

The Social Consequences of Economic Inequality for Canadian Children

A Review of the Canadian Literature

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Table of contents

Executive Summary 3

Overview	3
Results	4
Justice/social justice outcomes	4
Educational Outcomes – Academic/Cognitive	5
Educational Outcomes- Social/ Behavioural	6
Health Outcomes	7
Employment outcomes	8
Limitations	9
Conclusion and Policy Implications	9
Full Article Summaries	10
Social Justice Outcomes	10
Eisler and Schissel (2004)	10
Bagley and Mallick (2000)	11
Kuo and Roysircar (2004)	11
Trocme, Knoke and Blackstock (2004)	12
Schissel (2001)	13
Educational Outcomes	14
Dooley and Stewart (2004)	14
Entorf and Minoiu (2005)	15
Willms (2002)	15
Schiller, Khmelkov and Wang (2002)	16
Pyrty and Lytton (1998)	17
Maggi, Hertzman, Kohen and D'Angiulli (2004)	18
Kohen, Brooks-Gunn, Leventhal and Hertzman (2002)	19
Ma and Klinger (2000)	20
Romano, Tremblay, Boulerice and Swisher (2005)	21
De Civita, Pagani, Vitaro and Tremblay (2004)	21
Kornberger, Fast and Williamson (2001)	22
Nakahaie, Silverman and Lagrange (2001)	23
Saloman and Stroebel (1996)	24
Health Outcomes	25
Kerr (2004)	25
Hou and Ram (2003)	26
Ma (2002)	27
Beiser, Hou, Hyman and Tousignant (2002)	28
Letourneau, Hungler and Fisher (2005)	29
Phipps, Burton, Osberg and Lethbridge (2006)	29
Guttman, Dick and To (2004)	30
Dubois and Girard (2003)	31
Seguin, Xu, Potvin, Zunzunuegi and Frohlich (2003)	32
Hardwyck and Patychuk (1999)	33

Shields, Jolly, Moses and Jeddy (2004)	33
Singh, Darroch and Frost (2001)	34
Abernathy, Webster and Vermeulen (2002)	35
Lipman, Offord and Boyle (1996)	36
Employment Outcomes	37
Thiessen and Blasius (2001)	37
Oreopolous (2003)	37
Implications	39
Bibliography	41

Executive Summary

Overview

The purpose of this review is to summarize, analyze and evaluate the Canadian quantitative literature examining the social consequences of economic inequality for children. Education, health, social justice and employment outcomes are examined.

Searches applying a broad range of applicable search terms to twelve major databases initially yielded 828 articles potentially relevant to one or more of the above four outcomes categories. Subsequent examination of article abstracts reduced the number to 45. Further examination of the full texts of these articles reduced the total number reviewed to 34. Articles were excluded if: they did not use quantitative empirical methodologies; they did not sample Canadian populations; they did not examine measurable outcomes of income inequality; or, if they proved irrelevant to the question, despite being captured by the searches.

Articles were included if they used socio-economic status (SES) rather than income as their measure of economic inequality. Including only articles examining income inequality in isolation would have excluded 14 of the studies here. In most articles measuring SES, income is a component of that variable; however in a few it is not.¹ The full summaries of the studies describe the components of the SES variables.

In the analysis below, the four outcomes categories are subdivided: educational outcomes are divided into academic and social/behavioural outcomes; and health outcomes are subdivided into emotional and physical health outcomes. Many articles examine outcomes in more than one of the four main categories or subdivided categories. The findings in this executive summary are presented thematically - different findings from the same article are discussed under different headings. However, the full article summaries present each article 'intact.' The rationale for this decision is efficiency. The reader needs to know the methodology and constructs used in each article to interpret the findings; repeating these methodologies every time a finding is reported would be unduly redundant. Therefore, some full article summaries subsumed by one outcomes category, for example 'Health,' may examine outcomes in other categories as well, for example 'Education.'

¹ For example, Ma and Klinger (2000) measure the educational items found in the home and participation in cultural activities to gauge SES.

The table below shows the thematic coverage of each article.

Outcomes Theme	Article
Social Justice	Eisler and Schissel (2004); Trocme, Knoke and Blackstock (2004); Kuo and Roysircar (2004); Schissel (2001); Bagley and Mallick (2000)
Education-Academic/Cognitive	Entorf and Minoiu (2005); De Civita, Pagani, Vitaro and Tremblay (2004); Dooley and Stewart (2004); Maggi, Hertzman, Kohen and D'Angiulli (2004); Hou and Ram (2003); Kohen, Brooks-Gunn, Leventhal and Hertzman (2002); Schiller, Khmelkov and Wang (2002); Willms (2002) Kornberger, Fast and Williamson (2001); Ma & Klinger (2000); Pyryt and Lytton (1998); Lipman, Offord and Boyle (1996)
Education-Social/Behavioural	Romano, Tremblay, Boulerice and Swisher (2005); Kerr (2004); Hou & Ram, (2003) Kohen, Brooks-Gunn, Leventhal and Hertzman (2002); Saloman & Stroebel (1996) ;Nakahaie, Silverman and Lagrange (2001); Lipman, Offord and Boyle (1996)
Health-Emotional	Letourneau, Hungler and Fisher (2005); Kerr (2004); Abernathy, Webster & Vermeulen (2002); Ma (2002); Beiser, Hou, Hyman and Tousignant (2002); Lippman, Offord & Boyle (1996)
Health- Physical	Phipps, Burton, Osberg, and Lethbridge (2006); Guttman, Dick and To (2004); Shields, Jolly, Moses and Jeddy (2004); Seguin, Xu, Potvin, Zunzunuegi & Frolich (2003); Dubois and Girard (2003) Abernathy, Webster & Vermeulen (2002); Singh, Darroch and Frost (2001); Hardwyck & Patychuk (1999)
Employment	Oreopolous(2003); Thiessen and Blasius (2001)

Results

Justice/social justice outcomes

Five studies address social justice outcomes. Bagley and Mallick (2000) indicate children in chronic poverty are more likely to be physically, sexually or emotionally victimized by age 17. Eisler and Schissel (2004) also describe the effects of economic inequality on physical and emotional victimization, and discover that while poor children are at greater risk of victimization than their wealthy peers, the degree and type of risk varies by geography, gender and race. Race also informs Trocme, Knoke and Blackstock's (2004) examination of child welfare reports, where they find socio-economic indicators partially account for Aboriginal children's overrepresentation in foster care, and becoming 'suspected' and 'substantiated' problem cases. Schissel (2001) describes race and gender effects on different gambling behaviours, a form of regressive taxation in which he finds poor male Aboriginals and poor female non-Aboriginals disproportionately participate. Kuo and Roysircar (2004) find that higher socio-economic status (SES) increases the chances for successful acculturation to Canada, and less associated stress, among Chinese immigrants.

The latter four studies illustrate the double and triple disadvantage that occurs when poverty interacts with other ascribed characteristics. Poor aboriginal youth appear especially vulnerable, even compared to poor non-Aboriginals (Eisler and Schissel, 2004; Trocme, Knoke & Blackstock, 2004; Schissel, 2001). The different risks faced by males and females are exacerbated by low incomes (Eisler and Schissel, 2004; Schissel, 2001). Immigrant youth have greater need of high socio-economic status to buffer them from risks not faced by non-immigrants (Kuo and Roysircar, 2004).

Educational Outcomes – Academic/Cognitive

Twelve studies examine academic educational outcomes, which include academic/cognitive, and behavioural/social development. As has often been shown, there is little doubt that higher income or SES is associated with better academic outcomes. SES seems to operate most strongly at the family level. Ma & Klinger (2000) show grade six students' scores in reading, writing, mathematics and science moderately increase at every ascending level of family SES. Willms (2002) shows fifteen year olds' PISA² reading scores increasing along the socio-economic gradient, a claim supported by Entorf and Minoiu (2005) who show that for every 10 points a Canadian student's score increases on their measure of SES, her PISA score increases by 13.5 points. Schiller, Khmelkov and Wang (2002) similarly find parental education is correlated with higher achievement on the TIMSS³. Dooley and Stewart (2004) show mean scores increase with family income on the revised Peabody Picture Vocabulary Test (PPVT-R), reading, and dramatically, in math.

Conversely and complementarily, De Civita, Pagani, Vitaro and Tremblay (2004) assert children in persistently poor welfare dependent and working families have respective risks 228% and 59% greater of academic failure by grade six than never poor children. And child poverty accounts for 21% of the risk of poor school performance in Lipman, Offord and Boyle (1996). Hou and Ram (2003) similarly attribute lower scores on the PPVT-R and Mathematics Computation Tests to belonging to a low income group.

Nonetheless, interpretation here demands caution. The SES measure does not include income in Schiller, Khmelkov and Wang (2002), Ma and Klinger (2000), or Willms, all of whom use various combinations of parental education, ownership of educational items, participation in cultural activities, and occupations to impute SES. Although all these indicators are widely recognized as positively related to income, they are not identical.

Two studies ask if employment/income status affects academic outcomes. De Civita *et al.* (2004) find that while all persistently poor children are at greater risk of failure by grade six, those of welfare dependent families are more at risk than those from working poor families. Similarly, Kornberger, Fast and Williamson (2001) find welfare dependent

² Programme for International Student Assessment, a set of standardised tests administered to a sample of 15 year olds (n> 4500) in Organization for Economic Cooperation and Development (OECD) countries every three years.

³ Trends (formerly 'Third') in International Mathematics and Science Study comprises standardised math and science tests, administered in fourth and eighth grade in over 75 countries.

pre-school children score lower than children of the working poor on the PPVT-R. Both groups however, score below the non-poor norm.

Some researchers question the effects of living and attending school in poor or rich neighbourhoods, as opposed to poor or rich families. Pyryt and Lytton (1998) report that the mean income of an elementary school accounts for 39-45% of the difference in test scores between schools, a figure that dwarfs the 3-6% difference teaching styles appear to make. According to Ma and Klinger (2000) higher school mean SES increases test scores between six and 10 percent, over and above family SES.

Maggi, Hertzman, Kohen and D'Angiulli (2004) believe highly competent children in Vancouver elementary schools may be having their progress impeded if living in low SES neighbourhoods characterized by more at risk children, and possibly overburdened teachers, though this study should be treated with caution. In examining pre-school students, Kohen, Brooks-Gunn, Leventhal and Hertzman (2002) find children in high poverty neighbourhoods have lower mean scores on the Peabody Picture Vocabulary Test (PPVT) than their peers in affluent neighbourhoods, though these neighbourhood effects disappear when variables are added. They also show that children from poor households in poor neighbourhoods score lower than children from poor households in affluent neighbourhoods.

Educational Outcomes- Social/ Behavioural

Family and neighbourhood level income and SES also affect behavioural outcomes, as evidenced in eight studies. Neighbourhood unemployment and affluence appear to contribute to incidences of undesirable behaviour in expected directions (Kohen *et al.*, 2002) and family SES seems to be negatively associated with incidences of physical aggression, and weakly but positively associated with pro-social behaviour (Romano, Tremblay, Boulerice and Swisher, 2005; see also Saloman & Stroebel, 1996). Family income is weakly negatively associated with hyperactivity, conduct disorder and property offenses (Hou & Ram, 2003; Kerr, 2004); however, low income's predictive power vis-à-vis conduct disorder and other behavioural problems strengthens considerably when examining only 6-11 year olds, and excluding 12-16 year olds (Lipman *et al.*, 1996). Resistance to school is a behavioural problem often attributed to lower social classes in the extant literature, however, Nakahaie, Silverman and Lagrange (2001) find few differences between the social classes' levels of resistance to school, except among the very disadvantaged, in particular children of unemployed or unskilled parents.

Although the correlations between income and/or SES and diminished educational outcomes in the above studies are clear, the mediating variables associated with low income often appear to be the root causes of difficulties. Dooley and Stewart (2004) show that the 'consumption' of enriching activities allowed by money accounts for only part of the variance in test scores predicted by economic status. Willms (2002) argues parenting styles, maternal mental health, and family cohesiveness offset vulnerability due to low SES, and shows, despite lower aggregate *mean* scores, many *individual* low SES students perform quite well on the PISA. Similarly Romano *et al.* (2005) argue 'good parenting skills' and positive 'family functioning' negate the deleterious effects of low SES, as do

higher levels of self and social (i.e. parent) control (Nakahaie *et al.*, 2001) and higher maternal aspirations for their children's education (De Civita *et al.*, 2004).

Neighbourhood level poverty appears to lose its power to negatively affect children in strong and stable families (Kohen *et al.*, 2002; Romano *et al.*, 2005; see also Oreopolous, 2003).

Health Outcomes – Emotional

Six studies indicate low income children live with heightened risk of emotional difficulties (Kerr, 2004; Abernathy, Webster & Vermeulen, 2002; Ma, 2002; Beiser, Hou, Hyman and Tousignant, 2002; Lippman, Offord & Boyle, 1996). However, in many studies, positive family characteristics mitigate or erase these negative effects of low income/SES (Kerr, 2004; Abernathy *et al.*, 2002; Hou & Ram, 2003; Beiser *et al.*, 2002).

Furthermore, low income appears to affect different sub-groups' emotional health differently. Using National Longitudinal Survey Canadian Youth (NLSCY) data, Ma (2002) finds family SES has no significant effect on immigrant emotional health, but a weak effect on non-immigrant mental health. By contrast, Beiser *et al.* (2002) use the same data set to determine economic deprivation threatens immigrant children's health over and beyond negative family functioning, the variable which accounts for all the negative emotional outcomes in the non-immigrant population. This difference between 'SES' and 'income' may account for this contradiction. Only low income children ages 6-11, not 12-16, are at increased risk of psychiatric disorders in Lipman *et al.* (1996). Letourneau, Hungler and Fisher (2005) offer the barest preliminary evidence that Aboriginal children in poverty may be at greater emotional risk than non-Aboriginals.

Health Outcomes- Physical

Eight studies show physical health risks of low income/SES. Low income youth smoke more frequently, do less physical activity, spend more days sick, assess their health more negatively and have less access to doctors than high income youth (Abernathy *et al.*, 2002). Phipps, Burton, Osberg, and Lethbridge (2006) show poor Canadian children are more frequently and severely obese than non-poor children. Interestingly, Abernathy *et al.* (2002) also report that low income children who are active, overcome the low income disadvantage in emotional health.

The youngest children may be especially vulnerable to low income physical health risks. Guttmann, Dick and To (2004) find 35% of infants hospitalized in the year previous to their study hailed from families of low income adequacy, whereas 20% of non-hospitalized infants came from these families. Low income children were 1.7 times more likely to be hospitalized in the previous year than adequate income children. Similarly, mothers with incomes below 60% of the Statistics Canada Low Income Cut Offs (LICOs) rate their infants' health as 'less than excellent' 1.8 times as frequently as mothers of sufficient income. The rate falls to 1.5 times for mothers living between 60-99% of the LICOs (Seguin, Xu, Potvin, Zunzunuegi & Frolich, 2003). Dubois and Girard (2003) find that high SES mothers are more than twice as likely as low SES mothers to follow all three accepted infant feeding recommendations: they breast feed exclusively at birth; they

do not introduce other foods before 4-6 months; and they delay introduction of cow's milk until 9-12 months.

Risky sexual behaviour also contributes to undesirable health outcomes. The rate of genital Chlamydia is 2.9 times greater among teens in the lowest income quintile Toronto neighbourhoods than the highest (Hardwyck & Patychuk, 1999). Chlamydia is also a particular risk among low income street youth in seven urban centres, with particular risk to females, Aboriginals and the homeless (Shields, Jolly, Moses and Jeddy, 2004).

Teen motherhood may not be a health risk per se, but is widely regarded as undesirable. The teen birthrate steadily rises along the economic gradient of Hardwyck and Patychuk's (1999) neighbourhood quintiles; it is nearly four times the rate in the lowest income neighbourhood as the highest. Singh, Darroch and Frost (2001) show Canada's least educated give birth in adolescence far more often than the most educated (42% vs. <10%) though the causal relationship here may be reversed. Also, females in the lowest economic category reported having first intercourse before age 20 significantly, though not greatly, more often than those in the highest category.

Unlike educational outcomes, and emotional health outcomes, the studies do not provide evidence that risks to physical health are mediated by other variables associated with economic or socio-economic status. There seems to be some advantage to children of older mothers in Dubois and Girard (2003) beyond SES; but we do not find the systematic diminishing of importance of the economic variables through family structure and family characteristics variables that we do when examining other outcomes.

Employment outcomes

Only two studies reviewed here address employment outcomes. Thiessen and Blasius (2001) find working class are more likely to perceive their fathers' work as dangerous and dirty, whereas middle class youth perceive their fathers' jobs as 'respected' 'rewarding' and 'exciting.' Similar, though weaker, findings hold for mothers' jobs. The most interesting finding is that working class youths' expectations for their own jobs do not appear hindered by their socio-economic status. While gender predicts aspirations, most youths, regardless of class, expect jobs typically associated with the male middle class.

Congruently, Oreopolous (2003) finds that growing up in large housing projects in Toronto's poorest neighbourhoods compared to projects in low/middle income neighbourhoods does not significantly affect eventual income level. The variance in incomes within the sample of the poorer neighbourhoods is similar to that of the more affluent neighbourhoods; and it is wide. Furthermore, sibling incomes are strongly correlated but neighbours' incomes are not; therefore, family factors, not neighbourhood factors, appear to be the strongest indicator of eventual labour market outcomes.

Limitations

Interpretation of findings should be undertaken with caution. All research reviewed here has limitations. Many studies depend on surveys, often the NLSCY. Survey data, even when drawn from the NLSCY, are often cross-sectional, so direction of causality cannot be assumed, though income and SES are likely prior to social outcomes in most cases. Furthermore, many surveys, including the NLSCY, are vulnerable to interviewer and subject effects, i.e. respondents self reporting on sensitive topics may not wish to report accurately, may not be able to report accurately, or may not wish to report accurately to their particular interviewers. All surveys, and especially voluntary surveys, suffer from selection bias. The NLSCY has been criticized for underrepresenting immigrants/refugees and excluding on-reserve Aboriginals, arguably two of our more vulnerable populations. Finally, most 'cognitive' measures are scores on single tests, which are rather narrow measures of cognition. Some argue all tests merely evaluate reading comprehension.

Conclusion and Policy Implications

The research reviewed here indicates the strong relationship between low income and/or socio-economic status and deleterious social outcomes. However, the effects of economic inequality are clearly mitigated and mediated by other variables, and act differently on different populations. Among the possible policy implications of the findings are:

- Policy interventions may be best aimed at improving family functioning or family environments, especially with regards to behaviour and emotional health, and somewhat to academic achievement.
- Direct income transfers may be most beneficial as a means of improving physical health outcomes.
- The targets of policy interventions should be carefully considered. Low income appears to affect boys and girls, Aboriginals and non-Aboriginals, immigrants and non-immigrants, welfare-dependent and non-welfare dependent, young children and older children and adolescents, differently.
- There may be benefits to increasing access to opportunities for physical activity among lower income children.
- In many cases, parental education levels as much as income levels may be affecting outcomes. Where this is so, access to educational opportunities is potentially a key to long term amelioration of negative social outcomes.

Full Article Summaries

Social Justice Outcomes

Eisler and Schissel (2004)

Eisler and Schissel (2004) aim to show that a) the disenfranchised are more often victimized than the privileged; and b) this victimization is dependent upon geographic, gender and race contexts. Drawing on data from the Saskatchewan Youth Attitudes Survey completed by grade 9-12 students ages 13-18 (n=2 605), they show how economic disadvantage differs in predicting victimization among urban, rural and 'satellite' (i.e. small town near urban centre) students, among males and females, and among Aboriginals and non-Aboriginals.

Economic status is inferred from students' self assessments of their families' relative economic situations, and subsequently categorised as 'poor,' 'comfortable,' and 'well off.' Victimization is defined by five indicators of both perception and reality: fear of being hurt in school; actually being hurt in school; being victim of an attack; being victim of a (non-physical) crime; and witnessing a crime.

Bivariate analyses⁴ show poor students are more vulnerable than their comfortable and well-off peers to the first four of the five victimisation indicators. Male students are significantly more likely than females to be victimized in school, but not out, and are more vulnerable to crime. Students in rural schools are significantly more vulnerable than their peers at urban or satellite schools to the first three indicators of victimisation. Aboriginal students are significantly more likely than non-Aboriginals to be victims of attack.

The findings become more nuanced when the race, gender and geography variables are controlled. Unlike their wealthier peers, poor males are more vulnerable than poor females to fear and attack in schools. Conversely, poor females are more vulnerable than poor males to physical and criminal victimization outside school. Poor rural youth are more vulnerable to being victim of a crime than their comfortable and well-off peers, but not to any other type of victimization. By contrast, poor urban youth are more likely to be hurt at school, and victimized by attacks or other crimes than their comfortable or well-off peers. And for poor 'satellite' youth, chances of being hurt or afraid at school are greater than they are for their comfortable and well-off peers. Poor Aboriginal youth are more likely than their comfortable and well-off Aboriginal peers to be victims of crime, but not for any of the other indicators. Poor non-Aboriginals, by contrast, are more likely than their comfortable or well-off peers to be afraid at school, hurt at school, or victims of attack.

⁴ 'Bivariate analyses' refers to one variable's isolated effect on another (e.g. the effect of being in the 'poor' category on the amount of times one is 'hurt at school'). No other variables are yet controlled. For example, because we have not yet accounted – or 'controlled' - for geography we do not yet know if being poor in a 'rural' area does in fact increase likelihood of being hurt at school; perhaps only being poor in 'urban' areas increases the likelihood.

In sum, economic privation places youth at significant risk of victimization, though in different ways depending on racial, geographical and gender contexts. The study is somewhat limited in that it selects only students in Saskatchewan (urban Saskatchewan is different from urban BC or Ontario), relies only on adolescents' responses to a long survey, and appears to gather data only from subjects attending school. Possibly students vulnerable to victimization would be disproportionately absent.

Bagley and Mallick (2000)

Bagley and Mallick (2000) examine the factors leading to sexual maltreatment by age 16, including chronic poverty, as well as neurological status, difficult temperament, maternal stress, cognitive status, negative family climate, weak bonding and family disruption. Income inequality is a component of, but not the focus of, their study. Chronic poverty is defined as the family's total income being below the level at which the province would provide support, measured at child's ages six and nine. Sexual abuse is self-reported "unwanted sexual contacts with another person." Degree of abuse is also queried. Data are drawn from a longitudinal study of 290 Canadian females in the city of Calgary.

Initial correlations show chronic poverty strongly associated with conduct and emotional disorders, at strengths similar to those of sexual abuse in predicting these disorders. Multiple regression analyses show mothers' years of education (as a proxy for social class) and chronic poverty are both strongly related to sexual abuse in the expected directions. A further finding shows 16.7% (n=2) of children in chronic poverty by age nine experienced long term sexual abuse, and 33.3 % (n= 4) experienced some form of physical or emotional or sexual maltreatment by age 17. There are policy implications here for early intervention.

The study is obviously limited by its small sample size and the self reports of young people on this sensitive topic. Furthermore, while some longitudinal data were collected over time, for ethical purposes, instances of abuse had to be recalled at age 17, not in the years the abuse occurred.

Kuo and Roysircar (2004)

A different tack on social justice is taken by Kuo and Roysircar (2004) who examine the effects of socio-economic status (SES), gender, age of arrival in Canada, cohort status and English reading ability on the acculturation and acculturative stress of immigrant Chinese adolescents, where 'acculturation' refers to identification and affiliation with Canadian social customs and language use, and 'acculturative stress' to the reduction of health status of those undergoing acculturation.

Three cohorts of students are surveyed: 'early immigrants' including Canadian born and those who immigrated prior to completing elementary school (n= 284); 'late immigrants' who arrived after completing elementary school (n=106); and 'internationals,' non-immigrants on student visas(n=108). SES is a composite index of parents' estimated income, highest education level and occupations.

Bivariate analyses show SES significantly positively correlated with acculturation and negatively correlated with acculturative stress for the whole sample, though length of stay in Canada and ability to read English are far stronger predictors of both. At the individual cohort level higher SES predicts only less acculturative stress for early immigrants and only better acculturation for late immigrants. It is not significant for international students.

Multiple regression analyses⁵ show high SES as the strongest positive predictor of acculturation and negative predictor of acculturative stress for the whole sample. However, when considering each cohort level individually, the significance of SES is lost, possibly due to smaller sample sizes. Higher SES, with its entailed occupational, academic and financial resources likely acts as a buffer to acculturative stress and a support for acculturation among Chinese adolescents. Lower SES immigrants may therefore face more difficulty negotiating their acculturation to Canadian society, and subsequently more detrimental psychological outcomes.

The study's generalizability is limited by its use of a non-random sampling employed predominantly in Toronto, exclusively on Chinese immigrants. Furthermore, only 13% of the sample did not belong to the middle or upper middle class, perhaps distorting the effect of the SES variable.

Trocme, Knoke and Blackstock (2004)

Trocme, Knoke and Blackstock (2004) observe Aboriginal children's child welfare reports are more likely than Caucasian children's to be classified as 'suspected' or 'substantiated,' and these children are more than twice as likely as Caucasians to be placed in foster care. Employing data from the 1998 Canadian Incidence Study of reported Child Maltreatment (n= 2 898 reports), their research examines the degree to which socio-economic, child, parent and maltreatment factors explain this difference.

The researchers examine income inequality only indirectly. Income source is added to family living conditions and 'number of moves in the previous year' to form an index for socio-economic status (SES). This index is in turn added to family structure measures to create a 'family characteristics' block of variables.

The researchers find the 'family characteristics' block of variables slightly but significantly reduces the odds of Aboriginal rather than Caucasian cases being substantiated and greatly and significantly reduces the odds of Aboriginal rather than Caucasian children being placed in foster care. In other words, children from low SES, single parent homes are disproportionately placed in foster care; however, many Aboriginal families exhibit these characteristics. However, when each family

⁵ Multiple regression analysis is a statistical technique that allows all variables to be controlled simultaneously. In other words, we can ascertain how much effect SES has on acculturation independent of whatever effects English language proficiency, length of stay in Canada, or family structure etc. might be having.

characteristics variable is considered individually, of the SES indicators, only unsafe housing conditions and residential mobility significantly predict case substantiation (where one might suspect deriving income from welfare would) and only part time employment and residential mobility (two or more moves in the previous year) predict increased likelihood of child foster care placement.

The role of economic inequality in accounting for aboriginal overrepresentation in the child welfare system is indirect and not always especially strong, though statistically significant. The effects of poverty are also likely captured by other variables that account for aboriginal overrepresentation, such as 'parent criminal activity,' 'parent cognitive impairment;' and 'caregiver mistreated as a child.' And indeed, the authors contend that some of the variance attributed to Aboriginal status may also be related to the socio-economic disadvantage experienced by Aboriginals.

The study's major limitation is all the data are collected from child welfare workers whose reports were not independently verified. Misperceptions about Aboriginal people may have biased the reports.

Schissel (2001)

Schissel (2001) hypothesises that poor youth gamble more than their richer counterparts; that youth gambling increases as young people feel less able to control their own lives; and that gambling is related to drug and alcohol abuse.

He uses data from the Saskatchewan Youth Attitudes Survey (SYAS) (n=1996) collected from students, aged 13-20, attending high school. Gambling includes playing: bingo; Sport Select, where the gambler buys a ticket and bets on sporting events; and Video Lottery Terminals (VLTs), electronic slot machines found in drinking establishments. Income is measured two ways: by yearly family income; and by income adequacy, a self-assessment of the family's financial situation on a five point scale. Substance use and feelings of disempowerment are also measured, and gender and race are controlled.

Bivariate analyses show weak and contradictory relationships between family income and gambling, and insignificant relationships between income adequacy and gambling. Feelings of disempowerment and drinking however, are correlated with gambling. However, controls for race and gender provide different results. Female non- Aboriginals with who play VLTs often (more than five times a year) have lower incomes than those who play less frequently. Interestingly, female Aboriginals exhibit the exact opposite pattern; these VLT players have the highest mean family incomes. Income adequacy produces no significant associations for either group; neither do Bingo or Sport Select.

For male Aboriginals lower income adequacy is associated with playing VLTs and Sport Select often. Similarly, those who play these games often have much lower mean family incomes than those who play them 1- 4 times a year. However, male Aboriginals who do not play these games at all have the lowest mean family incomes. For male non- Aboriginal youth, neither income adequacy nor family income produces any significant associations with gambling. High levels of drug and alcohol use and feelings of

disempowerment however, tend to be associated with all three of gambling for all male youth. Thus Schissel's first hypothesis, the one of concern for this review, holds for female non-Aboriginal and male Aboriginal youth. His second and third hypotheses are supported more strongly among all youth save female Aboriginals. Ethnicity and race mediate the effects of low income on gambling.

Limitations of the study are similar to Eisler and Schissel (2004) as the data set is the same. High risk behaviour is assessed in schools where those who indulge in high risk behaviour are disproportionately less likely to be, and the validity of the youth self reports is not clear.

Educational Outcomes

Dooley and Stewart (2004)

Dooley and Stewart (2004) use the National Longitudinal Survey of Children and Youth (NLSCY) to measure the effect of family income on child outcomes on three measures of cognition: the revised Peabody Picture Vocabulary Test (PPVT-R); and, modified reading and mathematics components of the Canadian Achievement Test (CAT).

The authors measure income over the five years that subsume the three waves of the NLSCY to determine permanent income and include only children who experience no change in family structure over this time (n=7 661 and up depending on test). Income is divided into three levels: under \$20 000/year; \$20 000- \$40 000/year; and, over \$40 000/year.

Initial bivariate analyses (i.e. no controls) show mean scores increase with family income on all three tests. Mathematics is the most dramatic with a 30 point increase in mean score from children in families under \$20 000 to children in families over \$40 000.

Later, the authors conduct a series of tests to try to determine the extent this relationship is causal, and if so, through which pathways. An initial test shows that PPVT-R, math and reading scores rise with each one standardized unit increase in income (.30, .12 and .19 of a standard deviation respectively) but this effect flattens out after incomes exceed \$60 000. In other words, scores increase with income up to \$60 000, after which additional income provides no advantage.

When running tests to control for variables related to income, like parental health and skill, which might be root causes of improved test scores, the authors find the income effects are somewhat smaller. The 'consumption' of enriching activities that income allows does not explain all the variance in scores, indicating it is not just the material goods that money allows that facilitates positive cognitive outcomes. The authors conclude that their study indicates caution about using direct cash transfers as a way of improving cognitive outcomes among low income children. Early childhood education may provide a more effective use of public funds.

The authors have taken an innovative approach to examining the pathways by which higher income confers advantage, though all studies relying on NLSCY data may share similar limitations. The first is selection bias, the NLSCY seriously under represents immigrants and refugee children, and Aboriginals on reserve. As a voluntary study it may over-represent certain types of people. Although it is longitudinal, data comparing independent variables to outcomes in the same wave of the study are necessarily cross-sectional, and therefore causality cannot be presumed. The test outcomes (e.g (PPVT-R) are fairly narrow indicators of cognition, And many other outcomes are based on mothers' self reports of child behaviours and attitudes which are not independently verifiable and may be inaccurate, especially considering questionnaires were usually administered by interviewers.

Entorf and Minoiu (2005)

Family level socio-economic status is also the independent variable of interest in three large scale studies. In the first, Entorf and Minoiu (2005) seek to evaluate the importance of social class, migration background, and command of national languages on the 2000 Program for International Student Assessment (PISA) test scores. They compare PISA reading test scores across nine countries, four 'typical countries of immigration' including Canada (Canada $n > 30\,000$), and five European countries typified by labour migrants. SES is indicated by the International Socio-Economic Index of occupational status (ISEI), an instrument based on education, income and age of occupational group, which allows for cross country comparisons.

The impact of SES on PISA reading scores is strong in all nine countries, though interestingly it has the second smallest effect in Canada, a standardized effect of 1.35, compared, for example, to 2.20 in Germany; in other words, an increase of 10 points on the ISEI increases a Canadian student's PISA score by 13.5 points, but a German student's by 22 points. Only Finland exhibits a flatter (i.e. more equitable) socio-economic gradient than Canada. Nonetheless, the gradient is still steep in Canada, and when broken into subgroups, steeper among migrants (1.46) than those with parents born in the country (1.28). Immigrant students in Canada, however, have a higher mean ISEI score than the native born Canadian population. For this reason, and because the SES gradient is not as steep, Canadian immigrants are less likely than migrants to European countries like Germany or the UK to be trapped in lower social classes.

This is strong study only limited by its purpose in providing the most general overview of the correlation between SES, migration and linguistic ability on PISA test scores. It does not purport to account for the effectiveness of differing school systems in determining outcomes, for example. Indeed its main purpose seems to be to encourage German authorities to adopt Canadian style immigration policies that target migrants rich with human and financial capital.

Willms (2002)

In the second large-scale study, Willms (2002) summarises findings from the NLSCY and Programme for International Assessment (PISA), an large-scale international survey

of fifteen year olds' reading, math and science skills to show who 'vulnerable' children are, what PISA scores are, and how poverty and socio-economic status are related to these outcomes.

Willms defines vulnerability in the cognitive domain as low scores on NLSCY tests of motor and social development from ages 0-3; low scores on receptive vocabulary tests at ages 4 and 5; and low scores on standardized mathematics tests at ages 6-11. Behavioural vulnerability results from parent ratings of difficult temperament at ages 0-1 or any one of six behaviour disorders: anxiety; emotional disorder; hyperactivity; inattention; physical aggression; or indirect aggression.

Twenty-eight point six percent of Canadian children are vulnerable under the above definitions. Vulnerability is only weakly associated with family income and other socio-economic factors. Rather, parenting style, family cohesiveness, maternal mental health and parental engagement with children in learning and play activities emerge as predictors of (lack of) vulnerability. Crucially, children in poor families exhibit superior language skills when they attend day-care, indicating the importance of early childhood education. Small class sizes and specialist teachers in later schooling advantage children later in their scholastic careers.

Willms also compares SES to PISA data. SES is operationalised as parental education and occupation and educational and cultural possessions in the home, not as income. Here important trends are: low SES Canadian children outperform low SES children from other OECD countries; there is a substantial gap in scores between Canadian children of low and high SES backgrounds; nonetheless, there is a wide range in scores of all levels of SES backgrounds – many low SES students perform quite well.

In sum, Willms argues that childhood vulnerability arises not from poverty but from the environments in which children are raised. Policy interventions ought to create environments that support children's development rather than ameliorate risk factors. This summary report does not contain numerical data. NLSCY shortcomings have been documented already.

Schiller, Khmelkov and Wang (2002)

In the final international study with family level variables, Schiller, Khmelkov and Wang (2002) investigate how two aspects of adolescents' social backgrounds – parents' education and family structure – associate with national economic development levels to predict success on the Third International Mathematics and Science Study (TIMMS). This study is included in this review because of the strong relation between parental education and family structure with access to financial resources.

TIMMS samples over 200 000 thirteen year old students, including 15 000 from Canada, in 34 nations, and collects information on parents' education and family structure. The authors define parental education level as highest education level achieved by either parent, and family structure as living with both or 'not both' parents. The GDP standardized in US dollars represents the economic development level of the nation.

Gender, talent, and attitudes toward Math are also controlled through survey responses. The dependent variable is the standardized score on the Mathematics component of TIMMS.

When controlling for parental education and academic ability, the authors find an advantage to living with both parents in the nations with stronger economies. This finding supports the 'marginalised family hypothesis' which states the importance of parents spending time and attention on children is increased in industrialised nations which are characterized by high geographic mobility and small families, i.e. fewer social supports.

When controlling for family structure and ability, higher parental education levels are correlated with higher achievement on TIMMS in all 34 countries. Only in Canada, where it is significant at the 95% confidence level, is this finding not significant at the 99% confidence level. This finding repudiates the 'meritocracy' thesis that in more economically developed societies expanded educational opportunities decrease the importance of social background. Indeed both findings support the 'social reproduction' thesis. That is, elites in all societies use education to pass social advantage to their children.

This is a strong study, though of course it tells nothing about the processes leading to living in non-traditional families that might affect achievement, and nothing of the differences of provisions of schooling and social services in each nation that might also mediate outcomes.

Pyryt and Lytton (1998)

Other studies are concerned with the effects of neighbourhood level and school level economic and socio-economic status. Pyryt and Lytton (1998), for example, ask what school-based factors above and beyond social class account for variation in achievement between schools. They use the Calgary Board of Education's 1996 grades three and six Alberta Achievement Test scores in language arts and mathematics (n= approx. 14 000) to measure achievement. Social class is measured first by computing the mean income of a school's families according to 1991 'community district' census data. Secondly, a community 'disadvantage index' is created based on data from Calgary's social services department; it includes percentage of single parents, percentage of unemployed adults over 25, and percentage of children living in welfare dependent families. After establishing social class the authors ask a number of questions to determine the student characteristics, for example number of ESL students, and school characteristics, for example teachers' years of experience, of each school.

Simple bivariate correlations show that for every additional \$1000 of mean family income at a school students would receive an additional quarter percentage point on their achievement test score. Multiple regression analyses show in grades three and six, the mean family income and the disadvantage index combine to explain 39-45% of the variance in test scores between all schools. By contrast, student body characteristics, such as percentage of ESL students, and school factors, such as teachers' practices and principals' attitudes, predict only 11% and 3-6% of the variance in test scores

respectively. Overwhelmingly, the study indicates the pre-eminence of socio-economic factors in predicting academic outcomes.

As the authors acknowledge, their particular statistical model tends to accentuate the importance of socio-economics. Nonetheless, they affirm other models produce only slightly weaker results. The study's strength is its whole sample of a city's school system. However, data are aggregated at the school, not the family level, so it is not clear whether the students' benefit from attending richer schools or from being richer themselves. Ma and Klinger (2000) below address this issue.

Maggi, Hertzman, Kohen and D'Angiulli (2004)

Maggi, Hertzman, Kohen and D'Angiulli (2004) investigate the relationship between neighbourhood socio-economic characteristics, classroom composition and changes in the proportions of highly competent children in Kindergarten, grade 4 and grade 7. In particular, they wonder if the learning experiences of highly competent children are mitigated by academic climate of classrooms in low SES neighbourhoods which may contain disproportionate numbers of children facing learning difficulties.

The authors use cross-sectional data collected from 78 Vancouver schools in 2000. Data include the language and cognitive component of the Early Development Institute (EDI) questionnaire, a survey of Kindergarten teachers' perceptions of their students; and grade 4 and grade 7 reading and math scores on the Foundation Skills Assessment (FSA), an annual provincial standardised test. Students scoring above the 90th percentile on the EDI are regarded as 'highly competent.' Students assessed on the FSA as 'exceeding expectations,' as compared to 'meets expectations' or 'not yet within expectations,' are regarded as highly competent. These results are first compared only to school board indicators of catchment area SES, and subsequently with: catchment area SES; school board data describing class size and proportions of children in special education; and, proportions of students 'at risk,' defined by the EDI data identifying those below the 10th percentile and FSA data identifying students not yet meeting expectations.

The authors first find catchment area SES insignificantly and minimally predicts proportions of highly competent children in Kindergarten. However, it dramatically and significantly predicts the proportions of highly competent children in grades 4 and 7; specifically, lower SES neighbourhoods contain fewer highly competent children.

Secondly, the authors analyse the effects of catchment SES together with class size, proportion of students in special education, and proportion of students 'at risk.' Class size and proportion in special education prove insignificant, thus the final analysis includes only SES and proportions of students 'at risk.' In this final analysis, SES and 'at risk' variables again prove insignificant at Kindergarten but strong and significant predictors of highly competent children in grades 4 and 7; again, lower neighbourhood SES and higher 'at risk' proportions are correlated with fewer highly competent children, and moreso than when SES is the only variable.

The authors therefore posit that because schools in low SES neighbourhoods contain highly competent children in Kindergarten but not in the higher grades, perhaps a) their progress is impeded by the slow pace demanded by their vulnerable peers; or b) better teachers are more attracted by high SES schools; or c) working in low SES schools leads to teacher burnout or a willingness to 'go through the motions,' or d) the multicultural populations of low SES schools leads to adverse parent teacher relations, lower classroom morale, and a slower pace of learning.

This study is seriously limited. It is not at all clear that the measures of 'high competence' on the EDI and FSA are equivalent or comparable. Furthermore the EDI is based on teacher perceptions and the FSAs are student completed. The study is cross-sectional so the authors are comparing three *different* populations of students in K grade 4 and grade 7 and inferring a decrease in competence; they are not examining the educational progress of the same group over time.

Kohen, Brooks-Gunn, Leventhal and Hertzman (2002)

Kohen, Brooks-Gunn, Leventhal and Hertzman (2002) examine the effects of neighbourhood socio-economic characteristics on the verbal and behavioural competencies of a national sample of pre-schoolers, ages four and five, from the 1994-1995 NLSCY (n=3 350).

The authors define neighbourhoods as the census enumeration areas (approximately 300 households) and neighbourhood poverty and affluence as percentages of families with incomes below \$20 000 and above \$50 000 a year respectively. Zero- eight percent of families in poverty is a 'low poverty' neighbourhood; eight (sic) to 19% is a 'middle-poverty' neighbourhood; above 20% of families in poverty is a 'high poverty' neighbourhood. Neighbourhood family structure, unemployment, disorder, and cohesion are also included to provide a full measure of neighbourhood socio-economic status. Child outcomes are measured by receptive verbal ability on the revised Peabody Picture Vocabulary Test (PPVT-R); and, parent responses on the scale items comprising the Child Behaviour Checklist. The authors also control for family demographic characteristics, including income, and maternal emotional and social characteristics.

Univariate analyses show children in high poverty neighbourhoods have lower mean scores on the PPVT-R and higher mean scores for behaviour disorders than their peers in more affluent neighbourhoods, though the difference is not great in either case. Bivariate analyses show neighbourhood poverty is weakly but significantly correlated to lower PPVT-R scores and not significantly correlated with behavioural problems. By contrast, household income is significantly and moderately related to both in the expected directions.

Multivariate regression analyses show that while neighbourhood poverty and neighbourhood affluence begin as weak but significant indicators of PPVT-R performance, their strength diminishes as different variables are added. And, in the final model, with all variables considered, they lose their significance. Household income, by contrast, remains a strong (more than 10 times the strength of neighbourhood poverty)

indicator of PPVT-R scores in all models. Further analysis shows the interaction between household and neighbourhood income. Children from poor households (<\$20 000) in high poverty neighbourhoods score lower on the PPVT-R than children from poor households in more affluent neighbourhoods. Children from high income households in all neighbourhoods score higher than their lower income peers.

The most affluent neighbourhoods are significantly associated with lower behaviour problem scores, albeit very weakly. Neighbourhood poverty however does not significantly affect behaviour scores. Neighbourhood unemployment also contributes to higher behaviour problem scores. Interestingly, family income is positively correlated with behaviour problems though the authors do not comment on this finding.

Overall, the study indicates neighbourhood poverty and affluence do affect children's outcomes, and policies ought therefore to promote healthy development in these areas. Furthermore, living in an affluent neighbourhood appears to benefit poor children whereas living among poorer peers appears not to harm affluent children. This study is limited in part by the possibility of selection bias, and self-reports already described in relation to the NLSCY (see p. 5-6), however it is strong overall.

Ma and Klinger (2000)

Two studies use Hierarchical Linear Modeling (HLM)⁶ to tease out the effects of family level from neighbourhood level socio-economic status. Ma and Klinger (2000) examine student background, including family SES, school context, including school mean SES, and school climate effects on grade six student achievement in mathematics, science, reading and writing. Data are drawn from the 1995-96 New Brunswick School Climate Study (n= 6 883) and include student scores on math, science, reading and writing tests as dependent variables, and student questionnaires including student characteristics, school context and school climate items as independent variables. They use Hierarchical Linear Modeling (HLM) to isolate student level effects such as family SES, from school level effects, such as school climate and school mean SES. Importantly, SES is constructed as a measure of educational items in the home and participation in social and cultural activities. School mean SES is derived from SES of individual students. These measures are only indirect indicators of income.

Students' SES significantly affects mean scores on math, science, reading and writing tests. A student who is one standard deviation below the mean SES can expect scores 9, 14, 17 and 14% of a standard deviation below the mean scores of each test respectively. Additionally, school mean SES affects scores over and beyond individual SES in Math (6%), reading (7%) and writing (10%). Interestingly, the effects of family structure, i.e. single vs. two biological parents, disappear when SES is introduced into the equation. By

⁶ HLM is an advanced statistical technique that separates different 'levels' of effects. For example, a student's family SES affects him at the individual level, but this effect occurs within a school level. The school SES may itself be high or low. HLM allows researchers, for example, to distinguish the effect of being a high SES student in a high SES school from being a high SES student in a low SES school.

contrast, the strong effects of gender and native ethnicity remain. Disciplinary climate of the school is also a significant predictor of test scores.

The study samples only New Brunswick English Speakers, and may not be generalisable to a more multicultural population. The measure of SES is useful to consider but only very indirectly measures income inequality. However, the wide range of outcome variables which can be independently verified (i.e. test scores not self reports) strengthen the study.

Romano, Tremblay, Boulerice and Swisher (2005)

Whereas Ma and Klingner (2000) examine cognitive outcomes at different levels, Romano, Tremblay, Boulerice and Swisher (2005) examine the effects of individual, family and neighbourhood level variables on the development of pro-social and aggressive behaviour. They wish to discover the independent and aggregate contribution of the three levels of variables. Socio-economic variables are included at the family and neighbourhood levels.

They draw data from the NLSCY on children aged 2-11 (n= 2745). The sample is 93% Caucasian, 81% living with both parents, with 71% of mothers and 93% of fathers employed outside the home. Neighbourhood SES is defined through mothers' perceptions of their neighbourhood and calculations of percentages of families living below Statistics Canada's low income cut-offs. Family SES is a composite measure of mother and her spouse's educational level and occupational prestige, and family income.

Initial bivariate analysis shows family SES is negatively correlated to physical aggression and very weakly positively correlated with pro-social behaviour. When controlling for each level of variables using HLM, family SES ceases to be a significant predictor of either outcome. The authors contend that the effects of SES are probably captured by other variables like 'good parenting skills' and 'good family functioning.' Counter-intuitively, neighbourhood poverty is associated with lower physical aggression. The authors posit that neighbourhood effects may already be caught in the family level variables in their model. Overall, most variation in aggression and pro-social behaviour occurs at the individual level (through interactions with parents), followed by the family level (by mother's age, mood and behaviours, not SES), and distantly by the neighbourhood level.

As alluded, the authors demand caution in interpreting results, asserting that a) HLM favours individual level variables, and b) the individual and family level variables controlled for may have captured neighbourhood characteristics, thus underestimating the effects of neighbourhoods. Finally the survey is cross-sectional, not causal. Only associations can be noted.

De Civita, Pagani, Vitaro and Tremblay (2004)

Two studies are concerned with the effects of different employment statuses or income sources. In the first, De Civita, Pagani, Vitaro and Tremblay (2004) ask if the income source of persistently poor families influences academic failure by age 12, and if

maternal aspirations mediate this risk. They hypothesise all persistently poor children will be more at risk than never poor children; that children of welfare dependent families will be most at risk of failure due to the greater discrimination and isolation faced by such families; that the working poor will be next worse off; and that work and welfare dependent families will be less at risk than the working poor due to the stability of the welfare benefit.

Their data source is a sample from the Quebec Longitudinal Survey conducted in the 11 administrative regions of Quebec (n =1112; 609 female 503 male). Families are defined as persistently poor if their income level averaged below 1.5 times Statistics Canada's poverty line from the child's 8 to 11th year. Families are coded as welfare dependent (n=39); work and welfare dependent (n=21); working poor (n=375) and never poor working (n=687). The outcome variable, academic failure, is defined as having experienced grade retention by the age 12. Maternal aspirations are inferred from a single question asking mothers' desired levels of education for their children.

De Civitas *et al.* find children in persistently poor welfare dependent families have a risk of academic retention 228% greater than those in never poor working families. Children in persistently poor working families have a risk 59% greater than never poor working families and children of work and welfare dependent families show no statistically significant difference from never poor working families, likely due to the small sample size. As they predict, maternal aspirations mediate these outcomes. Higher levels of maternal aspirations reduce risk of failure by 48% in children of both welfare dependent and working poor families.

One should generalise cautiously from the study due to the small sample sizes of welfare dependent and work and welfare dependent families. Nonetheless, the authors maintain the missing data likely would have captured subjects who deviated more from the mean scores; thus the variance in the study likely underestimates relationships. Nonetheless, the sample is Quebec only, 97% Caucasian and 95% French speaking. It has likely not captured immigrant families, for example. Furthermore the study is not longitudinal so causality cannot be determined. Mother's aspirations could as easily have been influenced by children's previous academic achievement as vice versa.

Kornberger, Fast and Williamson (2001)

Kornberger, Fast and Williamson (2001) echo De Civita *et al.*'s concerns. They wonder whether poor children benefit when their parents move from welfare to the workforce. They ask if the employment status of parents in poor families (working poor or welfare dependent) predicts verbal ability in pre school children. Using data from the 1995 NLSCY, they sample 665 children aged four and five whose families live below the low income cut offs (LICOs), and divide the sample into working poor and welfare dependent families. The dependent variable is the child's score on the revised Peabody Picture Vocabulary Test (PPVT-R), a measure of school readiness. Other factors controlled include parental depression, quality of parent child interactions, family type, parental education, family size and income.

Results show that welfare dependent families' incomes are lower than the working poor but both groups are well below the LICOs. Welfare mothers are significantly more depressed than working poor mothers. Both groups produce mean scores below the standard score for their age groups on the PPVT-R. Welfare dependent children score significantly below working poor children, though the difference is within one standard deviation; about two months behind in school development, according to the authors.

After controlling for family effects, the employment status of the parent still predicts scores on the test. Children in welfare dependent families score 5.49 points lower on the PPVT-R than their working poor family peers. Employment status is in fact the strongest predictor of PPVT-R test scores of all the variables in the model. Curiously, single parent status predicts higher scores and parental child interactions prove insignificant. Furthermore, depth of poverty is insignificant. In sum, employment status (working or welfare) is a significant predictor of child development of those in poverty, but children in both poverty groups are below the norm.

Potential problems with selection bias for the NLSCY have been discussed (see p. 5). The PPVT-R score is an independent measure (not a self-report) which increases its validity, however it is only one narrow measure of child outcomes. The results of this study should not be interpreted as proof that work leads to better overall outcomes than welfare.

Nakahaie, Silverman and Lagrange (2001)

Two remaining educational studies partially frame their research around notions of social class. Nakahaie, Silverman and Lagrange (2001) hypothesize low self control, and to a lesser degree social control, will account for the bulk of variance in resistance to school. Differences attributed to social class, and gender and ethnicity, can actually be explained by differences in self control within these categories.

They draw data from the Study of Juvenile and Adolescent Behaviour Cross Sectional Survey of secondary students in Edmonton (n=2 485). 'Self control' is based on six factors derived from 25 survey questions, 'social control' on four factors derived from 19 survey questions, and SES is indicated by the most advantaged parent's occupation and neighbourhood income mean. 'Resistance to school' is an index variable of five factors derived from 19 survey questions: estrangement, truancy, misbehaviour, low aspirations, and lack of belonging.

The authors initially analyse, in isolation, each independent variable's (SES, gender, age, and ethnicity) effect on social control, self control and resistance to school. They find Aboriginals show less social and self control and more resistance to school than non-Aboriginals. Older students have less social and self control and more resistance than younger students. Boys have less social and self control and more resistance than girls. Other minorities have higher self control and lower resistance than Caucasians. Importantly for this review, there is little difference in self control among social classes, but the truly disadvantaged (parentless or unemployed parent) indeed show more resistance to school.

Secondly, the authors conduct multiple regression analyses with all the above variables controlled. Initially, having an unemployed parent is a weak but statistically significant predictor of resistance. However, when self control and social control are added to the model, they prove very strong and significant and all social class effects increasing resistance disappear. Finally, the authors examine each attribute of resistance individually. Children of unskilled and unemployed parents have significantly lower aspirations than their peers. No other social class category predicts any other attribute of resistance.

The authors posit that the lack of resistance attributable to social class may indicate more class mobility in Canada than existed in contexts where classic studies indicating class resistance to schooling were conducted. It could also be in the post industrial economy all classes recognize the need for a minimum degree of schooling.

The major limitation of this study may be the construct of social class which is based on youth's possibly inaccurate evaluations of what their parents do for a living and the gross indicator of mean neighbourhood, rather than individual level, income. Important economic distinctions may have been lost.

Saloman and Stroebel (1996)

Saloman and Stroebel (1996) examine the effects of economic status, constructed as social class, as well as sex, and academic performance, on primary school children's social networks, interpersonal skills and help seeking behaviours. They sample 330 students (m=179;f=151) in grades 4-6 in Montreal. Middle class children comprise slightly less than half the sample; lower class the bulk, according to Montreal School Board criteria describing neighbourhoods. Achievement of 70% or better in French and mathematics denotes good academic performers. Indices of social networks, interpersonal concerns and helping seeking behaviours are developed from multiple questionnaire items.

In the results, the economic status variable is only considered in interaction with the other two variables. When considering social networks, low performing boys in the lower economic levels report the fewest friends in school. All low performing lower class respondents nominate their parents as important less often than the middle class group, and lower class boys nominate extended family as important less often than others do. When considering interpersonal skills low performing boys from lower class neighbourhoods are the most negatively assertive. When considering help seeking behaviour, low performers from the lower class seek informational and instrumental help at school the least of any sub-group. Overall, the authors assert a low performing male from a lower class neighbourhood has fewer friends, more nuclear family problems, more propensity to engage in harmful interpersonal behaviour, and is less likely to seek help problem solving than his peers.

The study's limitations include a sample selected while attending school, therefore possibly excluding those at risk, and dependence on non-verifiable self reports, though the authors did use strategies to encourage valid responses. The study is clearly not

causal, and effects of economic inequality are not separated from other independent variable that predict outcomes.

Health Outcomes

Health outcomes are a focus of many studies. The first five studies reviewed here have an emotional health outcome component. As explained in the overview, some 'health' studies also examine educational outcomes.

Kerr (2004)

Kerr (2004) seeks to identify the relative importance of income poverty and family structure on reported hyperactivity, depression/anxiety, and academic difficulty. He examines data on a sample of 4 209 children who participated in all three waves of the National Longitudinal Survey of Children and Youth (NLSCY). Explanatory variables are collected from the 1994 wave or summarized over 1994, 1996 and 1998. The outcome variables are measured in 1998. A temporal relationship can thus be inferred and longer term effects of living in poverty, or nontraditional family structures can be measured.

The poverty line is defined as Statistics Canada's 1992 pre tax low income cutoff adjusted for inflation. Family structure is categorized as: 'intact families,' 'stepfamilies' and 'female lone parent families.' Each outcome variable is a composite index of 3-5 survey items.

Initial bivariate analyses show that children living in female lone parent families have the highest levels of all three areas of child difficulties, followed by children of stepfamilies, followed by children in intact families. With regard to low income, children who were persistently in low income families over all three waves of the NLSCY consistently face increased difficulties in all three outcomes compared to children with no spells in a low income category. Generally there is a widening of disadvantage in all three outcomes over the 1994-1998 time period.

Multivariate analyses which control for the above variables as well as age of parent, family functioning, education of parent, gender and number of children yield somewhat more surprising results. Children in female lone parent and stepfamilies significantly but only weakly face increased hyperactivity and academic difficulties, and no significant increase in anxiety or depression. Children in persistently poor families from 1994-1998 face a very small but significant increased risk of hyperactivity, but not in anxiety/depression or academic difficulties. In predicting hyperactivity and academic difficulties, gender – with the advantage to females- and the parental education level are far stronger predictors of outcomes than income or family structure. 'Family functioning' is also a better predictor than income or family structure of hyperactivity and anxiety/depression.

Overall, children in persistent poverty and in nontraditional family structures, more so in the latter, face increased childhood difficulties; however, these two factors should not be overemphasized. Family functioning, parental education and younger parents with less life experience also influence outcomes. Of course these variables are themselves correlated with low income and non-intact families. Gender is also critical.

Kerr acknowledges possible validity and reliability problems with the data. Single parents may react to single parent stigma by downplaying difficulties, and poverty could have been defined much differently, perhaps to capture 'deep poverty' or to include other socio-economic factors such as occupational status, low parental education, or unemployment.

Hou and Ram (2003)

Hou and Ram (2003) aim to discover the role that economic and familial resources play in mediating the effects of family structure changes – i.e. the shift from a two parent to a single parent family – on children's emotional and cognitive outcomes.

They draw data from up to 4000 cases selected from the three cycles of the National Longitudinal Survey of Children and Youth (NLSCY). Emotional outcomes include: hyperactivity/inattention/, emotional disorder/anxiety; property offense/destructive behaviour; physical aggression/conduct disorder, and indirect aggression. These constructs are inferred from questionnaire items to which the person most knowledgeable (PMK) about the child (typically the mother) responded. Cognitive outcomes are measured by math and reading comprehension scores on the Mathematics Computation Test and the revised Peabody Picture Vocabulary Test.

Changes in family structure include: remaining in a two parent family; moving from a two to one parent family; and moving to a step family. One major intervening variable, economic resources, is defined by using Statistics Canada's low income cut-offs (LICO). Respondents are classified as those who, between the two year cycles of the survey: 'moved into low income group'; 'moved out of low income group'; 'remained in the low income group'; and 'remained out of the low income group.' The other major intervening variable, 'family resources,' is represented by questionnaire items indicating ineffective parenting, parental depression, and family dysfunctioning. Child's age and sex, mother's education, age, age at child's birth and nativity are also controlled.

Through multiple regression analyses, the authors find that living in non-traditional family structures negatively affects child emotional outcomes. When the three measures of low economic resources are introduced, the externalizing behaviours – conduct disorder, property offense and to a lesser degree, hyperactivity – are reduced. However overall, the effects of the low income variables are fairly minimal, especially in comparison with the effects of family resource variables which massively reduce the effects of living in non-traditional families. In other words, poor parenting and family difficulties are better predictors of poor emotional outcomes than low income.

In the examination of cognitive outcomes, children who move into non-traditional family structures are again disadvantaged compared to their peers in traditional families. In this

case the effects of introducing the low income variables to the equation are greater than they are for emotional outcomes. In other words, the lack of financial resources associated with single parenthood explains poor cognitive outcomes to a significant degree. By contrast, the family resource variables matter far less than the economic variables and far less than they did in determining emotional outcomes. However, even here the authors admit the variance accounted for by the low income variables is not impressive.

The authors conclude that while the study indicates policies that address the quality and psychological well being of parents may seem more effective ways to improve children's well being than income transfer practices, it could be that existing social transfers, for example, social assistance and day care subsidies, have muted the effects of declines in economic resources; perhaps without the transfer payments outcomes for poor children would have been much worse.

The sample of this study is quite good. The cognitive measures construct (two brief tests) is rather narrow, and it should be remembered that the emotional outcomes are based solely on PMK's interpretations of children's behaviours. Other authors have noted the possibility of mothers in vulnerable categories deliberately understating negative outcomes for their children (see p. 5 for fuller discussion of limitations of NLSCY data).

Ma (2002)

Ma (2002) also uses the NLSCY to examine emotional outcomes, although he focuses on the immigrant youth that now comprise approximately 30% of the youth populations in Vancouver and Toronto. Using a sub-sample of 7-11 year old immigrant and non-immigrant children from 21 major cities (n= 182 and 2 122 respectively), he asks the average level of behavioural and emotional problems of immigrant children and what child, family and city characteristics contribute to the variation in these problems.

Emotional outcomes are defined as the five dimensions in Hou and Ram (2003) above with the addition of pro-social behaviour. The student characteristics used to predict these outcomes include: gender; age; SES (not defined); family structure; length of residence; and culture of origin. City level characteristics gleaned from 1996 census data include: geographic region; population characteristics; socio-economic conditions; social mobility; social climate and social services conditions.

Initial analyses show no noteworthy or significant effects of youth living in cities compared to the nationwide sample, for either immigrant or non-immigrant youth on emotional outcomes. Subsequent multi-level analyses reveal differences in the role of economic inequality for immigrant and non-immigrant youth. Family SES has no significant effect on immigrant youth across any of the six emotional outcomes but is significantly, albeit weakly, related to all outcomes for non-immigrant youth, in expected directions, i.e. higher SES leads to positive outcomes.

When considering city-level socio-economic characteristics, increases in average housing costs are related to more hyperactive behaviour in immigrant children, and higher unemployment is related to *fewer* incidences of conduct disorder, a counterintuitive

finding, possibly related to increased parental supervision. For non-immigrant youth incidences of low family income in the city are related significantly but weakly to incidences of conduct disorder and indirect aggression.

For immigrant children, the social climate of the city (indicated by divorce rates and social support for students) and access to social work and health care professionals predict poor outcomes better than city level SES, albeit the more access to social workers, the more poor outcomes reported, possibly due to the opportunities for diagnoses. For non-immigrant children, family structure predicts poor emotional outcomes better than SES, though SES does predict outcomes better for this group than for immigrants. For both groups, gender predicts poor emotional outcomes better than SES, with the advantage to the females. In sum, Ma contends immigrant youth need social climate supports and non-immigrant youth need more social, i.e. economic, equity supports.

Although Ma uses statistical techniques to compensate for the small sample of immigrants, this study is clearly limited by the amount of data on immigrants available through the NLSCY (see p. 5). Generalisations about immigrant youth from this study should be made cautiously.

Beiser, Hou, Hyman and Tousignant (2002)

Beiser, Hou, Hyman and Tousignant (2002) examine the differential effects poverty has on the mental health of foreign-born children (n= 684), Canadian-born children of immigrant parents (n=2 573), and children of non-immigrant parents (n=10 092). Ages of children are 4-11. They conduct secondary analysis on data from the first wave of the NLSCY. Parent reported emotional and behavioural problems constitute indicators of poor mental health. Statistics Canada's Low Income Cut Off defines the threshold of poverty. Other predictor and control variables include: ineffective parenting; parental depression; single parent status, age and sex of child and race/ethnicity and time spent in Canada.

Initial descriptive statistics show 36.4% of immigrants are poor compared to 14.5% of the whole sample. However, immigrant children have significantly lower scores on emotional and behavioural problems than their peers.

Multiple regression models yield interesting results. Poverty is fairly strongly associated with emotional and behavioural problems in all three groups; however when family functioning and structure variables are added (e.g. single parent status, ineffective parenting) poverty's effects lose their significance for Canadian born children of immigrant and nonimmigrant parents, but retain their significance of immigrant children. Family characteristics are important mediating variables between poverty and mental health for the former two populations. In other words, material deprivation seems to threaten immigrant children's mental health while the familial concomitants to poverty, such as single parenthood seem to explain poverty's effects on the Canadian born population.

Potential cross-cultural applicability problems with the NLSCY are threats to the study's reliability (i.e. do immigrant parents respond to mental health indicators on the

questionnaire in a way comparable to other groups?). Other problems include the impossibility of validating any self reports and selection bias. Immigrants not fluent in English or French, the less acculturated and perhaps thus a higher risk group, were likely excluded.

Letourneau, Hungler and Fisher (2005)

Letourneau, Hungler and Fisher (2005) compare parent-child interactions, which, insofar as they are sensitive and responsive, the literature recognizes as important to children's healthy development, between Aboriginal and non-Aboriginals in a probability sample of low income participants. They perform secondary analysis on data from a small Edmonton sample (Aboriginal parent-child pairs n= 12; non-Aboriginal parent-child pairs n= 48) who participated in the Nursing Child Assessment Teaching Scales (NCATS). Observation of parent-child interactions, structured interviews and semi-structured interviews comprised primary data collection.

Poverty is defined as living at or below Statistics Canada's low income cut offs. Aboriginal status is based on self-identification. Parent child interactions are observed as the parent teaches the child an age appropriate task and scored on 'sensitivity to cues;' 'response to child's distress;' 'social-emotional growth fostering;' 'cognitive growth fostering;' clarity of cues;' and 'responsiveness of caregiver.' Children are aged 1-36 months.

Findings show few significant differences between Aboriginal and non-Aboriginal parent-child interactions in the low income sample. However both groups score at least 1 standard deviation below NCATS norms on each of the measures described above, and total scores for each group, i.e. all six measures added together, are below the 10th percentile, and defined in the literature as "worrisome scores." These findings indicate that low income, with its concomitant levels of parental stress, anxiety and depression, may be a better indicator of parent child interactions than ethnicity. To the extent the groups do differ, the non-Aboriginal parents have some advantages in verbal interactions, and explicit teaching strategies. It may be argued that these 'advantages' are culturally biased.

The small non-random sample size severely limits the study though the authors claim the findings support similar findings in American literature. Nonetheless, generalizations probably cannot be made from this study alone.

Phipps, Burton, Osberg and Lethbridge (2006)

The following seven studies are chiefly concerned with physical health outcomes. Phipps, Burton, Osberg and Lethbridge (2006) examine the potential role international differences in child poverty have in explaining international differences in child obesity. They choose Canada, the USA and Norway as their countries of study. Canadian data is drawn from the 1994 wave of the NLSCY for children aged 6-11 (n=9 227). They compare poverty levels, obesity levels, and the poor vs. non poor obesity levels in the three countries.

Body mass index is calculated from parent reported height and weight of the child, and obesity is defined using the Center for Disease Control's (CDC) thresholds for age and sex. The authors calculate three obesity measures: 'severity' of obesity, the extent to which obesity exceeds the CDC threshold; 'prevalence' of obesity in the population; and the arithmetical product of these two measures, the 'extent' of obesity in each country. They define poverty as 50% of the median post-tax income adjusted for family size. Congruent to the obesity measures, 'depth' of poverty describes the extent to which income falls below the poverty line, 'incidence' of poverty describes the percentage of children with income below the poverty level, and the arithmetical product of these two measures comprises the 'intensity' of poverty.

Analyses show: Canada has higher prevalence of obesity (16.1%) and incidence of poverty (16.1%) than Norway (6.3% and 3.5% respectively) but lower rates than the USA (20.7% and 24.6%). Canada has less severe obesity and less depth of poverty than Norway, but overall greater 'extent' of obesity and 'intensity' of poverty (the product measures) than Norway. The USA has the greatest poverty and obesity of all three countries on all three measures.

Obesity is prevalent in 19.4% of poor Canadian children but only 15.2% of the country's non-poor. The proportional severity of obesity is 18.4% in poor Canadian children but only 16.5% in our non-poor. The score for extent of obesity in Canadian children in poverty is 357 compared to 250.8 for non-poor children. Results are similar but exaggerated in the USA. Interestingly there are not enough poor obese children in the Norwegian sample to run statistical tests.

The research depends on the NLSCY. Possible problems identified already include selection bias and inaccurate self reports. Nonetheless the large sample size and clear constructs serve to create a trustworthy study.

Guttman, Dick and To (2004)

Guttman, Dick and To (2004) also use the NLSCY to examine the contribution of family socio-demographic and psychodynamic factors to the risk of hospitalization of children between 12 and 24 months (n=2 184). Socio-demographic factors include SES which is measured by income adequacy according to Statistics Canada's 'income to needs' ratios. The total number of individuals the two lowest levels of income adequacy in this study is similar to Statistics Canada's 1995 poverty level. Maternal education, maternal employment outside the home, single parenthood and immigrant status are also included in this socio-demographic index. Psychodynamic variables include: measures of parenting; family functioning; maternal depression and maternal self reported health. Biological variables are controlled; they included low birth weight, gender, prenatal exposure to tobacco and alcohol, breastfeeding, the need for special care at birth.

Bivariate analyses reveal that 11.2% of the total sample was hospitalized over the last year. Thirty four point nine percent of the hospitalized group suffers from low income adequacy compared to only 20.1 % of the non-hospitalized group. This difference is greater than that of important predictor variables in other studies reviewed here, such as

'single parent' (13.2% hospitalized vs. 8.6% non-hospitalized) or 'hostile parenting' (26.2% vs. 21 %).

A multivariate logistic regression containing simultaneous controls for all variables in order to predict probability the child has experienced hospitalization shows similar results. Children in families with low income adequacy are 1.66 times more likely to have been hospitalized in the previous year than those in families with adequate or better incomes. Only maternal depression (1.81 times) and reported child health (4.04 times) are better predictors. However, neither of these latter predictors can be assumed causal in the direction of interest. Mothers may be depressed because the child is sick, rather than vice versa. Reported health will likely be bad if a child has been hospitalized. Single parent status is the other strong predictor (1.55 times) above and beyond income adequacy, of hospitalization.

As with all studies based on NLSCY data, independent verification of the mothers' reports is impossible, and as alluded, the associations shown in cross-sectional data do not determine causality. Although the sub-sample that reported hospitalization is small (approximately 220 cases) statistical weighting mutes the effects of the analyses; therefore, the findings should be considered valid in terms of sample size.

Dubois and Girard (2003)

Dubois and Girard (2003) describe the extent to which different social groups, including low SES families, follow three infant feeding recommendations, and they highlight the main factors influencing adherence to these recommendations at the population level. They draw data from the 1998 Longitudinal Study of Child Development in Quebec. Information is collected from mothers on breast feeding at five months (n= 2 103) and again at 17 months (remaining n=1 985).

The three infant feeding recommendations, or outcome variables, are: to breast feed exclusively for 4-6 months; to continue breast feeding with complementary foods for up to two years; and, to not introduce cow's milk for 9-12 months. The predictor variables include mother's age; mother's education level; level of poverty; family type; SES, divided into three levels, and living area. Because SES is constructed as a composite measure of parental education, gross family income and occupational prestige, its inclusion alongside the mother's education level and level of poverty variables is puzzling.

Descriptive statistics⁷ show 2.6 times more high SES mothers than low SES mothers exclusively breast feed at birth and 3.5 times as many do so at two months. High SES mothers are less likely than low SES mothers to feed formula to infants before six months and less likely to feed them cow's milk at 9 and 12 months. When all variables are controlled this latter pattern appears to hold.

When asking if mothers adhered to all three recommendations, findings are starker. Mothers in the highest of the three SES groups are 2.3 times more likely than the lowest

⁷ Descriptive statistics are simple frequencies at which a phenomenon occurs. No controls are in place.

SES group, and 1.8 times more likely than the middle SES group, to follow all three recommendations. Conversely the high SES mothers are only two thirds as likely as the low SES group to follow none of the three recommendations.

This SES advantage increases with age. High SES mothers under 24 are only 1.8 times as likely as low SES mothers to follow all three recommendations, but high SES mothers over 35 are 8.4 times more likely than low SES young mothers to follow all three recommendations. Nonetheless even in this 'best social situation,' fewer than half of children are fed in accordance to all recommendations. The authors contend high social and medical costs are associated with the widespread non-adherence to these practices, which is nonetheless unevenly distributed among social classes to the disadvantage of those at the bottom.

The valuable data and insightful results of this study are marred by the conceptual problem of measuring socio-economic status in addition to other parental education and income variables. It seems likely these variables interfered with each other, perhaps reducing the effect socio economic status actually played.

Seguin, Xu, Potvin, Zunzunuegi and Frohlich (2003)

Seguin, Xu, Potvin, Zunzunuegi and Frohlich (2003) are similarly concerned with infant outcomes. They examine the link between inadequate family income specifically and poor infant health. They also employ the 1998 Quebec Longitudinal Study of Child Development (n=2223).

Income adequacy is divided into three levels using Statistics Canada definitions: 'sufficient,' above the low income cut off (LICO); 'moderately inadequate,' between 60-99 % of the LICO and 12% of homes in the study; and, 'inadequate,' below 60% of the LICO and 15.5 % of homes in the study. Infant health is defined as: the mother's assessment of the baby's health on a five point scale; presence of a physician-diagnosed chronic health problem; and instance of hospitalization for one night or more since birth. Other relevant variables including mother's age, education, immigrant status and smoking status, and baby's sex, age and neo-natal health are controlled.

Before controlling for all variables the authors first find mothers in the inadequate income group are more likely than the other two groups to report: a) chronic health problems in their infants; and, b) their infants' health as less than excellent. As income category rises, so do affirmative results for these two outcomes. Mothers in the moderately inadequate category are far more likely to report their infants had been admitted to a hospital than mothers in either the inadequate or sufficient category. The authors contend that the lack of hospital admittance of infants in the inadequate income category likely owes to the mother's social isolation or lack of financial resources than to better infant health.

When conducting logistic regression to control for all variables, the authors find that inadequate and moderately inadequate income mothers are respectively 1.8 and 1.5 times more likely than sufficient income mothers to assess their babies' health as less than excellent. Those with very inadequate incomes are more likely to report a chronic health

problem, and those with a moderately inadequate income are again 1.8 times as likely as sufficient income mothers to have admitted their infants to a hospital.

Overall the study demonstrates family poverty has an effect on infant health over and above mother's education, family structure, duration of breast feeding, presence of neonatal complications, and mother's smoking. The lack of material resources is an important factor in the detrimental situation of poor infants.

This is a strong and clear study of the detrimental effects of poverty. It is possible selection bias – the poorest and least educated mothers as well as those who spoke no official language disproportionately were non respondents- in fact underestimates the impact of poverty.

Hardwyck and Patychuk (1999)

Three of the seven physical health studies examine the impact of risky sexual behaviour in low income youth. Hardwyck and Patychuk (1999) examine the association between poverty and teen births and STDs among 15-24 year olds. They use data gathered in the city of Toronto from a number of sources: the Health Planning System; Ministry of Health; Statistics Canada census, 1996; Reportable Disease Information System and the City of Toronto. The authors divide census tracts into five groups (quintiles) so that each group comprises an equal number of females 15-19 and rank them by percentage of families living in poverty (i.e. below Statistics Canada's Low Income Cut Off). Forty-four percent of families live in poverty in the highest quintile, 9% in the lowest.

They find the teen birthrate climbs along the socio-economic gradient such that it is 3.8 times higher in the lowest income areas than in the highest income areas (31.3% vs. 8.4%). Similarly, the rate of genital Chlamydia is 2.9 times higher among teens in the lowest income neighbourhoods than those in the highest quintile (2 034 cases/100 000 vs. 700 cases/100 000)

This study clearly shows the higher incidence of undesirable sexual outcomes in lower income areas in Metropolitan Toronto. It is limited insofar as Toronto is by far the largest and most multicultural Canadian urban environment. The results may only be generalisable to a few other Canadian contexts. Nonetheless, new immigrants in low income neighbourhoods appear to have fewer instances of these negative outcomes than native born Canadians, suggesting that results may be even starker in other urban settings. The study does not tell us if each individual case of teen pregnancy or Chlamydia is associated with a high poverty background; it only examines neighbourhood level poverty.

Shields, Jolly, Moses and Jeddy (2004)

Shields, Jolly, Moses and Jeddy (2004) also examine the prevalence and correlates of Chlamydia infection among a low income population. Their focus is street youth exclusively. They use a 'snowball sample' to recruit youth (15-24) from 'drop-in' centres, outreach work and mobile vans, and in seven Canadian urban centres (n=1 355). Nurses administer questionnaires to gather data about street youths' backgrounds, then take urine samples to test for infection. Although the study's purpose is not to compare

this low income group to higher income groups, the authors note in their discussion that the overall infection rate for street youth is almost nine times the rate of the general Canadian population of the same age.

Descriptive statistics show: 15-19 year old females are more at risk of infection than male peers (11.8 vs 6.4%), as are Aboriginals compared to non-Aboriginals (13.7% vs. 6.6%), and youth with no permanent home compared to youth with a permanent home (10.2% vs. 7%). Female Aboriginal and female homeless are far more at risk than their male peers.

Multiple logistic regression shows for females: being Aboriginal; having no permanent home; and having experienced foster care combine to double the likelihood of acquiring Chlamydia infection. These factors are not significant for males for whom the only factor is having had a social worker.

The study is relevant because street youth are clearly economically marginalized, and are shown to suffer Chlamydia infection at far greater rates than mainstream Canadians. Over and beyond their street youth status, they are even further at risk to the extent they are female, Aboriginal, and homeless.

The study is limited by its necessary use of non-random snowball sampling, non-verifiable self reports from street youth about their histories, and small numbers of positive cases upon which to build logistic regression models. Nonetheless it covers many Canadian cities, and tests for the infection are conducted medically, so are independently verifiable.

Singh, Darroch and Frost (2001)

Singh, Darroch and Frost (2001) explore the relationship between socio-economic disadvantage and adolescents' sexual and reproductive behaviour in Canada, France, Great Britain, Sweden and the United States. They do not specify the sources of their Canadian data, but use measures of income and poverty to create 'low,' 'medium,' and 'high' categories of economic status among the subjects in each country. They also employ a three tiered measure of educational attainment. Their dependent variables are adolescent sexual activity, and adolescent child bearing.

Analyses show more economic inequality in Canada than Sweden, but less inequality than the other three countries as measured by the ratio of proportion of income received by the top and bottom 20% of the population. Canada, however has a greater percentage of the population living below 50% of the median income than does Sweden or France. The study does not report on the relationship of economic status to adolescent childbearing in Canada. In Great Britain and the USA, females in the lowest economic category give birth in adolescence far more often than those in the highest (e.g. USA 40% vs. <8%). In Canada the least educated are shown to give birth in adolescence far more frequently than the most educated (42% vs <10%). Eighty-one percent of females in the lowest economic category had first intercourse before age of 20; about 70% of those in the highest had. The authors also report that more low than higher income adolescent

females had used a condom at last intercourse. The study is limited in its discussion of Canada and clarity about how data are gathered.

The final two studies are fairly comprehensive accounts of low income's relationship to health outcomes. Both cover physical and emotional health. Abernathy, Webster, and

Abernathy, Webster and Vermeulen (2002)

Abernathy, Webster and Vermeulen (2002) examine the pathways through which income adequacy affects health status. These pathways include: the physical environment; the social environment; access to health care; and individual behavioural and biological outcomes. Data are collected on youths aged 12-19 from the 1994 National Population Health Survey (NPHS) (n=1759). Populations on Indian reserves, military bases and remote regions of Quebec and Ontario are excluded.

'Income adequacy' is defined as all household income and categorized into five groups after adjusting for family size. 'Social environment' distinguishes between lone parent and other families, urban and rural dwellings, and includes a five point social support index. Physical environment is indicated only by the presence of a smoker in the home. Individual psychological outcomes include self-esteem, mastery, and distress; biological outcomes are smoking, alcohol use and physical activity. Respondents also report self assessed health and injuries, physician diagnosed disease, and use of and access to health care.

Bivariate analyses reveal the following correlations. Compared to living in a higher income group, living in the lowest of the five income groups is related to: being a younger adolescent; living with a smoker; living with a single parent; living with less social supports; living with less self esteem and sense of mastery; and, living with heightened sense of distress. Low income adolescents are more likely to be smokers themselves and less likely to be happy, interested in life, or physically active. The mean number of days spent in bed due to illness is twice as high in the lowest income group as the highest group and self rated health declines dramatically from the highest income group to the lowest. Seventy eight point five percent of the lowest income group has regular access to a doctor, compared to 94.7% of the highest income group; and, 8.3% of the lowest income group reports not receiving needed health care, compared to 2.2% of the highest income group. Lower income groups more frequently report not seeing a doctor in the previous 12 months; however, those in the lower income groups who do see doctors report doing so more frequently than those in high income groups.

When logistic regression is conducted to find the probability of low income adolescents vs. higher income adolescents of experiencing the outcomes listed above while controlling for all variables, only low self esteem, low sense of mastery and days in bed due to sickness were insignificant. All other outcomes were more likely in low income youth. When considering self-esteem, it was found that active low income youth had self-esteem comparable to higher income youth; indeed active low income youth had self esteem much higher than inactive high income youth.

The authors conclude that economic disadvantage cuts across many dimensions of health outcomes, many of which, such as access to health care, are amenable to policy interventions. The study appears very strong, with a large nationwide random sample, although it is based on data which are now nearly 12 years old.

Lipman, Offord and Boyle (1996)

Lipman, Offord and Boyle (1996) examine the effect of child poverty on psychosocial morbidity, a construct comprising: four measures of psychiatric disorder; poor school performance; chronic health problems; and, social impairment. They use data on children aged 6-16 from the 1983 Ontario Child Health Study (n=1 996), gathered from the reports of parents and teachers, and youths themselves between ages 12 and 16.

Thresholds for classifying a psychiatric disorder as present or absent based on these reports are made independently by child psychiatrists. The four psychiatric disorders are hyperactivity, emotional disorder, somatization, and conduct disorder. Poor school performance denotes grade failure or special class placement. Chronic health problems denote illnesses or conditions lasting more than six months. Social impairment denotes problems getting along with peers, teachers and family. Statistics Canada's low income cut offs are used as the threshold of poverty.

Results show strong associations between low income and all four measures of morbidity in the 6-16 year old age group. When this group is subdivided, low income 6-11 year olds are at greater risk than their non poor peers for any of the four psychiatric disorders, and for social impairment. They are 4.47 times more likely to suffer from conduct disorder, for example. By contrast, there is no statistical significance to the increased risk of psychiatric disorders among low income 12-16 year olds. This latter group however is 2.37 times more likely to have suffered from poor school performance than their non poor peers.

By considering the prevalence of poverty and the rate of morbidity in the whole sample, the authors calculate the 'attributable risk' of poverty on each of the outcomes. Here again there are differences between age groups. Among low income 6-11 year olds their poverty accounts for 36% of conduct disorder, 32% of emotional disorder and 26% of social impairment. By contrast among low income 12-16 year olds, their poverty accounts for less than 11% of attributable risk on all measures of morbidity, except poor school performance where it accounts for 21%. The findings show the increased risk to young children of low income. Other than school performance the risk attributable to low income for 12-16 year olds is not high. But for young children, particularly vis-à-vis psychiatric disorders, low income predicts negative outcomes.

This study illustrates the association between low income and poor outcomes but as a cross-sectional survey it establishes no causal link. It is unreasonable to assume that eliminating low income would by itself reduce incidences of poor outcomes by the percentages above. Problems with the validity of self reports also mitigate the

generalisability of the data. The data used are now quite old, so demographic changes in Ontario since 1983 may also limit its current relevance.

Employment Outcomes

Thiessen and Blasius (2001)

Only two studies directly address employment outcomes. Thiessen and Blasius (2001) explore the manner and the extent to which youth's social class, gender and geographic residence affect their mental images of work. The authors derive data from a 1989 study conducted in Halifax, Hamilton and rural Nova Scotia where youth were interviewed and parents surveyed (n=1209; female 569). Youth were asked to associate their fathers' mothers' and own expected work, and housework, with a list of attributes (e.g. 'dangerous,' 'enjoyable'). Social class of the youth was inferred from the occupations and job descriptions of their parents, and divided into 'middle class' comprising: professionals, semi-professionals, managers, supervisors and technicians; and, 'working class,' comprising all others.

The first finding indicates that contrary to expectations, working class male youth view dirty and dangerous work (i.e. manual work) as undesirable to the same degree as middle class male youth. Working class youth of both sexes and all geographic locations view their fathers' jobs as dirty or dangerous, whereas middle class children of both sexes and all geographic locations view their fathers' jobs as respected, rewarding, and enjoyable.

The class distinction holds but is not as strong for mothers' work which working class youth view it as 'boring' and 'dirty' rather than 'dangerous' and 'dirty.' Interestingly, for youth's own expected work, class is not a strong predictor of images, although working class males are a little more likely than middle class males to expect their jobs to be undesirable. Rather, gender tends to influence the expected attributes of one's job, and most youth tend to expect their job desirability to approximate typical male middle class professions.

This study only bluntly measures income inequalities, though it does indicate those with lower incomes are somewhat more likely to view their parents' occupations negatively. Interestingly, income inequality insofar as it can be inferred does not appear to affect youth's own aspirations. Nonetheless, the working class/middle class distinction is not nuanced and may contribute to the lack of differentiation between each group's aspirations. Furthermore, working class youth are quite different from those living in poverty, whom the author does not examine.

Oreopolous (2003)

Oreopolous (2003) measures the effect on adults of having been assigned to substantially different neighbourhood housing projects as youths. He compares those who grew up in large projects in Toronto's poorest neighbourhoods, 61% of residents living below LICOs, with those who grew up in projects in low/middle income areas, 25- 30% of residents living below the LICOs. Median household income in the large projects is about one third of that in the small project neighbourhoods. About 21% of all Toronto residents

live below the LICOS; thus, Oreopolous contrasts poor neighbourhood effects to low/middle income neighbourhood effects. Affluent neighbourhood effects are not examined.

He employs two strategies to determine the answer. First, he compares the means of the permanent incomes of individuals who had been randomly assigned to different housing projects. Secondly, he compares sibling outcomes with neighbour outcomes, to separate the effects of neighbours from families. Data are drawn from Toronto public housing administrative databases and income tax databases. The author links youths from the housing projects to their income tax information later in life.

First, Oreopolous finds significant differences in incomes for individuals who grew up in the two different neighbourhoods who did *not* live in one of the housing projects. Even when controlling for family variables, those raised in the 'better' neighbourhood have a mean income 17% higher than individuals from the poorer neighbourhood. Furthermore 30% fewer from the affluent neighbourhood receive welfare. Exposure to crime is far worse in the poorer neighbourhood.

However, youth from the poorer public housing projects exhibit no statistical difference in income or receipt of welfare from those hailing from the middle income housing projects. Nonetheless, while there is little variance *between* the samples from each neighbourhood, there is wide variance in income *within* each sample. The 85th percentile from the better neighbourhood receives \$43 802, from the poor neighbourhood \$43 503. Conversely, the fifteenth percentile from the better neighbourhood receives \$10 099, from the poorer neighbourhood \$10 133. When comparing correlations between sibling incomes and neighbour incomes, siblings are highly correlated while neighbours' correlations are negligible.

In sum, all findings speak to the importance of families in determining the long run labour market outcomes. The neighbourhood environment appears to have minimal effect. Not only is there negligible difference in outcomes between the samples from each neighbourhood, there is substantial variance in income within the sample from each neighbourhood and brothers' incomes are similar whereas neighbours' incomes are not. The author recommends policies aimed at improving child outcomes ought to focus on alleviating household distress and family circumstance rather than improving residential living conditions.

This study benefits from its longitudinal nature, and the quasi-experimental approaches comparing a) two different randomly selected neighbourhood samples (residents were assigned to their projects; they could not choose neighbourhoods) and b) siblings and neighbours. The use of administrative data rather than self-reports also give validity to the author's findings.

Implications

Despite the obvious association between low income or low socio-economic status and deleterious social outcomes evidenced here, other independent variables associated with low income mediate outcomes in many cases. Typically, these variables indicate family characteristics. For example, family structure, family functioning, positive parent-child interactions, and maternal mental health often account for more of the variance in outcomes than low income or socio-economic status do in isolation. Often, these family characteristics reduce income/SES effects to statistical insignificance.

The pre-eminent role of family characteristics is particularly notable in examinations of emotional health, and educational outcomes. For example, in academic educational outcomes the effects of neighbourhood poverty sometimes disappear completely with the addition of family variables (Kohen, Brooks-Gunn, Leventhal and Hertzman, 2002), and the effects of low family income are substantially reduced by positive family characteristics (e.g. Willms, 2002; Dooley and Stewart, 2004). Behavioural outcomes exhibit the same trend; family SES ceases to significantly predict outcomes with the addition of family characteristics variables (e.g. Hou & Ram, 2003; Romano, Tremblay, Boulerice & Swisher, 2005). And family characteristics may be most prevalent in determining emotional health (e.g. Kerr, 2004; Abernathy *et al.*, 2002; Hou & Ram, 2003; Beiser *et al.*, 2002). Finally, Oreopolous (2003) convincingly shows the power of the family in determining the long run labour market success of children.

Therefore, policy interventions may often be best aimed at improving family functioning or family environments. As Willms (2002) argues, we might think of childhood vulnerability as being less a problem stemming directly from poverty and more a problem stemming from the environments in which children are raised. Nonetheless, family characteristics are not shown to have the same degree of ameliorating effects on physical health outcomes (see for example, Seguin, Xu, Potvin, Zunzunuegi & Frolich, 2003; Dubois and Girard, 2003; Abernathy, Webster & Vermeulen 2002). It may be that direct income transfers are more appropriate in alleviating negative outcomes in this category; however, in some cases the studies do not test for family effects (e.g. Hardwyck & Patychuk, 1999); the fact that these effects are not shown does not mean they do not exist.

Studies employing measures of socio-economic status have been included in this review. SES usually includes an educational component, and in some studies it includes education but not income (e.g. Schiller, Khmelkov and Wang, 2002; Ma and Klinger, 2000; Willms, 2002). Therefore, it may be parental education more than parental income that contributes to the difference in outcomes in these studies. This seems particularly likely in the determining of educational outcomes (e.g. the studies cited above in this paragraph), but parental education may also be affecting health outcomes (e.g. Dubois & Girard, 2003). Therefore, access to educational opportunities may often be as important a solution as direct financial transfers when ameliorating the negative social consequences associated with low income.

Low income or SES clearly affects different identifiable groups in different ways. Poor male youth are more at risk of attack in school than poor female youth, but the opposite is true outside of school (Eisler & Scissel 2004). Young males are more at risk of negative emotional health and behavioural outcomes (e.g. Ma, 2002). Aboriginals are at especial risk in a number of categories including: gambling (Schissel, 2001); risk of STDs (Shields, Jolly, Moses and Jeddy, 2004); placement in foster care (Trocme, Knoke and Blackstock, 2004); and being victims of attack (Eisler & Scissel 2004). Immigrant youth seem to benefit from the protective effects of high SES to aid in acculturation (Kuo & Roysircar, 2004), especially when it is also found that poverty affects their mental health more than it does non-immigrants (Beiser, Hou, Hyman and Tousignant, 2002).

It is possible that low income is most detrimental to young children, given a number of studies that show health risks to infants under the age of three (Seguin, Xu, Potvin, Zunzunuegi and Frohlich, 2003; Dubois and Girard, 2003; Guttmann, Dick and To, 2004). Furthermore, Lipman, Offord and Boyle (1996) show low income 6-11 year olds at far greater risk than 12-16 year olds of psychiatric disorders; but conversely that the latter group is more at risk of poor school performance. Finally, there are different depths and types of poverty. Children of welfare-dependent families score below the children of the working poor in measures of cognition, and are more likely to have depressed mothers (Kornberger, Fast & Williamson, 2001). Furthermore, welfare dependent children are 228% more likely than the non-poor to experience academic failure by grade 6, compared to the children of the working poor who are 59% more likely (De Civita, Pagani, Vitaro and Tremblay, 2004).

In sum, the target populations of policy interventions need to be carefully considered. While some interventions, such as increased access to day care (e.g. Willms, 2002) may benefit all, clearly one-size-fits-all policy making will often be inappropriate.

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