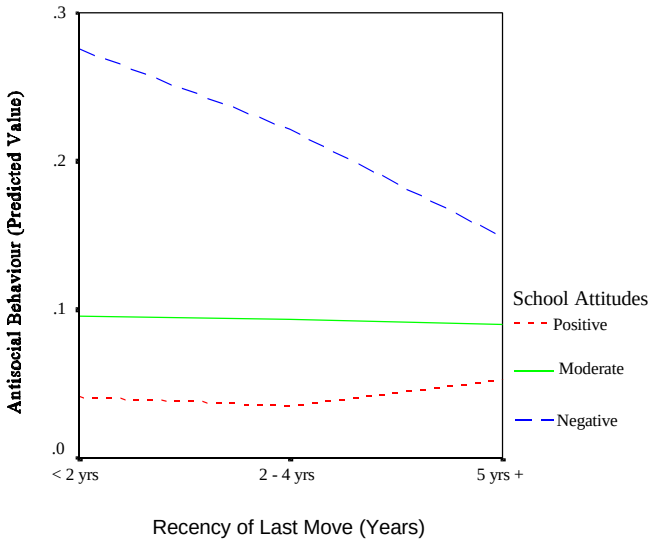
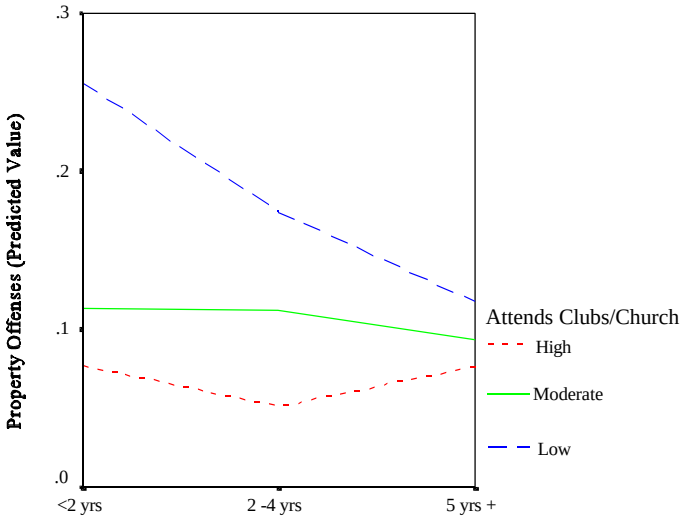


Figure 6
Moderation Effects of Attendance at Clubs/Church on Property Offenses for Recency of Moving (Self-Reports)



Source: NLSCY

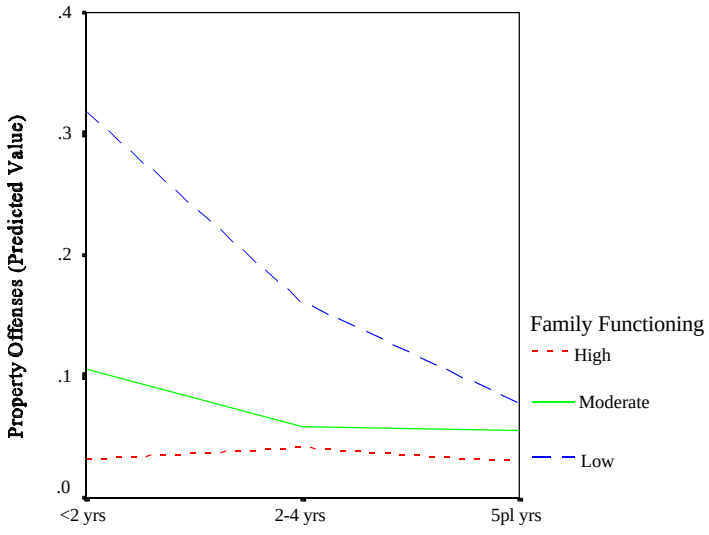
4.2.3 Other Moderator Effects

Tests for significant interaction or moderator effects were performed for measures of geographic relocation together with theoretically important control variables. The latter included the child's sex, living arrangements, neighbourhood climate, family socioeconomic status, level of family dysfunction, and parental depression. Because of multiple testing, only effects significant at $p \leq .01$ were reported. Our interest in examining these interactions was to assess under what conditions geographic relocation would be associated with childhood behavioural problems.

Results showed a heightened vulnerability to the potentially harmful effects of moving for certain sub-populations of children. Recency of the last move was positively related to property offenses (child self-reports) but only among children living in a single-parent, blended or adoptive family.

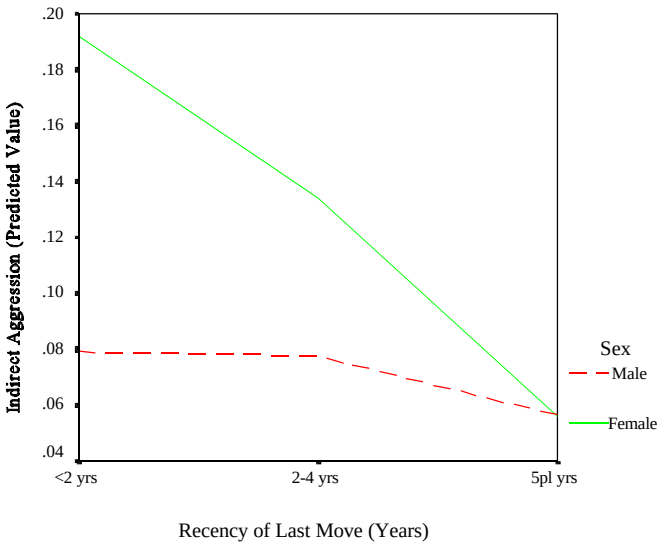
Statistically significant interactions were also observed for family dysfunction. Among children from dysfunctional families, recent moves were associated with a steep increase in the risk of property offenses (PMK reports only). Experiencing a recent move was not associated with property offenses for those from moderate or highly functional families. The moderating effect of family functioning on property offenses for recency of moving is presented in Figure 7.

Figure 7
Moderation Effects of Family Functioning on Property Offenses
for Recency of Moving (PMK Reports)



In general, the findings did not show a greater vulnerability to the effects of moving for either sex, children with low or high family SES, or children with a parent low or high on depression. For child sex, one notable exception occurred. Among females only, moving within the past two years was strongly associated with a heightened risk of indirect aggression (PMK reports). The moderating effects of child sex on indirect aggression for recency of moving is presented in Figure 8.

Figure 8
Moderation Effects of Child Sex on Indirect Aggression
for Recency of Moving (PMK Reports)



Source: NLSCY

Finally, the analysis obtained several significant interaction effects involving three measures of neighbourhood climate: problems, safety, and cohesion. However, many of the results were conflicting in nature, particularly with respect to neighbourhood problems. Interpretation of these results is difficult (if not impossible), and complicated by the fact that only current measures of neighbourhood context were available. Children from upwardly mobile families currently residing in a problem-free, highly cohesive neighbourhoods may have previously resided in socially or economically depressed areas. Conversely, other families living in less than favourable conditions at the time of the survey may have been forced to leave a relatively problem free environment as a result of a job layoff or marital disruption.

5. Discussion

Adhering to the underlying tenets of Social Control Theory, this paper sought to test the hypothesis that geographic relocation (measured in terms of total moves and recency of the last move) increases the risk of childhood problem behaviour by weakening parental disciplinary practices and child bonds to prosocial institutions such as the family, school, and community. Analyses were based on the parental/guardian (PMK) and self-reports of 3,224 pre-adolescent Canadian children ages 10 and 11 years.

Based on Baron and Kenny's (1986) framework for assessing mediator effects, results revealed limited support for the study hypothesis. Some evidence of mediation occurred for PMK and self-reports of child indirect aggression, antisocial behaviour (self-reports), and self-reported alcohol use. Compared with recency of the last move, total number of moves was the most salient correlate of childhood problems. Attachment to family (i.e., parent/child attachment and family harmony), attachment to school (i.e., negative school attitudes), and inconsistent and punitive parenting practices were identified as potential mediators. However, significant results were not found for parental monitoring of child activities. This is surprising in view of other study results implicating parental supervisory capacity as a key mediating mechanism linking relocation with delinquent child behaviour (Sampson & Laub, 1993). Also absent were significant effects for many of the measures of child attachments to community, possibly a result of less than adequate measures of these constructs. In general, the models suggested that experiencing many moves heightened the risk of behavioural problems through its positive association with ineffective parenting practices and weakened child attachments to family and school.

Much weaker support was found for an independent or unique effect of relocation on child behaviour. Exceptions included child self-reports of property offenses and PMK reports of indirect aggression. In the former case, we found a statistically significant nonlinear relationship (quadratic effect) between total moves and offenses. A successively higher number of total moves were associated with an increase in the risk of offenses followed by a decreased risk. These effects remained after the addition of hypothesized mediators selected from the backward elimination procedure. We also found a statistically significant unique and positive effect of recent moves on indirect aggression assessed through PMK reports.

Descriptive analysis of the NLSCY data based on PMK and child self-reports revealed that total moves was a more important correlate of childhood problems than recency of the last move. In general, results for total moves revealed an increased risk of problems at three or moves with almost no difference in risk observed between nonmovers and those having moved once or twice. These findings closely parallel the results of recent studies of geographic relocation among school-age children in the United States (see for example, Simpson & Fowler, 1994). One plausible explanation is that families of children who have moved once or twice are moving for reasons pertaining to normative life changes such as the birth of a new child or parental upward occupational mobility. In contrast, many families of children who have moved three or more times may have been forced to do so out of economic necessity as a result of unstable parental employment and severe poverty. These unfavourable circumstances could explain the comparatively higher rates of behavioural problems experienced by this group.

However, many statistically significant relationships between geographic relocation and child behavioural problems observed in the bivariate case disappeared with the introduction of theoretically important antecedents (e.g., family structure or living arrangements, household SES, family dysfunction, and neighbourhood climate). This finding suggests that the relationship between moving and at least some negative outcomes for children are an artifact of common causes (i.e., factors exerting a positive influence on both relocation and negative outcomes). For total moves, spurious relationships were identified for physical aggression-conduct problems (PMK and self-reports), lifetime smoking and school failure. Only one of the significant positive relationships between recency of the last move and childhood problems observed in the bivariate case remained significant in the presence of controls.

The absence of significant relationships between number of moves and several of the outcomes is somewhat at odds with findings from other cross-sectional population surveys. One possible explanation for the disparate results is that the effect of geographic relocation on child behaviour may be an age-related phenomena. The focus in this report was on pre-adolescent children ages 10 and 11. In contrast, the scope of many U.S. studies has encompassed a broad age range of young people including adolescents. Adolescents in particular may be adversely affected by frequent uprooting because of severed ties to peers which play a key role in defining individual self-worth. Evidence of substantial age effects were confirmed by Haveman and colleagues who

found that for a large sample of young adults, disruptions to physical location between the ages of 4 and 7 or the ages of 12 to 15 were most damaging to academic performance and future prospects for high school graduation (Haveman et al., 1991). Future analysis of the NLSCY baseline data will include younger children to examine the role of age as a potential moderating variable.

It must be acknowledged that the rather lackluster effects of moving on child behaviour observed in this study could signify that moving is not an inherently stressful process for many children. Indeed, studies of post-move adjustment problems among children have found that frequent moving sometimes leads to actual improvements in behaviour, enhancements in the quality of parent-child relations, and more effective coping mechanisms (Kroger, 1980; Stroh, 1990). In part, these findings may result from a survivorship effect in that children who do not cope well do not continue to move while those who continue to move are more resilient to change (Donohue & Gullotta, 1983). Wheaton (1990) has suggested that life events (including family moves) may enhance mental and physical well-being by liberating individuals from highly undesirable or stress inducing situations (e.g., a bad marriage, hostile work environment). Similar arguments can be made for children, specifically those having difficulties with peers or problems at school. For some children, perceptions of control over the event may influence whether moving is perceived and responded to as stressful. For example, Stroh's analysis of the post-move adjustment of 45 children affected by corporate transfers found that children's involvement in the decision making process preceding the move was a key determinant of self-confidence after a move (Stroh, 1990).

Significant moderator effects revealed more harmful effects of moving (in terms of heightened risk of problem behaviour) among children low on family harmony, children exposed to inconsistent disciplinary practices, and children having weak attachments to parents. In some instances, greater vulnerabilities to the effects of moving were also observed among children low on academic achievement, those possessing negative attitudes toward school, and those having infrequent involvement in out-of-school sports or other community activities (i.e., attending church or participating in clubs).

Our analysis of respondent background characteristics as having possible moderating influences on children's behavioural problems yielded several interesting findings. Sex differences in the

effects of relocation on child behaviour were largely absent except for PMK reports of indirect aggression. Negative effects of moving on behaviour were observed for females. Unfortunately, comparisons of these findings with other studies are difficult. With one exception (Cohen et al., 1989), large scale investigations of child relocation have not examined interactions by sex while others have limited their analysis to males or females only.

The extent to which relocation experiences vary by sex may depend on the stage of child development. Simmons et al. (1987) found that many life transitions (e.g., changing schools, residential mobility, family breakup, pubertal development) had a negative impact on the self-esteem of their sample of pre-adolescent girls but not boys. They attributed the greater vulnerability of girls to a growing preoccupation with peer regard and physical appearance as well as difficulties coping with early pubertal development. It is interesting to not that the only large scale study to examine male/female differences in the effects of moving on child psychopathology failed to find a significant gender effect (Cohen et al., 1989).

Harmful effects of relocation were found for children living with a single-parent, blended or adoptive families at the time of interview and those belonging to dysfunctional families. These results tend to support a commonly held view that moving contributes to aberrant child behaviour by intensifying problems (i.e., problem behaviour risk factors) which already exist in the family. An alternative explanation is that frequent family moves are simply a “marker” for highly stressed or dysfunctional families also characterized by child behavioural problems. Given the limited scope of this study, additional research is needed to gauge the effect of moving on childhood behavioural problems in circumstances where it intersects with more serious forms of family dysfunction such as child physical and sexual abuse in addition to normative life event changes that occur during the adolescent years (e.g., dating, pubertal maturation, entry into high school).

5.1 Study Limitations

Given the cross-sectional nature of the data, the results of this study should be interpreted with caution. A number of previous investigations using prospective data have concluded that moving does not lead to child behavioural problems or significant delays in growth and development. Instead, the best predictor of post-move adjustment appeared to be the level of adjustment before the move. Although these results are not shared by all longitudinal studies (some of which have

found negative effects of moving on child behaviour), they do suggest the need for stronger designs which assess the child's mental state, behavioural problems, and learning difficulties both before and after the move. Important too are time-related measures of family circumstances (e.g., living arrangements, family dysfunction) as well as neighbourhood environmental factors either of which may serve to confound the relationship between moving and childhood problem behaviour. Straits (1987) found that the extent to which moving inhibited school progress among a national sample of teenagers was a direct function of the degree of cultural difference between the point of origin and the point of destination. Cultural difference was defined as how places differed in terms of their position on a rural-urban continuum, the difference in educational attainment of adults, and the distance of the move. In the present study, family characteristics, place of residence, and neighbourhood environment were measured only at the time of interview. As such, we were not able to determine the level and direction of environmental change experienced by children of families who moved. Our plans for future analyses of the NLSCY data involve the addition of a longitudinal component that will permit an assessment of change and thus a more rigorous test of the influence of moving on childhood well-being.

Other methodological limitations included the high percentage of missing cases (15 to 20 percent) on study variables obtained through the child self-report. An analysis of non-response on child self-reported outcomes indicated that non-respondents were most likely to be male, residents of Quebec and the Prairies and from families low on socioeconomic status. The results place limits on our ability to generalize study findings to these specific population subgroups.

While this study did find statistically significant positive relationships between geographic relocation and some child outcomes (in the presence of controls), it should be acknowledged that the magnitude of the standardized regression coefficients was generally quite small. The sole exception was the effect of number of moves on self-reported property offenses. More importantly, for those outcomes where modest support for the mediational model was found (e.g., indirect aggression), results showed only a modest reduction in the magnitude of the relocation coefficients (i.e., number of moves) following the addition of the hypothesized mediators (i.e., measures of social control) to the regression models. These modest reductions in effect size suggest that the effect of number of moves on particular childhood outcomes is at best only partially mediated by measures of social control.

Since the NLSCY was not specifically designed to address questions pertaining to the effects of relocation on childhood well-being, a number of important measures were excluded from this study. Lacking was critical information on the distance of moves. Compared to short-distance moves, long-distance moves may have more negative behavioural consequences to the extent that they are more likely to involve a change of schools, dissolve close friendships, and attenuate extended family ties. Long-distance moves may also be determined by a different set of demographic and socioeconomic circumstances. One study of geographic mobility among American families found that a majority of the long-distance moves were the result of job transfers while the majority of short-distance moves were associated with changes in family structure (e.g., parental divorce, family formation) or neighbourhood dissatisfaction (Glick, 1993). Also excluded from the NLSCY was information on the spacing of moves. Common sense dictates that two or three moves occurring in the space of a just a year have a greater potential to lead to child adjustment problems than two or three moves spread out over a much wider time interval.

Also excluded from the analysis were important social control measures of child attitudes and beliefs toward general conventional values (e.g., importance of obeying the law) as well as specific beliefs regarding the use of various substances such as alcohol, tobacco, and marijuana. Previous studies have confirmed the importance of beliefs as determinants of childhood behavioural problems and delinquent behaviour (Massey & Krohn, 1986; Paternoster & Iovanni, 1986). Had we been able to incorporate these measures in the analysis, different results might have emerged.

Other deficits pertaining to measurement included weak measures of child commitment or bonding to school, a factor which may have contributed to the ineffectiveness of school attachment relative to family attachment and parenting practices as a potential mediator. Missing from the study were previously validated and reliable multi-item scales specifically designed to capture child attitudes toward school as well as objective indicators of the child’s current or past level of academic performance.

5.2 Policy Implications

On a general level, the findings should alert health care professionals and educators to the potential harmful effects of relocation on child well-being. Because frequent moves may be a marker or risk factor for other serious family problems, revisions to mental and physical health screening and intake forms should include questions on family relocation history in conjunction with other family variables highly correlated with moving (e.g., marital dissolution, family SES).

Treatment and prevention programs are also required which focus on helping children and parents from relocated families adjust to their new surroundings. Previous studies have confirmed the protective influence of family social supports in mitigating certain negative effects of moving on adolescent mental health (Hendershott, 1989). The results of this study suggest that the most effective programs for relocated children are those which focus on strengthening family bonds, educating parents on the use of appropriate disciplinary techniques, and by helping family members to maintain open lines of communication.

Evidence indicates that the health needs of many relocated children may go undetected by health-care service providers. Fowler et al. (1993) found that mobile American families were significantly less likely than nonmovers to lack a regular site for preventive and sick care and less likely to use emergency departments when their children became ill. Fortunately, schools can play an important role in identifying relocated youth and in providing the necessary referrals to outside helping agencies. Schools can also provide assistance by actively engaging relocated youth in student affairs and extra-curricular programs, involving parents in after-school activities, and offering on-site counselling services (Matter & Matter, 1988). In the United States, school programs for relocated youth have been proven effective in improving academic achievement, enhancing self-esteem, reducing psychological problems such as depression and anxiety, and reducing delinquent behaviour (Felner et al., 1993).

5.3 Summary

This study has shown that frequent moves (especially three or more moves) and to a lesser extent a recent move, may be associated with a heightened risk of behavioural problems among pre-adolescent Canadian children. Frequent relocation was often associated with children's behavioural problems via its positive impact on ineffective parental disciplinary practices,

weakened child attachments to family, and weakened attachments to school. Particularly vulnerable to the negative effects of moving were children from single-parent or reconstituted families and those coming from dysfunctional families. Future analyses of the NLSCY data will involve the addition of a longitudinal component allowing for measurements of childhood problems and family circumstances before and after a family move. The arrival of these data will assist in making sound causal judgements of the effects of moving on childhood problem behaviour.

Appendix A

Description of Study Measures

Study Measures	Source[1]	Same Measure Used	Description	No. of Items	Cronbach's α PMK	Cronbach's α SR
Dependent Variables						
Physical aggression-conduct problems	PMK/SR	Same	Three-point scale ranging from 1=never or not true to 3=often or very true (e.g., I get into many fights). Scale includes 1 item from the Montreal Longitudinal Survey (MLS) and 5 items from the Ontario Child Health Study (OCHS)(see NLSCY, 1998).	6	.80	.75
Antisocial behaviour	PMK/SR	Same	Three-point scale ranging from 1=never or not true to 3=often or very true (e.g., I help other children who are feeling sick). This scale includes 5 items from the MLS and 3 items from the OCHS (NLSCY, 1998).	8	.80	.73
Indirect aggression	PMK/SR	Same	Three-point scale ranging from 1=never or not true to 3=often or very true (e.g., I try when I am mad at someone, to get others to dislike him/her). Includes 5 items from Lagerspetz, Bjorngvist and Peltonen of Finland.	5	.79	.73
Property offenses	PMK/SR	Same	Three-point scale ranging from 1=never or not true to 3=often or very true (e.g., I destroy my own things, I steal at home)	6	.71	.62
Lifetime alcohol use	SR	NA	Child asked if they had ever drank alcohol.	1	-	-
Lifetime tobacco use	SR	NA	Child asked if they ever tried cigarette smoking, even just a few puffs.	1	-	-
School failure	PMK	NA	PMK asked if child had ever repeated a grade at school.	1	-	-

Appendix A (Continued)

Study Measures	[1]	Same Measure Used	Description		α PMK	α SR
Lifetime moves for child	PMK		PMK asked the number of times in child's life, the child moved or changed place of	1	-	-
	PMK	NA		1	-	
Proposed Mediators (Measures of Social Control)						
Family Mediators	PMK/SR	Same	Five-point scale ranging from 1=very well no problems to 5=not well at all, constant problems (e.g., in the past 6 months, how well have you gotten along with mother; father; responses. These items are modified from the Ontario Child Health Study. PMK-report with parents; siblings). If child had no siblings, used child's response for question dealing with parents.	3		.98
	SR	NA	exactly where I am and what I am doing; they tell me what I can watch on TV).	6	-	
Weak parent/child		Different	Self-report Four-point scale ranging from 1=never to 4=very often (e.g., my parents smile at me; praise me).	5		.78

Appendix A (Continued)

Study Measures	Source[1]	Same Measure Used	Description	No. of Items	Cronbach's α PMK	Cronbach's α SR
Weak parent/child attachment (continued)			PMK-report Four-point scale ranging from 1=never to 4=very often (e.g., how often do you and your child laugh together; how often do you do something special with your child that he/she enjoys?	5	.71	-
Punitive parenting	PMK/SR	Different	Self-report Four-point scale ranging from 1=never to 4=very often (e.g., my parents nag me about little things; hit me or threaten me)	3	-	.57
			PMK-report Four-point scale ranging from 1=never to 4 very often (e.g., how often do you raise your voice, scold or yell at your child; use physical punishment)	4	.55	-
Inconsistent parenting	PMK/SR	Different	Self-report Four-point scale ranging from 1=never to 4=very often (e.g., my parents soon forget a rule they have made; enforce a rule or do not enforce a rule depending upon their mood).	3	-	.49
			PMK-report Four-point scale ranging from 1=never to 4=very often (e.g., how often does your child get away with things that you feel should have been punished; how often when you discipline your child does he/she ignore the punishment).	5	.64	-
Times changed schools	PMK	-	Number of times child changed school.	1	-	-

Appendix A (Continued)

Study Measures	Source[1]	Same Measure Used	Description	No. of Items	Cronbach's α PMK	Cronbach's α SR
Low academic achievement	SR/PMK	Different	Self-report Five-point scale ranging from 1=very well to 5=very poorly (e.g., how well are you doing in school)	1	-	-
			PMK-report Five-point scale ranging from 1=very well to 5=very poorly (e.g., how well is child doing in reading; mathematics; composition; and, overall).	4	.89	-
Community Mediators Low participation in sports	PMK/SR	Same	Four-point scale ranging from 1=never to 4=4 or more times a week (e.g., how often does child participate in sports with a coach or instructor; plays sports without a coach or instructor).	2	-	-
Low participation in clubs/ church attendance	PMK/SR	Same	Two items comprised of a 4-point scale ranging from 1=never to 4=4 or more times a week (e.g., how often does child taken art lessons; participates in clubs or community activities). Scale also includes an item about frequency of church attendance.	3	.28	.36
Control Variables						
Age of child	HR	NA	Children ages 10-11	1	-	-
Sex	HR	NA	Females=1; males=0	1	-	-
Region of residence	HR	NA	Maritimes=1; Quebec=2; Ontario=3; Prairies=4 and BC=5	1	-	-
Urban/rural residence	HR	NA	Urban population 15,000 or more=1; rural populations <15,000=0	1	-	-
Living arrangements	HR	NA	Lives with both biological parents=0; other=1	1	-	-

Appendix A (Continued)

Study Measures	Source[1]	Same Measure Used	Description	No. of Items	Cronbach's α PMK	Cronbach's α SR
Low family SES	PMK	NA	Derived from five sources: the level of education of the PMK, the level of education of the spouse/partner; the prestige of the PMK's occupation; the prestige of the occupation of the spouse/partner; and household income. The SES score for single-parent families will tend to be lower because household income, on average, will be lower.	1	-	-
Low neighbourhood safety	PMK	NA	Four-point scale range from 1=strongly disagree to 4 strongly agree (e.g., it is safe to walk alone in this neighbourhood after dark; it is safe for children to play outside during the day).	2	-	-
Low neighbourhood cohesiveness	PMK	NA	Four-point scale ranging from 1=strongly agree to 4 strongly disagree (e.g., if there is a problem around here; the neighbours get together to deal with it; people around here are willing to help their neighbours).	5	.87	-
Neighbourhood problems	PMK	NA	Three-point scale ranging from 1=no problem to 3=a big problem (e.g., how much of a problem is garbage, litter, or broken glass in the street or road, on the sidewalks or in yards; selling or using of drugs).	6	.71	
Parental depression	PMK	NA	Four-point scale ranging from 1=rarely or not at all to 4=most or all of the time (e.g., in the past week, I did not feel like eating, my sleep was restless, etc.). Questions for scale are shorter version of CES-D developed by L.S. Radloff (NLSCY,1998).	6	.70	-
Parental smoking	PMK	NA	Derived variable based on number of cigarettes smoked daily by PMK and spouse; 1=at least one parent reported they smoked daily.	1	-	-
Parental drinking	PMK	NA	Derived variable for frequency of alcohol use in the past year; 1=at least one parent reported drinking 2-3 per week during the past year.	1	-	-
Family dysfunction	PMK	NA	Four-point scale ranging from 1=strongly disagree to 4=strongly disagree (e.g., planning family activities is difficult because we misunderstand each other.). Questions were developed by researchers at the Chedoke-McMaster Hospital of McMaster University (NLSCY,1998).	6	.82	-

Appendix A (Continued)

Study Measures	Source[1]	Same Measure Used	Description	No. of Items	Cronbach's α PMK	Cronbach's α SR
Low frequency of seeing friends/ weekly	PMK/SR	Same	Five-point scale ranging from 1=6-7 days a week to 5=never (e.g., how many days a week does child do things with friends).	2	-	-
Negative school climate	PMK/SR	Different	Self-report Five-point scale ranging from 1=all the time to 5=never (e.g., children say nasty and unpleasant things to me at school; I am bullied at school, I feel left out at school)	4	-	.49
			Five-point scale ranging from 5=never to 5=all of the time (e.g., my teacher treated me fairly; I feel safe at school; I feel safe on my way to and from school).	4	-	.71
			PMK-report Four-point scale ranging from 1=strongly agree to 4=strongly disagree (e.g., most children in this school enjoy being there; parents are made to feel welcome in this school; school spirit is high).	4	.78	-
Peer substance use	SR	NA	Number of friends that smoke; number of friends that drink; and, number of friends who have tried drugs or sniffed glue or solvents.	3	-	.68
Deviant peers	SR	NA	Child asked if in the past year, they were part of a group that did bad things.	1	-	-
Low child self-esteem	SR	NA	Four-point scale ranging from 1=mostly true to 4=false (e.g., in general, I like the way I am, when I do something I do it well). These items were taken from the General-Self Scale of the Marsh Self-Description Questionnaire developed by H.W. Marsh (NLSCY, 1998).	4	-	.73

[1] Data available for PMK (i.e., Person Most Knowledgeable about child), SR (i.e., child self-reports) or HR (i.e., derived from household roster and relationship grid or sample information).

Appendix B

Univariate Statistics of Study Measures

	PMK			Self-Report		
Measure	$\bar{x}$	s.d.	min-max	$\bar{x}$	s.d.	min-max
Dependents						
Physical aggression - conduct problems	.10	.31	0 - 1	.13	.34	0 - 1
Property offenses	.11	.31	0 - 1	.07	.25	0 - 1
Indirect aggression	.08	.28	0 - 1	.13	.33	0 - 1
Antisocial behaviour	.11	.31	0 - 1	.13	.34	0 - 1
School failure	.09	.28	0 - 1	--	--	--
Lifetime alcohol use	--	--	--	.19	.39	0 - 1
Lifetime tobacco use	--	--	--	.10	.31	0 - 1
Independents						
Number of moves	2.02	2.21	0 - 20	--	--	--
Recency of last move (years)	4.22	3.53	0 - 11	--	--	--
Controls						
Sex						
Female	.49	.50	0 - 10	--	--	--
Age	10.47	.49	10 - 11	--	--	--
Region of residence						
Maritimes	.09	.28	0 - 1	--	--	--
Quebec	.23	.42	0 - 1	--	--	--
Prairies	.19	.39	0 - 1	--	--	--
British Columbia	.12	.33	0 - 1	--	--	--
Ontario						
Urban-rural residence						
Urban	.72	.45	0 - 1	--	--	--
Living in single-parent, blended or adoptive family	.26	.44	0 - 1	--	--	--
Number of siblings in household	1.50	.93	0 - 4+	--	--	--
Low family SES	5.10	2.89	1 - 10	--	--	--
Parental depression	8.25	2.82	6 - 24	--	--	--

Appendix B (Continued)

	PMK			Self-Report		
Measure	$\bar{x}$	s.d.	min-max	$\bar{x}$	s.d.	min-max
Family dysfunction	9.92	2.77	6 - 21	--	--	--
Low parental social support	4.51	2.81	1 - 11	--	--	--
Parental smoking	.37	.48	0 - 1	--	--	--
Parental drinking	.26	.44	0 - 1	--	--	--
Low neighbourhood safety	1.62	1.27	0 - 6	--	--	--
Neighbourhood problems	7.30	1.68	6 - 18	--	--	--
Low neighbourhood cohesion	5.05	2.93	0 - 15	--	--	--
Negative school climate	6.56	1.74	4 - 16	--	--	--
Bullied at school	--	--	--	6.61	2.53	4 - 20
Low school safety	--	--	--	7.06	2.62	4 - 20
Low parental interest in child's education	2.91	1.05	2 - 8	2.45	.94	2 - 9
Low frequency of seeing friends/weekly	2.32	1.10	0 - 5	2.78	1.33	1 - 6
Low self-esteem	--	--	--	3.24	2.78	0 - 16
Peer substance use	--	--	--	.92	2.54	0 - 26
Deviant peers	--	--	--	1.07	.27	1 - 2
Family Mediators						
Low family harmony	1.82	1.48	0 - 9	3.23	2.21	0 - 12
Low parental monitoring	--	--	--	11.2	2.88	6 - 23
Weak parent/child attachment	9.56	2.84	1 - 20	8.11	2.95	5 - 20
Punitive parenting	8.73	2.01	4 - 19	4.77	1.72	3 - 12
Inconsistent parenting	7.09	3.44	2 - 20	5.84	1.98	3 - 12
Negative school attitudes	6.16	1.93	2 - 12	4.95	1.76	3 - 15
Low academic achievement	7.59	3.37	4.20	1.89	.81	1 - 5
Times changed schools	.79	1.21	0 - 6	--	--	--
Community Mediators						
Low participation in sports	5.74	2.24	2 - 10	4.85	1.66	2 - 8
Low participation in clubs/church attendance	11.61	2.71	4 - 16	9.79	2.44	3 - 14

Source: NLSCY

Appendix C

Multivariate Logistic Regression Analyses

Table C.1 Logistic Regression Predicting Childhood Physical Aggression/ Conduct Problems (standardized odds ratios)

Predictors	PMK (n=2745)				Self-Report (n=1978)			
	Model				Model			
	A	B	C	D	A	B	C	D
Independents								
Number of moves	1.41**	1.19	---	1.07	1.09	1.07	---	1.02
Recency of last move	1.31**	1.00	---	.97	1.11	.83	---	.83
Family Mediators								
Low family harmony	---	---	3.23**	3.21**	---	---	+	+
Weak parent/child attachment	---	---	+	+	---	---	+	+
Punitive parenting	---	---	+	+	---	---	1.65**	1.63**
Inconsistent parenting	---	---	1.30**	1.30**	---	---	+	+
Low parental monitoring[a]	---	---	---	---	---	---	1.25*	+
School Mediators								
Negative school attitudes	---	---	1.24*	1.27*	---	---	+	+
Low academic achievement	---	---	+	+	---	---	+	+
Times changed schools	---	---	1.26*	1.27*	---	---	+	+
Community Mediators								
Low participation in sports	---	---	+	+	---	---	+	+
Low participation in clubs/church attendance	---	---	+	+	---	---	.73*	+

Model A: Independents
Model B: Controls plus independents
Model C: Controls plus proposed mediators (measures of social control)
Model D: Controls plus independents plus proposed mediators
* $p \leq .01$
** $p \leq .001$
--- Variablewas not included in model
+ Variable dropped from model in backward elimination with alpha set at .01
[a] Measure available for self-report only

Source: NLSCY

Appendix C (Continued)

Table C.2 Logistic Regression Predicting Childhood Indirect Aggression (standardized odds ratios)

Predictors	PMK (n=2672)				Self-Report (n=1987)			
	Model				Model			
	A	B	C	D	A	B	C	D
Independents								
Number of moves	1.58**	1.26*	---	1.21	1.21**	1.26*	---	1.23
Recency of last move	1.59**	1.27*	---	1.36*	1.07	.80	---	.83
Family Mediators								
Low family harmony	---	---	1.77**	1.80**	---	---	1.26*	+
Weak parent/child attachment	---	---	+	+	---	---	+	+
Punitive parenting	---	---	+	+	---	---	1.22*	1.27*
Inconsistent parenting	---	---	1.35**	1.35**	---	---	1.39**	1.36**
Low parental monitoring[a]	---	---	---	---	---	---	+	1.25*
School Mediators								
Negative school attitudes	---	---	+	+	---	---	+	+
Low academic achievement	---	---	+	+	---	--	+	+
Times changed schools	---	---	1.52**	+	---	---	+	+
Community Mediators								
Low participation in sports	---	---	+	+	---	---	1.22*	+
Low participation in clubs/church attendance	---	---	+	+	---	---	+	+

Model A: Independents
Model B: Controls plus independents
Model C: Controls plus proposed mediators (measures of social control)
Model D: Controls plus independents plus proposed mediators
* $p \leq .01$
** $p \leq .001$
--- Variable was not included in model
+ Variable dropped from model in backward elimination with alpha set at .01
[a] Measure available for self-report only

Source: NLSCY

Appendix C (Continued)

Table C.3 Logistic Regression Predicting Childhood Antisocial Behaviour (standardized odds ratios)

Predictors	PMK (n=2707)				Self-Report (n=1964)			
	Model				Model			
	A	B	C	D	A	B	C	D
Independents								
Number of moves	1.04	.87	---	.83	1.09	1.28*	---	1.23
Recency of last move	1.11	1.04	---	1.07	1.00	.87	---	.90
Family Mediators								
Low family harmony	---	---	1.33**	1.34**	---	---	+	+
Weak parent/child attachment	---	---	1.28*	1.28*	---	---	1.75**	1.75**
Punitive parenting	---	---	+	+	---	---	+	+
Inconsistent parenting	---	---	+	+	---	---	+	+
Low parental monitoring[a]	---	---	---	---	---	---	+	+
School Mediators								
Negative school attitudes	---	---	1.51**	1.51**	---	---	1.52**	1.50**
Low academic achievement	---	--	+	+	---	---	+	+
Times changed schools	---	---	+	+	---	---	+	+
Community Mediators								
Low participation in sports	---	---	+	+	---	---	+	+
Low participation in clubs/church attendance	---	---	+	+	---	---	+	+

Model A: Independents
Model B: Controls plus independents
Model C: Controls plus proposed mediators (measures of social control)
Model D: Controls plus independents plus proposed mediators
* $p \leq .01$
** $p \leq .001$
--- Variable was not included in model
+ Variable dropped from model in backward elimination with alpha set at .01
[a] Measure available for self-report only

Source: NLSCY

Appendix C (Continued)

Table C.4 Logistic Regression Predicting Childhood Property Offenses (standardized odds ratios)

Predictors	PMK (n=2751)				Self-Report (n=1971)			
	Model				Model			
	A	B	C	D	A	B	C	D
Independents								
Number of moves	1.52**	1.16	---	1.19	---	---	---	---
Linear	---	---	---	---	1.97**	2.56**	---	3.71**
Quadratic	---	---	---	---	.96	.93*	---	.96*
Recency of last move	1.64**	1.04	---	1.07	1.27**	.90	---	.93
Family Mediators								
Low family harmony	---	---	2.43**	2.37**	---	---	+	+
Weak parent/child attachment	---	---	+	+	---	---	+	+
Punitive parenting	---	---	+	+	---	---	1.72**	1.65**
Inconsistent parenting	---	---	1.30	2.37*	---	---	+	+
Low parental monitoring[1]	---	---	---	---	---	---	1.35**	1.39**
School Mediators								
Negative school attitudes	---	---	1.49**	1.29**	---	---	+	+
Low academic achievement	---	---	1.85**	1.95**	---	---	+	+
Times changed schools	---	---	+	+	---	---	+	+
Community Mediators								
Low participation in sports	---	---	1.31*	1.31**	---	---	+	+
Low participation in clubs/church attendance	---	---	+	+	---	---	+	+

Model A: Independents
Model B: Controls plus independents
Model C: Controls plus proposed mediators (measures of social control)
Model D: Controls plus independents plus proposed mediators
* $p \leq .01$
** $p \leq .001$
--- Variable was not included in model
+ Variable dropped from model in backward elimination with alpha set at .01
[1] Measure available for self-report only

Source: NLSCY

Appendix C (Continued)

Table C.5 Logistic Regression Predicting Childhood Substance Use (standardized odds ratios)

Predictors	Lifetime Tobacco Use Self-Report (n=1852)				Lifetime Alcohol Use Self-Report (n=1855)			
	Model				Model			
	A	B	C	D	A	B	C	D
Independents								
Number of moves	1.34**	1.21	---	1.21	1.07	1.23*	---	1.21
Recency of last move	1.19*	.97	---	.97	.97	.97*	---	.77*
Family Mediators								
Low family harmony	---	---	+	+	---	---	+	+
Weak parent/child attachment	---	---	+	+	---	---	+	+
Punitive parenting	---	---	1.51**	1.51**	---	---	1.51**	1.53**
Inconsistent parenting	---	---	+	+	---	---	+	+
Low parental monitoring[1]	---	+	+	+	---	+	+	+
School Mediators								
Negative school attitudes	---	---	+	+	---	---	1.26*	1.22*
Low academic achievement	---	---	+	+	---	---	+	+
Times changed schools	---	---	+	+	---	---	+	+
Community Mediators								
Low participation in sports	---	---	+	+	---	---	.75**	.76**
Low participation in clubs/church attendance	---	---	1.41*	1.41*	---	---	+	+

Model A: Independents
Model B: Controls plus independents
Model C: Controls plus proposed mediators (measures of social control)
Model D: Controls plus independents plus proposed mediators
* $p \leq .01$
** $p \leq .001$
--- Variable was not included in model
+ Variable dropped from model in backward elimination with alpha set at .01
[1] Measure available for self-report only

Source: NLSCY

Appendix C (Continued)

Table C.6 Logistic Regression Predicting Childhood Grade Failure (standardized odds ratios)

Predictors	PMK (n=2746)			
	Model			
	A	B	C	D
Independents				
Number of moves	1.36**	1.16	---	1.04
Recency of last move	1.36**	1.00	---	.93
Family Mediators				
Low family harmony	---	---	+	+
Weak parent/child attachment	---	---	+	+
Punitive parenting	---	---	+	+
Inconsistent parenting	---	---	+	+
Low parental monitoring[1]	---	---	+	+
School Mediators				
Negative school attitudes	---	---	+	+
Low academic achievement	---	---	2.24**	2.18**
Times changed schools	---	---	1.35**	1.37**
Community Mediators				
Low participation in sports	---	---	+	+
Low participation in clubs/church attendance	---	---	+	+

Model A: Independents
Model B: Controls plus independents
Model C: Controls plus proposed mediators (measures of social control)
Model D: Controls plus independents plus proposed mediators
* $p \leq .01$
** $p \leq .001$
--- Variable was not included in model
+ Variable dropped from model in backward elimination with alpha set at .01
[1] Measure available for self-report only

Source: NLSCY

References

Agnew, R. (1991). A longitudinal test of social control theory and delinquency.*Journal of Research in Crime and Delinquency,* 28(2), 126-156.

Audette, R., Algozzine, R., & Warden, M. (1993). Mobility and school achievement. *Psychological Reports*, 72, 701-702.

Asher, S.J., & Bloom, B.L. (1982). Geographic mobility as a factor in adjustment to divorce. *Journal of Divorce*, 6, 69-84.

Astone, N.M., & McLanahan, S.S. (1994). Family structure, residential mobility, and school drop out: A research note. *Demography*, 31, 575-584.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.

Barrett, C.L., & Noble, H. (1973). Mothers' anxieties versus the effects of long distance moves on children. *Journal of Marriage and the Family*, 181-188.

Brett, J., & Werbel, J. (1980). *The effect of job transfer on employees and their families.* Washington, D.C.: Research Report to Employee Relocation Council.

Brooks-Gunn, J., Duncan, G.J., Klebanov, P.K., & Sealand, N. (1993). Do neighbourhoods influence child and adolescent development? *American Journal of Sociology,* 99, 353-395.

Brown, A.C., & Orthner, D.K. (1990). Relocation and personal well-being among early adolescents. *Journal of Early Adolescence*, 10, 366-381.

Calabrese, R.L. (1989). The effects of mobility on adolescent alienation. *The High School Journal*, 72, 41-46.

Carlisle-Frank, P.L. (1992). The relocation experience: Analysis of factors thought to influence adjustment to transition. *Psychological Reports*, 70, 835-838.

Cohen, P., Johnson, J., Stuening, E.L., & Brook, J.S. (1989). Family mobility as a risk factor for childhood psychopathology. In B. Cooper, & T. Helgason (Eds.) *Epidemiology and the prevention of mental disorders.* (pp. 145-156). New York: Routledge.

Crockett, L.J., Peterson, A.C., Graber, J.A., Schulenberg, J.E., & Ebata, A. (1989). School transitions and adjustment during early adolescence. *Journal of Early Adolescence*, 9, 181-210.

DeWit, D. (1998). Frequent childhood geographic relocation: Its impact on drug use initiation and the development of alcohol and other drug-related problems among adolescents and young adults. *Addictive Behaviours*, (in press).

Donohue, K.C., & Gullota, T.P. (1983). The coping behaviour of adolescents following a move. *Adolescence*, 18, 391-401.

Dowd, F. (1987). Strategies and materials for teachers and parents helping children adjust to geographic relocation. *Journal of Youth Services in Libraries*, 1, 65-78.

Duncan, G.J., & Brooks-Gunn, J. (1997). *Consequences of growing up poor*. New York: Russell Sage Foundation.

Eckenrode, J., Rowe, E., Laird, M., & Brathwaite, J. (1995). Mobility as a mediator of the effects of child maltreatment on academic performance. *Child Development*, 66, 1130-1142.

Elias, M.J., Gara, M., & Ubriaco, M. (1985). Sources of stress and support in children's transitions to middle school: An empirical analysis. *Journal of Clinical Child Psychology*, 14, 112-118.

Felner, R.D., Ginter, M., & Primavera, J. (1982). Primary prevention during school transitions: Social support and environmental structure. *American Journal of Community Psychology*, 10, 277-289.

Felner, R.D., Brand, S., Adan, A.M., Mulhall, P.F., Flowers, N., Sartain, B., & DuBois, D. (1993). Restructuring the ecology of the school as an approach to prevention during school transitions: Longitudinal follow-ups and extensions of the School Transitional Environment Project (STEP). In L.A. Jason, K.E. Danner, & K.S. Kurasaki (Eds.) *Prevention and School Transitions*. (pp. 103-136). New York: The Haworth Press, Inc.

Fergusson, D.M., Lynskey, M.T., & Horwood, L.J. (1993). Conduct problems and attention deficit behaviour in middle childhood and cannabis use by age 15. *Australian and New Zealand Journal of Psychiatry*, 27, 673-682.

Feshbach, N., & Sones, G. (1969). Sex differences in adolescent reactions toward newcomers. *Developmental Psychology*, 4, 381-386.

Fowler, M.G., Simpson, G.A., & Schoendorf, K.C. (1993). Families on the move and children's health care. *Pediatrics*, 91, 934-940.

Frost, A.K., & Pakiz, B. (1990). The effects of marital disruption on adolescents: Time as a dynamic. *American Journal of Orthopsychiatry*, 60, 544-555.

Fullilove, M. (1996). Psychiatric implications of displacement: Contributions from the psychology of place. *American Journal of Psychiatry*, 153, 1516-1523.

Glick, P.C. (1993). The impact of geographic mobility on individuals and families. *Marriage and Family Review*, 19, 31-54.

Gottfredson, M., & Hirschi, T. (1990). *A general theory of crime*. Stanford: Stanford University Press.

Haour-Knipe, M. (1989). International employment and children: Geographic mobility and mental health among children of professionals. *Social Science and Medicine*, 28, 197-205.

Haveman, R., Wolfe, B., & Spaulding, J. (1991). Childhood events and circumstances influencing high school completion. *Demography*, 28, 133-157.

Hendershott, A.B. (1989). Residential mobility, social support and adolescent self- concept. *Adolescence*, 24, 217-232.

Hirschi, T. (1969). *Causes of delinquency*. Berkeley: University of California Press.

Ingersoll, G.M., & Scamman, J.P., & Eckerling, W.D. (1989). Geographic mobility and student achievement in an urban setting. *Educational Evaluation and Policy Analysis*, 11, 143-149.

Irvin, D.M., & Maag, J.W. (1993). Substance Abuse among adolescents: Implications for at-risk youth. *Special Services in the Schools*, 7(1): 39-64.

Johnson, R.A., & Lindblad, A.H. (1991). Effect of mobility on academic performance of sixth grade students. *Perceptual and Motor Skills*, 72, 547-552.

Kantor, M.B. (1965). Some consequences of residential and social mobility for the adjustment of children. In Mildred B. Kantor (Ed.) *Mobility and Mental Health*. (pp. 86-122). Springfield: Charles C. Thomas Publishers.

Kroger, J. (1980). Residential mobility and self-concept in adolescence. *Adolescence*, 15, 967-977.

Krohn, M.D., Massey, J.L., Skinner, W.F., & Lauer, R.M. (1983). Social bonding theory and adolescent cigarette smoking: A longitudinal analysis. *Journal of Health and Social Behaviour*, 24 (Dec.), 337-349.

Lee, B.A., Oropesa, R.S., & Kanan, J.W. (1994). Neighborhood context and residential mobility. *Demography*, 31, 249-265.

Long, L. (1992). International perspectives on the residential mobility of America's children. *Journal of Marriage and the Family*, 54, 861-869.

Marsh, H.W. (1988). *Self-description Questionnaire, SDQ Manual. The Psychological Corporation.* Harcourt Brace & Company.

Massey, J.L., & Krohn, M.D. (1986). A longitudinal examination of an integrated social process model of deviant behaviour. *Social Forces,* 65, 106-134.

Matter, D.E., & Matter, R.M. (1988). Helping young children cope with the stress of relocation: Action steps for the counsellor. *Elementary School Guidance and Counselling*, 23, 23-29.

Mundy, P., Robertson, J., Greenblatt, M., & Robertson, M. (1989). Residential instability in adolescent inpatients. *Journal of the American Academy of Child and Adolescent Psychiatry*, 28, 176-181.

Needle, R.H., Su, S., & Doherty, W.J. (1990). Divorce, remarriage, and adolescent substance use: A prospective longitudinal study. *Journal of Marriage and the Family*, 52, 157-169.

Newcomb, M.D., & Harlow, L.L. (1986). Life events and substance use among adolescents: Mediating effects of perceived loss of control and meaninglessness in life. *Journal of Personality and Social Psychology*, 51, 564-577.

NLSCY (1998). *National Longitudinal Survey of Children and Youth. Survey: User's Handbook. Cycle One.* Statistics Canada/Human Resources Development Canada.

Offord, D.R., Boyle, M.H., & Racine, Y. (1989). Ontario Child Health Study: Correlates of disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 28, 856-860.

Paternoster, R., & Iovanni, L. (1986). The deterrent effect of perceived severity: A re-examination. *Social Forces*, 64, 751-777.

Reynolds, A.J. (1991). Early Schooling of Children at Risk. *American Educational Research Journal*, 28, 392-422.

Robins, L.N., & Rutter, M. (1990). *Straight and devious pathways from childhood to adulthood*. Cambridge. Cambridge University Press.

Sampson, R.J., & Laub, J.H. (1993). *Crime in the Making: Pathways and Turning Points Through Life*. Cambridge, Massachusetts: Harvard University Press.

Seidman, E., Allen, L., Aber, J.L., Mitchell, C., & Feinman, J. (1994). The impact of school transitions in early adolescence on the self-system and perceived social context of poor urban youth. *Child Development*, 65, 507-522.

Simcha-Fagan, O., & Schwartz, J.E. (1986). Neighborhood and delinquency: An assessment of contextual effects. *Criminology*, 24, 667-703.

Simmons, R.G., Burgeson, R., & Carlton-Ford, S., & Blyth, D.A. (1987). The impact of cumulative change in early adolescence. *Child Development*, 58, 1220-1234.

Simons, R.L., Johnson, C., Beaman, J., Conger, R.D., & Whitbeck, L.B. (1996). Parents and peer group as mediators of the effect of community structure on adolescent problem behaviour. *American Journal of Community Psychology*, 24, 145-171.

Simpson, G.A., & Fowler, M. (1994). Geographic mobility and children's emotional/ behavioural adjustment and school functioning. *Pediatrics*, 93, 303-309.

Stack, S. (1994). Relocation: The effect of geographic mobility on premarital sex. *Journal of Marriage and the Family*, 56, 204-208.

Statistics Canada (1993). *Mobility and Migration*. Cat No. 93-322. Minister of Industry, Science and Technology, Ottawa.

Straits, B.C. (1987). Residence, migration, and school progress. *Sociology of Education*, 60, 34-43.

Stanger, C., & Lewis, M. (1993). Agreement among parents, teachers, and children on internalizing and externalizing behavior problems. *Journal of Clinical Child Psychology*, 22(1): 107-115.

Stroh, L.K. (1990). Corporate mobility: Factors distinguishing better adjusted from less well-adjusted children and adolescents. *Child Study Journal*, 20, 19-33.

Swaim, R.C. (1991). Childhood risk factors and adolescent drug and alcohol abuse. *Educational Psychology Review*, 3(4): 363-398.

U.S. Bureau of the Census. (1989). *Geographic mobility: March 1986 to March 1987.* Washington, D.C.: Current Population Reports, Series P-20.

Vernberg, E.M. (1990). Experiences with peers following relocation during early adolescence. *American Journal of Orthopsychiatry*, 60, 466-472.

Vernberg, E.M., Abwender, D.A., Ewell, K.K., & Beery, S.H. (1992). Social anxiety and peer relationships in early adolescence: A prospective analysis. *Journal of Clinical Child Psychology*, 21, 189-196.

Wheaton, B. (1990). Life transitions, role histories and mental health. *American Sociological Review*, 55, 209-223.

Wood, D., Halfon, N., Scarlata, D., Newacheck, P., & Nessim, S. (1993). Impact of family relocation on children's growth, development, school function, and behaviour. *Journal of the American Medical Association*, 270, 1334-1338.