![CRDCN / RCCDR — Canadian Research Data Centre Network / Réseau canadien des Centres de données de recherche]

CRDCN Synthesis Series

THE RELATIONSHIP BETWEEN INCOME AND CHILDREN'S OUTCOMES:

A synthesis of Canadian Evidence

By Annie McEwen and Jennifer Stewart

Higher income is found to improve a range of child outcomes but that improvement is quite small. Addressing inequalities in childhood, which create unequal chances for success later in life, will require policy that tackles more than only income as a source of disadvantage.

THE RELATIONSHIP BETWEEN INCOME AND CHILDREN'S OUTCOMES

A synthesis of Canadian Evidence

La version française de cette synthèse intitulée « Revenu et développement des enfants au Canada : Synthèse de la recherche » est disponible sur le site web du RCCDR.

The Canadian Research Data Centre Network (CRDCN) is a research infrastructure allowing access to Statistics Canada's microdata files to researchers with an approved research project. To know more about the Network, visit our website at www.rdc-cdr.ca

About this series

The Canadian Research Data Centre Network (CRDCN) knowledge synthesis series assesses the research undertaken through Research Data Centres and analyze its implications for key policy issues. Their specific objectives are to ensure that research results are absorbed by policy-makers and the public, to contribute to the development and adoption of knowledge-informed policy and to identify key evidence gaps.

The syntheses are peer reviewed and edited by Sarah Fortin (CRDCN) and Saul Schwartz (Carleton University). They are available in English and French on the website of the CRDCN.

About the authors

Annie McEwen is a PhD Public Policy candidate in the School of Public Policy and Administration (Carleton University) and **Jennifer Stewart** is Associate professor in the School of Public Policy and Administration (Carleton University).

Summary

Since the federal government introduced the first family allowance program in 1945, income transfers to families with children have been a basic social policy in Canada. Over the years, both Ottawa and the provinces have spent important sums of money in these kinds of programs. In 2011 only, federal transfers to families amounted to more than 12 billion dollars. Though prompted by a range of goals, a central expectation motivating these kinds of transfers is that higher family income will lead to better child outcomes, especially in low-income families.

Using Canadian evidence, including from longitudinal surveys, this synthesis critically examines this assumption. It provides a comprehensive but critical overview of this body of literature and draws implications for policy and future research: What can we really expect from public policies, such as child benefits, that increase household income? Do they really improve child outcomes? Overall, we identified 34 relevant Canadian studies, five of which used research designs or techniques to identify the causal impact of income. The paper also discusses key theoretical and methodological issues in this area of research.

In essence, what does this research tell us? All other things being equal, for most measures, it suggests that higher income improves a range of child outcomes (cognitive, behavioural, social and emotional) but that the improvement is small in magnitude. Much of the correlation between lower income and worse child outcomes is explained by other factors that often go along with low income; income itself has a relatively small influence on child outcomes when researchers account for other factors.

The evidence thus suggests that the causal effect of income on child outcomes is, in and of itself, quite small. From a policy perspective, this finding suggests that we cannot expect income transfers to low-income families to vastly improve child outcomes, and that focusing exclusively on income to close the gap between children from low- and higher-income families, via transfers or otherwise, is unlikely to be effective.

While our focus is on research attempting to identify the role of income in causing child outcomes, we also included non-causal research: these studies offer a more nuanced portrait and provides insight into the nature of the relationship between income and child outcomes, aside from statistical significance and magnitude of impact. In terms of public policy, these studies suggest that income transfers could be more effective if they were targeted:

- Income's effect on child outcomes is non-linear — an additional dollar of income has a larger effect on lower-income children —If the goal is to improve child outcomes, families with lower income should be given significantly more benefits than those with more income.
- Income's effect on child outcomes displays diminishing marginal returns — each additional dollar of income has a smaller impact on child outcomes than the previous dollar. The evidence suggests that income transfers will have no significant effect on child outcomes beyond a certain threshold (C$60,000 year). Currently, many child benefits are designed progressively and decrease as income increases, but many of these extend well past this threshold.
- Income matters more in the early years of life. Since early outcomes persist through childhood, child benefit policies should be differentiated based on age, with higher transfers for younger children.
- Income also affects the movement between positive and negative trajectories: poor outcomes are more persistent and have more deleterious long-term effects for lower-income children. Middle- and high-income children are not immune from poor outcomes, but they are much more likely to be on a trajectory toward positive outcomes than lower-income children.

Canadian research on the effect of income on child outcomes has come a long way in the past 20 years. Better data, better data availability, and advancing techniques have allowed for more sophisticated research. However, untangling the complex relationship between income and child outcomes remains a challenge and requires better data and more analysis. Notably, we need to do more to address the following knowledge gaps:

- Living in low income for a longer period of time is more strongly associated with worse child outcomes. We need to further explore how longer periods of low- income and how income dynamics throughout childhood affect children.
- Research so far has mostly focused on early childhood; we need to also examine older children outcomes in middle school and high school.
- Research so far has mostly focused on cognitive outcomes; we need to also collect data and analyze a wider range of non-cognitive outcomes, such as mental health and self-control.
- Some studies suggest that income has a different effect on some subsets of the population: for instance, income's effect is not gender-neutral; there are likely other caveats to income's effect when looking at other subsets of the population.

Unfortunately, there is no data set currently following Canadian children through from birth to adulthood. The National Longitudinal Survey of Children and Youth (NLSCY) - which followed the same children from 1994 to 2008 and proved essential to examine child development in Canada as this synthesis illustrates - is now inactive. While useful as part of a broader evidence base, findings from other national contexts can only be used with caution in the Canadian context given the importance of domestic institutions and policy arrangements such as public health care and public education; foreign experience is at best a last resort option.

If informing Canadian policy to help improve child outcomes and support intergenerational mobility is a key goal, then analyzing the experience of children within Canada must be a priority. And to do that, developing a high-quality national longitudinal survey that will follow children well into adulthood must be a priority.

Table of Content

4

Introduction

Since the introduction of Family Allowance in 1945, transferring income to families with children has been a basic social policy of Canadian governments. Transfers have been motivated by a range of goals including increasing fertility rate, redistributing wealth, and addressing a sense of moral obligation to children (Albanese 2010; Finkel 2006). However, a central expectation has been that increased family income will improve the lives of Canadian children, especially those in low-income families. Income transfers to families with children have seen major expansion in recent years. Federal expenditure on child benefits, including the National Child Benefit and the Universal Child Care Benefit, totalled approximately $12.7 billion in 2011, nearly double in real terms the $7.2 billion spent on child benefits in 1995 (Government of Canada 2012). Despite this major expenditure, more than 8 percent of Canadian children were living in low-income families in 2010 (Statistics Canada 2012), leading many child advocates to continue to campaign for increased child benefits (Campaign 2000 2012).

This research synthesis examines the Canadian evidence as to whether income transfers improve child development and well-being and weighs the available evidence to tell us what to expect from policies, such as child benefits, that increase household income. The policy implications are clear: if the research shows increased income results in improved child outcomes, then governments could design cash transfer policies to "level the playing field" between children of different backgrounds, increasing equality of opportunity. If it finds insubstantial or negative effects, then other, non-income policy approaches such as in-kind transfers, subsidies, or programmatic expenditure need to be considered to improve child well-being. The challenge is to determine not only whether higher income is associated with better child outcomes, such as test scores or behaviour, but also whether an increase in income will *cause* child outcomes to improve.

The introduction of longitudinal surveys, which follow the same children over time, has been essential to researchers examining questions in this area. The National Longitudinal Survey of Children and Youth (NLSCY) was the first source of national longitudinal data with which to examine this difficult question in Canada. Conducted by Statistics Canada in partnership with Human Resources and Skills Development Canada, the NLSCY was a study of Canadian children from 1994 to 2008 that collected information about a range of measures of children's social, emotional, cognitive, and behavioural development, as well as factors that may influence development, including socio-economic status (SES) and household income. The eighth and final cycle of data was released to researchers in December 2011, completing one of the most comprehensive longitudinal studies on child development in the world.[1]

This article synthesizes the Canadian evidence to date on the relationship between household income and multiple dimensions of child outcomes using longitudinal data including the NLSCY. Our aim is to provide a comprehensive but critical overview of this body of literature to draw implications for policy and future research.

Our method for selecting the studies is described in the box below.[2] Before we summarize the available evidence, we first discuss the concept of income, two broad theoretical models on child development, and the methodological challenges facing researchers in this area of research.

In essence, what does the research tell us? All other things being equal, for most measures, it is slightly better for a child to grow up with higher family income. However, rarely are "all other things equal." Much of the correlation between lower income and worse child outcomes is explained by other factors that often go along with low income—lower education, less employment, a risky neighbourhood.

Income itself has a relatively small influence on child outcomes when researchers account for other socio-economic factors. The evidence tells us that despite income being a useful predictor of childhood vulnerability, we cannot expect income transfers to low-income families to vastly improve child outcomes. From a policy perspective, this finding suggests that focusing exclusively on income to close the evident gap in outcomes between children from low- and higher-income families is unlikely to be effective.

Income and Child Outcomes: Theory and Measurement

Defining and Measuring Child Outcomes

In the research reviewed here, child outcomes are quantitative indicators of a child's status and development. They range from developmental milestones, such as development of motor skills, to measures of ability, such as reading proficiency, and indicators of well-being, such as self-esteem. The

---

Selection of studies

While our focus is on research attempting to identify the role of income in *causing* child outcomes, we include non-causal research which gives insight into the nature of the relationship between income and child outcomes. Focusing on understanding the causal relationship, this synthesis excludes analysis that uses only a cross-section of longitudinal data or is purely descriptive (e.g., Willms [2002] uses the first cycle of the NLSCY to describe the situation of Canada's "vulnerable children").

While we recognize the role of income as a social determinant of health (Marmot and Wilkinson 1999; Raphael 2009), we exclude health outcomes and physical measures. The literature we reviewed supports this exclusion—research tends to analyze health separately from other child outcomes and theorizes the relationship between income and health differently (Currie 2009).

Because informing Canadian policy is the goal, focusing attention on research that analyzes the experience of children within Canada must be a priority. Comparative research finds that, corresponding to different institutional and policy arrangements (e.g. health care and public schooling), the relationship between income and child outcomes varies between countries, both in the size and strength of the association (Bradbury et al. 2012; Burton, Phipps, and Zhang 2012). Thus, while useful as part of a broad evidence base, international research findings must be applied to other national contexts carefully, making this synthesis's focus on Canadian research particularly relevant for policy-makers.

To identify studies for inclusion in this synthesis, we first searched by data source to identify relevant studies. In addition to academic papers using the NLSCY, we also considered papers using the Étude longitudinale du développement des enfants du Québec (ELDEQ), the Ontario Child Health Survey, and linked data using the Early Development Instrument data at the provincial level.

We used a variety of search terms and engines to find them, including the Canadian Research Data Centre Network (CRDCN) online bibliography, Thomson Reuters Web of Knowledge, Social Sciences Citation Index, EconLit, Google Scholar, and IDEAS. Second, we considered the works cited in the studies included from the first search. For the studies of central relevance to the synthesis topic, we looked for subsequent studies that cited these key studies. Finally, we relied on authors' prior knowledge and networks to identify relevant research, both Canadian and international.

Overall, we identified 34 Canadian articles to include in this synthesis. Among these, five articles used research designs or techniques to identify the causal impact of income. In our synthesis of findings below, we examine these in greater depth before summarizing insights from the broader literature.[1]

research on child outcomes using survey data is naturally limited by what outcomes are observable, measurable, and available in data sets.

Child outcome variables differ in some key characteristics, including reporting objectivity, expected distribution, and discernibility of a "good" or "bad" outcome, making it difficult to meaningfully compare the effect of income across outcomes. We have left these normative judgments regarding the relative importance of various outcomes out of our review and instead clarified the outcome measure used in each study.

Defining Income

Income can be defined and measured in different ways. In general, net income is defined as the after-tax sum of employment earnings, public and private transfers, and investment income, as measured on an annual basis. In most of the data available, including the NLSCY, income is measured based on the respondent's reporting; therefore, it is subject to recall error, the measure may miss some types of income (e.g., under-the-table wages, proceeds of illegal activity, or private gifts), and it may be subject to errors introduced by rounding. Income does not necessarily measure wealth; an annual measure of income does not account for the ability to draw on savings and assets to supplement income or consider the cost of interest on debts.

Almost all studies focus on income measured at the household level, and few differentiate between the sources of income (e.g., benefits vs. salary). Source of income is an important distinction to make when applying research to policies designed to transfer income because changes in different sources of income may have different effects on children. For example, increased employment income could correspond to increased hours of work or stress for the parents, whereas increased benefits may be spent differently. The studies that differentiate the source of income will be highlighted in this synthesis. Taking into account this definition and measurement, the results from the studies reviewed here, for the most part, offer estimates of the effect of marginal changes in this annual flow income.

This synthesis looks at research on income rather than poverty. By most definitions, poverty is a broader concept than low income: it denotes a status in society and a lack of resources to participate in that society (Alcock 2006; Lister 2010). The link to income via resources is clear, and poverty is typically measured in reference to a relative or absolute amount of income deemed to be a "poverty line" or low-income threshold. The determination of these lines, however, is contested.[3] In many cases, the term poverty is used to signify low SES more broadly, which includes a wider range of variables than income or resources alone, such as education and occupational class.

Some studies included here look at low-income status or at the relative position in the income distribution (for instance, Baker 2011), but most examine the benefit of additional dollars of income. While low income and poverty are closely related, the findings on income's effect cannot necessarily be equated with a poverty effect, and doing so would likely understate the effect of the broader experience of poverty on child outcomes.

A common treatment of income in this area of research is to find measures of "permanent income," measured by averaging income over several periods (Blau 1999; Dooley and Stewart 2004, 2007; Duncan and Brooks-Gunn 1997; Mayer 1997; Phipps and Lethbridge 2006). This averaging is done for several reasons, but generally it is meant to find the best measure of resources available to a household. While not capturing wealth or saved assets, permanent income smooths short-term fluctuations and potentially corrects for single-cycle measurement error. Permanent income measures are usually found to be more strongly associated with child outcomes than income measured at a single point in time (Blau 1999; Phipps and Lethbridge 2006). Unless otherwise noted, in this synthesis income refers to

income measured at a point in time, capturing a flow of resources available during that period. This measure of current income is most relevant for estimating effects change in income, such as those affected by child benefit policy changes.

The effect of a dollar of income is likely to differ by household size, both because the dollar is split between more individuals and also because economies of scale exist; that is, two people can live more cheaply together than separately. Many household expenses, such as durable goods and some utilities, do not increase with additional household members. The research we review accounts for these likely savings associated with different family size in two different ways. One approach is to include controls for family size and family structure in the models to account for the difference in needs (Dooley and Stewart 2004, 2007; Roberts, Smith, and Nason 2001). Another approach is to adjust income by an equivalency scale so that an increase in income represents a similar increase across different family sizes (Phipps and Lethbridge 2006). Using equivalency scales to adjust household income assumes that income is pooled and shared equally among all household members regardless of individual contributions to total income.

Theory

Meaningfully interpreting the empirical research on incomes and outcomes for policy application begins with consideration of why or how income has an effect on children. Two broad theories of how income affects child outcomes dominate the literature: the family resources theory and the family process theory. Both of these theories are explained with reference to Figure 1.

Figure 1 Model of Theorized Relationship Between Income and Child Outcomes
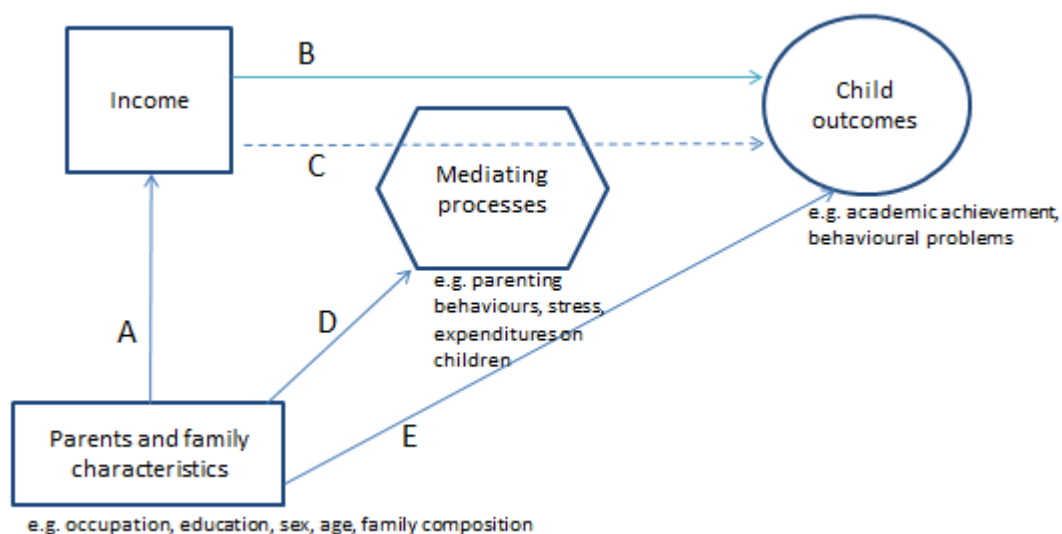
The family resources theory, also called child investment theory, posits that child outcomes are valued by families and are produced by the household through jointly dedicating resources and time (Leibowitz 1974; Becker 1981). Resources include nutritious food, material goods such as books and educational toys, and experiential goods like music lessons or sports. Lower income means fewer resources available for producing child outcomes, and the general prediction is that an increase in income will result in better child outcomes. However, it is also possible that a higher wage increases work and makes less time available for producing child outcomes. The ability of a household to turn resources and time into child outcomes will not depend only on the income level but also on characteristics of the household, such as educational level and parenting abilities. Family resources theory can be seen in

Figure 1 as one type of mediating process through which income indirectly influences child outcomes (the dashed line C passing through the octagon labelled Mediating Processes).

The family process model theorizes that lower income, and economic hardship in particular, affects family functioning, parenting behaviour, stress, and relationships (Duncan and Brooks-Gunn 1997). These lower levels of family functioning affect a variety of child outcomes (Conger, Conger, and Elder 1997; Duncan and Brooks-Gunn 1997; Yeung, Linver, and Brooks-Gunn 2002). In this theory, income is understood to affect child outcomes, not via resources dedicated to child outcomes, but through the effect of income level on family functioning. Like family resources theory, a family process model constitutes a mediating process, depicted in Figure 1 as the dashed line C passing through the octagon.

These models are not necessarily competing theories; the pathways by which income can influence child outcomes described in each model may exist simultaneously. Both models have been shown empirically to play a role in the correlation between income and various child outcomes using American data (Guo and Harris 2000; Yeung et al. 2002).[4]

Methodological Issues: Identifying the Effect of Income

Researchers have attempted to measure the total effect of income on child outcomes, represented by the solid line B in Figure 1. This total effect is the sum of the effect of income on the mediating process and the resulting effect of income via mediating processes on child outcomes. However, the estimated effect is rarely broken down into these two constituent parts because often the policy motivation is to know the total effect of an increase in transfers to families with children regardless of the pathway of effect.

The central theoretical and methodological challenge in identifying the effect of income on child outcomes is disentangling its effect from that of other characteristics with which it is highly correlated. As shown in Figure 1, parent and family characteristics, such as parental education, neighbourhood characteristics, attitudes of peers, and parents' attitude about education, may be correlated with income (line A) and may also affect child outcomes independently of income (line D). While some of these characteristics are measured in various surveys and their effect can be controlled for in the analysis, many are not. It is possible that these "unobserved characteristics" explain why higher income is often related with better child outcomes. For example, a parent endowed with a high ability in mathematics may earn a high income and pass this numerical ability onto his/her children. In measuring the relationship between parent income and the child's math scores, a researcher may not observe the parent's ability in math and may measure a strong correlation between income and math scores, when in fact the relationship is between a parent's ability and the child's ability (line D). Many such unobserved characteristics likely exist; therefore, it is difficult to conclude that income has a causal impact on child outcomes. To measure the effect of income independent of these unobserved characteristics, researchers must develop methodological strategies to properly identify what factor is having a causal effect. This synthesis focuses on papers that have used such strategies to identify a causal effect.

Synthesis Findings

Only five of the 34 Canadian studies isolated income effects from SES and unobserved characteristics to identify the causal effect of income on child outcomes (Dooley and Stewart 2004, 2007; Milligan and Stabile 2009, 2011; Phipps and Lethbridge 2006; Roberts et al. 2001). Echoing similar American studies (Blau 1999; Mayer 1997), they all find that income is statistically significant for many outcomes but has a small effect. We summarize the findings of these studies before reviewing relevant findings from the broader literature.

Roberts et al. (2001) use data from the first two cycles of the NLSCY to estimate the effect of income on children's cognitive and behavioural outcomes from ages 0 to 13. Their measure of income is an average over the first two cycles of the NLSCY. To examine whether a causal effect of income exists, they examine the effect of income on mediating measures of the "home environment" that would be expected to improve child outcomes, including parent-child interaction and child activities. They find that the home environment improves as income increases, providing a plausible pathway through which income may influence child outcomes, although they caution that they find "relatively moderate to weak associations" (Roberts et al. 2001, 37).

Dooley and Stewart (2004) use the first three cycles of the NLSCY and five different empirical strategies to estimate the impact of permanent and current income on child cognitive scores, accounting for unobserved characteristics correlated with income. They conclude that income has a positive effect on cognitive scores, but accounting for unobserved characteristics reduces the size of the estimated effect. In a similar paper, Dooley and Stewart (2007) estimate the impact of permanent and current income on behavioural and emotional scores for children using the same empirical strategies. Their results provide little support for the hypothesis that income has an effect on behavioural and emotional scores.

Milligan and Stabile (2009) exploit the 2001 decision by the Manitoba provincial government to end the "clawback" of social assistance benefits for transfers received through the National Child Benefit Supplement. This policy change allowed an increase in the income for families in receipt of social assistance. Comparing changes in child outcomes from before and after the policy change in Manitoba to changes in child outcomes in other provinces provides an opportunity to control for many unobserved characteristics. For families with high school or less education, a sample that is more likely to be affected by the changes in benefit level, they find an improvement in the MSD and behavioural and emotional scores.

Milligan and Stabile (2011) use six cycles of the NLSCY and exploit changes in federal and provincial child benefits during the late 1990s and early 2000s to estimate the impact of income on child outcomes. Changes in government benefits are exogenous to changes at the family level and are unlikely to be correlated with unobserved characteristics that could influence the total income received by a household; therefore, an estimated change in child outcomes from a change in government benefits is likely solely due to the increase in income, not other household factors. Again focusing on families with high school or less education, they find that benefits improve math scores and increase the probability of not being diagnosed with a learning disability. In contrast to Dooley and Stewart (2007), they find that benefits are related to an improvement in behavioural and emotional scores.

The results of these studies suggest that higher income improves a range of child outcomes but that the improvement is small in magnitude. This Canadian evidence, like that from elsewhere, informs the general consensus that lower income alone cannot explain the lower outcomes of children from lower SES backgrounds. The research in this area has also led to findings about the nature of the relationship between income and outcomes that are more nuanced than the magnitude of impact. Below, we review those findings that are relevant for future research and policy design.

Functional Form of Income

An increase in income for a family with a household income of C$10,000 is expected to have a different effect on child outcomes than the same increase for a family with a household income of $100,000. One reason to expect a difference is the possibility that income displays diminishing marginal returns—each additional dollar of income has a smaller impact on child outcomes than the previous dollar. Several studies have found that a difference of a dollar of income has a different (larger) effect for poorer

children (Blau 1999; Dooley and Stewart 2004, 2007; Duncan and Brooks-Gunn 1997; Phipps and Lethbridge 2006). Further evidence indicates the possibility of threshold effects; that is, the effect of income on child outcomes has a smaller effect after certain income thresholds. Dooley and Stewart (2004) find that after permanent household income reaches C$60,000, higher income has essentially no effect on cognitive outcomes.

Burton and Phipps (2008) find that income matters differently at different points in the outcome distribution. They examine the relationship between income and self-reported happiness of youth age 12–15 and find that while family income increases the likelihood of not reporting low levels of happiness, it does not predict the likelihood of being at the very top of the happiness distribution; income "appear[s] to matter for getting 'out of the bottom' but not for 'getting to the top.'" (365).

Age and Income

Several Canadian studies find persistence in outcomes over the course of childhood (Romano et al. 2010; Santos et al. 2012; Hoddinnott, Lethbridge, and Phipps 2002). Two related models of human development predict this persistence. The life course model (Elder, Johnson, and Crosnoe 2003) posits that there are key moments in the life cycle during which skills/abilities develop, and investment at these times is most beneficial. A second model is that any improvement will continue over time and promote larger subsequent growth, resulting in an accumulated advantage (Heckman 2000, 2006).

Research consistently supports the idea that income has a different effect at different ages, with generally a larger effect at younger ages. Phipps and Lethbridge (2006) show that every additional dollar in earlier childhood (up to age 7) has a larger effect for lower-income families than for higher-income families, while in later childhood the effect is the same regardless of income level. Caro, McDonald, and Willms (2009) examine how the academic achievement gap attributed to SES (not income alone) changes from childhood to adolescence. Their study shows that the early gap evident in school readiness persists through elementary school (through ages 7 to 11) at a relatively constant rate. Later, from ages 11 to 15, it widens at an increasing rate. There is also evidence that income has less of an effect later in life (Duncan and Brooks-Gunn 1997; Heckman 2006; Phipps and Lethbridge 2006). The longitudinal study of development of children in Quebec (Étude longitudinale du développement des enfants du Québec) found similar socio-economic gradients at school entry persisting through grade four (Desrosiers, Tétreault, and Boivin 2012).

Not only may income have an effect on outcomes at each point along the life course, but it may also affect the movement between positive and negative trajectories. Baker (2011) explores how developmental deficits of early childhood evolve over the life cycle for different levels of permanent household income. He finds that early poor outcomes are more persistent and have more deleterious long-term effects for lower-income children. Using the NLSCY, Baker finds that the higher the SES of a family, the more likely a child will move up from the bottom quintile of cognitive measures. A child from a bottom-quintile SES family who is in the bottom quintile of a cognitive test score distribution at ages 0–3 has a 43 percent chance of remaining in the bottom quintile for a math score distribution at ages 12–15. In contrast, if the child is from a top-quintile SES family, the probability of remaining in the bottom of the distribution is only 10 percent. While there is more mobility for all children in the distributions of behavioural outcomes, Baker finds that it is the cognitive measures that are more closely associated with later human capital indicators such as grade retention and high school dropout. Middle- and high-income children are not immune from poor outcomes, but they are much more likely to be on a trajectory toward positive outcomes than lower-income children.

Duration of Low Income

Alongside when during childhood income is most influential, the length of a period of low income may change income's influence on child outcomes. In Canada there is a fair amount of income mobility in and out of poverty (Statistics Canada 2012). Persistent periods of low income are less common than spells of poverty, though much of the mobility may be closely clustered around low-income cut-offs or poverty measures (Roberts et al. 2001). Unfortunately, there is very little Canadian research looking at how the duration of poverty affects children. Generally speaking, a consistently low income is strongly correlated with worse outcomes. Using the NLSCY, Hoddinnott et al. (2002) and Phipps and Lethbridge (2006) show that "permanent" measures of low income consistently correlate more strongly with outcomes than income measured in a single period. Using the first three cycles of the NLSCY, Jones et al. (2002) find that persistent (six-year) low income is related to lower child health, higher hyperactivity/inattention scores, and lower math scores. International research has also found that as the depth and duration of low income increase, so does the relationship between income and various child outcomes (e.g., Duncan and Brooks-Gunn 1997).

Differential Income Effects

The effect of income on outcomes also differs among children. Notably, for different outcomes, income's effect is not gender-neutral. Increases in income have a greater effect on cognitive outcomes for boys than for girls, and a yet higher effect on mental health outcomes for girls than for boys (Milligan and Stabile 2011). The gender difference in income effects is found throughout the international literature but has not been analyzed in the Canadian context.

Effect of Income Policies on Outcomes

As discussed in reference to income measurement, an additional dollar of earned or observed family income may have a different effect on children than a dollar of transferred income (e.g., child benefit), even when controlling for a host of socio-demographic factors. For this reason, several Canadian and foreign studies have tried to measure the influence of increased transfer income on child outcomes using randomized trials and analyzing the effects of policy variation.

The Self-Sufficiency Project was a randomized trial conducted in the 1990s regarding welfare-to-work policies for long-term welfare recipient single mothers in New Brunswick and British Columbia. The treatment group received a substantial earnings supplement for moving into paid work, nearly doubling their earnings and bringing them above the poverty line (Morris and Michalopoulos 2000). Data were collected on children's health, behaviour, and academic achievement for both treatment and control groups.

Three years after the beginning of the experiment, researchers found no cognitive effects for preschool children of mothers moving off welfare to higher-paid work, small positive cognitive effects for elementary school-age children, and small negative effects for older children (Morris and Michalopoulos 2000). These findings fit with an international meta-analysis of welfare-to-work experiments that found that employment and income changes affect different-aged children differently (Morris, Duncan, and Clark-Kauffman 2005). However, by the last follow-up observation of the children, nearly five years after the beginning of the project, researchers found no statistically significant difference in children's outcomes between the treatment group and the control group (Wilk et al. 2006).

This experiment was not able to distinguish the independent effects of increasing income, entering paid work, and exiting welfare, an important limitation that is noted by those evaluating the effects of the project on children (Wilk et al. 2006). In addition, only single-parent long-term welfare recipient

families were eligible for the program; thus, results cannot be generalized to two-parent families or to low-income families not on social assistance. The experiment did show small positive long-term effects for adults in the program, but in terms of child outcomes, there were no significant negative or positive effects for children when long-term social assistance recipients entered into paid work with their income significantly increased by earnings supplements.

The other major area where Canadian research has examined the effect of policy changes on children is work that analyzes the introduction of Quebec's universal subsidized daycare (Baker, Gruber, and Milligan 2008; Kottelenberg and Lehrer 2013; Lefebvre and Merrigan 2002; Lefebvre, Merrigan, and Roy-Desrosiers 2011). We have not included these studies as they do not focus directly on identifying income effects, though it should be noted that income has been identified as a factor related to whether the availability of low-cost daycare has an effect on child outcomes.

Summary of Findings

Income is just one of a wide range of factors involved in the complex process of child development. Through survey data analysis, we expect to only explain a fraction of the variation in child outcomes. At the simplest level we can say that, isolated from related socio-economic factors, income has a statistically significant but relatively minor influence on child developmental outcomes. This review has focused on Canadian research but finds that the evidence on the minor relationship between income and child outcomes fits closely with international findings, although research using Canadian data is crucial to accurately understanding policy effects in Canada.

Specifically, income matters less the more precisely or extensively researchers take into account the observed and unobserved characteristics correlated with income. In translating this evidence into policy implications, it is crucial to consider that characteristics correlated with income are often clustered together. While low income may be a good indicator of disadvantage, the causal effect of income alone is very small. Increasing income only, via transfers or otherwise, without changing other elements of family SES such as employment or parents' education, may not be an effective way to counter this disadvantage. To get a full picture of how the experience of coming from a household with lower income affects children, the cumulative effects of and interactions between socio-economic factors, including income, must be considered.

The body of Canadian research reviewed for this synthesis provides interesting findings about the nature of income's relationship with child outcomes, aside from statistical significance and magnitude. These findings include:

- Policy-driven income increases show small, if any, direct benefits for child outcomes measured in the research examined. This result does necessarily meant that income increases have in no way improved the lives of low-income families and children, but our interpretation of results must be constrained to the policy contexts and specific outcomes measured and examined in the research.
- Income's effect on child outcomes is non-linear; that is, an additional dollar of income has a greater effect on child outcomes on lower-income children. Though a socio-economic gradient may span the entire income distribution, income's effect on child outcomes plateaus as income increases.
- Longer time spent in low income is more strongly associated with worse child outcomes.
- Income matters more in the early years of life, and early outcomes persist through childhood.

- Research shows we need to be sensitive to differential income effects on subsets of the population. For example, we know boys and girls are affected by change in income differently, and there are likely other caveats to income's effect when looking at subsets of the population.

Policy Implications

The research reviewed in this synthesis provides evidence on the usefulness of income as a policy lever for improving child outcomes. It must be noted that child and family income policies are motivated by several different objectives besides this goal. There are both moral and rights-based arguments to be made for adopting a child poverty-reduction strategy regardless of its effect on child outcomes measured in quantitative surveys. Keeping that in mind, we return to our original policy question: what benefit to child development does the available evidence tell us to expect from policies that increase household income, such as federal and provincial child benefits? In general, the Canadian evidence reviewed here tells us, on average, to expect little improvement in child outcomes from policies that marginally increase income.

One particularly useful policy application of the research is how it might inform targeting of income policies. The evidence of non-linearity of income provides an outcome-oriented rather than redistributive rationale for progressive or targeted policy; if the policy goal is to improve child outcomes, families with lower incomes should be given significantly more benefits than those with more income. In addition, for children in families with middle to high incomes (above C$60,000 year), there is evidence to suggest income transfers will have no significant effect on child cognitive or behavioural outcomes. Currently, many child benefits are designed progressively and decrease as income increases, but many of these extend past what the evidence suggests is the threshold where income has an effect on child outcomes. For instance, the Universal Child Care Benefit of C$100 per month (taxable) is available to all families. In addition, differences in income's effect at different ages of childhood would suggest that child benefit policies be differentiated based on age, with higher transfers for younger children. Currently, the value of most Canadian child benefits is determined based on household income, with the same amount transferred for an infant as for a 17-year-old (with exceptions, including Alberta's child tax benefit[5]).

Low-income children are not the only ones to have poor outcomes; children from wealthier families also exhibit behavioural problems and poor cognitive outcomes. Poor early outcomes constitute a disadvantage for later life regardless of family income, though low-income children are less likely to move from poor to good outcomes (Baker 2011). While the evidence reviewed here suggests that income transfers will not help higher-income children, the existence of poor outcomes among children of different backgrounds suggests that policies and programs to improve child outcomes cannot be targeted only by income level if the aim is to reach all children demonstrating poor outcomes.

Again, we must emphasize that these policy implications relate to income effects, holding constant other socio-economic factors. The cumulative benefits of higher SES are not captured here, though we know from research that examines the relationship between SES and a wider range of outcomes, that the cumulative effect of low SES is significant. Designing policy frameworks that address or mitigate the disadvantage posed by these other SES factors, (e.g., unemployment, low parental education) is likely to be more effective than using income alone. However, income is related to a range of outcomes, and small changes across a range of outcomes may justify an increase in income transfers.

Research Gaps and Future Data Needs

Canadian research on the effect of income on child outcomes has come a long way in the past 20 years. Better data, better data availability, and advancing techniques have allowed for more sophisticated research. However, untangling the complex relationship between income and child outcomes remains a challenge and requires better data and more analysis.

Canadian research in child outcomes has been, and continues to be, significantly constrained by a lack of data. There is no ongoing national survey of children like those in several other countries. Provincial efforts to collect data, such as the Early Development Instrument (EDI), tend to be either cross-sectional or have inadequate individual household information (including on income) to facilitate research on income or SES effects at the individual level. Currently, there is no Canadian data set that follows children through from birth to adulthood. The NLSCY, now inactive, followed children for 16 years, but researchers must rely on relatively few international studies to make the link from childhood to adult outcomes. Without a high-quality national longitudinal survey, we can only speculate about the current well-being and development of Canadian children.

Canadian research to date has focused on outcomes early in childhood; we know more about child outcomes at school entry than we do about children in middle school and high school. This situation is related to the data constraints, but it is also a result of theories stressing the importance of the early years. Because policies affect all children, we need more research about the upper years of childhood to make informed policy decisions to best serve older children or to guide "investment" policy that aims at improving longer-term outcomes.

Aside from data constraints, current analysis neglects some policy-relevant questions, notably differential effects of income for different subpopulations and at different points in the outcome distribution. This issue has recently been examined with respect to child-care effects (Kottelenberg and Lehrer 2013) and for movement between relative positions in various outcome distributions (Baker 2011). More analysis of differential effects on child outcomes and the ways income affects different subsets of the population could better inform the discussion about policy targeting versus universality.

While the NLSCY marked the beginning of interesting national longitudinal analysis, it has been mostly used cross-sectionally rather than longitudinally. The two-year gap between NLSCY collection cycles has been a barrier to effective longitudinal analysis as there is missing information about every other year of a child's life. Overall, further and longer longitudinal analyses would improve our understanding of the longer-term effects of income and the potential effects of income dynamics, changes in income levels, throughout childhood.

The research reviewed here focused heavily on cognitive and behavioural outcomes, with little coverage of other potentially important child outcomes. Growing international research has shown that non-cognitive development in childhood (e.g., self-control and mental health) may be more influential on adult outcomes, including post-secondary educational attainment and employment (Heckman 2000, 2006; Tough 2012). Both because they are important to later outcomes and because they give a more holistic picture of immediate child well-being, data collection and research on a wider range of non-cognitive outcomes should be a future priority in Canada. For instance, only one of the studies included in our review looked at the effect of income on child hunger (Milligan and Stabile 2011).

As discussed above, theorizing and researching how income affects child outcomes are crucial for considering policy design that aims to improve outcomes. International research has sought to

empirically test the theories of family investment and family functioning (e.g., Guo and Harris 2000; Yeung et al. 2002). Many Canadian studies have used these theories to explain their findings and do not actually test them (Dooley and Stewart 2007; Jones et al. 2002; Thomas 2006). Pathways mediating income's effect, marked by variables such as parenting skills and extracurricular activities, also suggest policy approaches other than income transfers to improve outcomes. For example, if income's effect on cognitive outcomes is mediated by participation in extracurricular activities, policy that directly funds these activities may offer a more efficient approach to increasing cognitive outcomes than income transfers.

Conclusion

The rationale for income transfers to children in low-income families can at times appear self-evident. We do not need rigorous data analysis to tell us that children from less-well-off parents tend to fare less well. At a purely correlational level, approximately 23 percent of the variation in adults' incomes in Canada can be predicted by their parents' income (Corak, Curtis, and Phipps 2011). This level of intergenerational mobility is much better than that of many other countries, including the United States, but it shows roots of inequality in childhood and the potential long-term consequences of childhood household income. As the body of research reviewed here demonstrates, we need to consider more than simple correlations and to try to unpack the multiple sources and pathways of SES's effect on a range of child outcomes if we are to design policy to improve and equalize child outcomes. Moving forward, the lack of national longitudinal data collection on children in Canada will thwart efforts to understand changes in intergenerational mobility. Given the importance of domestic institutions such as public health care and public education, Canada cannot rely on international data to understand these phenomena.

This synthesis has focused on income as one key element of SES that is the major focus for policy addressing childhood inequalities, most evidently in the case of child benefits. The Canadian research reviewed here tells us that despite income being a key indicator of SES, and SES being highly correlated with child outcomes, income alone has a relatively minor substantive effect on children's cognitive, behavioural, and social/emotional outcomes. Addressing inequalities in childhood, which create unequal chances for success later in life, will require policy that tackles more than only income as a source of disadvantage.

References

Albanese, P. 2010. *Child Poverty in Canada*. Oxford: Oxford University Press.

Alcock, P. 2006. *Understanding Poverty*. New York: Palgrave MacMillan.

Baker, M. 2011. "Innis Lecture: Universal Early childhood Interventions: What Is the Evidence Base?" *Canadian Journal of Economics* 44 (4): 1069-1105.

Baker, M., J. Gruber, and K. Milligan. 2008. "Universal Childcare, Maternal Labour Supply, and Family Well-Being." *Journal of Political Economy* 116 (4): 709-45.

Becker, G.S. 1981. *A Treatise on the Family*. Cambridge, MA: Harvard University Press.

Blau, D. 1999. "The Effect of Income on Child Development." *Review of Economics and Statistics* 81 (2): 261-76.

Bradbury, B., M. Corak, J. Waldfogel, and E. Washbrook. 2012. "Inequality in Early Childhood Outcomes." In *From Parents to Children: The Intergenerational Transmission of Advantage*, ed. J. Ermisch, M. Jänti, and T.M. Smeeding, 87-119. New York: Russell Sage Foundation.

Burton, P., and S. Phipps. 2008. "Economic Resources, Relative Socioeconomic Position and Social Relationships: Correlates of the Happiness of Young Canadian Teens." *Child Indicators Research* 1 (4): 350-71.

Burton, P., S. Phipps, and L. Curtis. 2002. "All in the Family: A Simultaneous Model of Parenting Style and Child Conduct." *American Economic Review* 92 (2): 368-72.

Burton, P., S. Phipps, and L. Zhang. 2012. "From Parent to Child: Emerging Inequality in Outcomes for Children in Canada and the U.S." *Child Indicators Research* 6 (2): 1-38.

Campaign 2000. 2012. *Needed: A Federal Action Plan to Eradicate Child and Family Poverty in Canada.* Toronto: Campaing 2000. Accessed 10 February 2013 at http://www.campaign2000.ca/reportCards/national/C2000ReportCardNov2012.pdf.

Caro, D., J.T. McDonald, and D.J. Willms. 2009. "Socio-economic Status and Academic Achievement Trajectories from Childhood to Adolescence." Canadian Journal of Education 32 (3): 558-90.

Conger, R.D., K.J. Conger, and G.H. Elder. 1997. "Family Economic Hardship and Adolescent Adjustment: Mediating and Moderating Processes." In *Consequences of Growing Up Poor*, ed. G.J. Duncan and J. Brooks-Gunn, 288-310. New York: Russell Sage Foundation.

Corak, M., L. Curtis, and S. Phipps. 2011. "Economic Mobility, Family Background, and the Well-Being of Children in the United States and Canada." In *Persistence, Privilege, and Parenting*, ed. T.M. Smeeding, R. Erikson, and M. Jänti, 73-108. New York: Russell Sage Foundation.

Currie, J. 2009. "Healthy, Wealthy, and Wise: Socioeconomic Status, Poor Health in Childhood, and Human Capital Development." *Journal of Economic Literature* 47 (1): 87-122.

Desrosiers, H., K. Tétreault, and M. Boivin. 2012. "Caractéristiques démographiques, socioéconomiques et résidentielles des enfants vulnérables à l'entrée à l'école." *Portraits et Trajectoires*, no. 14. Institut de la statistique du Québec.

Dooley, M., and J. Stewart. 2004. "Family Income and Child Outcomes in Canada." *Canadian Journal of Economics* 37 (4): 898-917.

——. 2007. "Family Income, Parenting Styles and Child Behavioural-Emotional Outcomes." *Health Economics* 16 (2): 145-62.

Duncan, G.J., and J. Brooks-Gunn, eds. 1997. *Consequences of Growing Up Poor*. New York: Russell Sage Foundation.

Elder, G.H., M.K. Johnson, and R. Crosnoe. 2003. "The Emergence and Development of Life Course Theory." In *Handbook of the Life Course*, ed. J.T. Mortimer and M.J. Shanahan, 3-19. New York: Springer.

Finkel, A. 2006. *Social Policy and Practice in Canada: A History*. Waterloo: Wilfrid Laurier University Press.

Government of Canada. 2012. "Public Accounts of Canada 1995–2011." Accessed 10 February 2013 at http://www.tpsgc-pwgsc.gc.ca/recgen/cpc-pac/index-eng.html.

Guo, G., and K.M. Harris. 2000. "The Mechanisms Mediating the Effects of Poverty on Children's Intellectual Development." *Demography* 37 (4): 431-47.Hao, L., V.J. Hotz, and G.Z. Jin. 2008. "Games Parents and Adolescents Play: RiskyBehaviour, Parental Reputation and Strategic Transfers." *Economic Journal* 118 (528): 515-55.

Heckman, J.J. 2000. "Policies to Foster Human Capital." *Research in Economics* 54 (1): 3-56.

——. 2006. "Skill Formation and the Economics of Investing in Disadvantaged Children." *Science* 312 (5782): 1900-1902.

Hoddinnott, J., L. Lethbridge, and S. Phipps. 2002. *Is History Destiny? Resources, Transitions and Child Education Attainments in Canada*. Ottawa: Human Resources Development Canada.

Jones, C., L. Clark, J. Grusec, R. Hart, G. Plickert, and L. Tepperman. 2002. "Poverty, Social Capital, Parenting and Child Outcomes in Canada." *Working paper*, Applied Research Branch of Strategic Policy. Ottawa : Human Resources Development Canada.

Kottelenberg, M.J., and S.F. Lehrer. 2013. "New Evidence on the Impacts of Access to and Attending Universal Child-Care in Canada." *Canadian Public Policy* 39 (2): 263-86.

Lefebvre, P., and P. Merrigan. 2002. "The Effect of Childcare and Early Education Arrangements on Developmental Outcomes of Young Children." *Canadian Public Policy* 28 (2): 159-86.

Lefebvre, P., P. Merrigan, and F. Roy-Desrosiers. 2011. "Quebec's Childcare Universal Low Fees Policy 10 Years After: Effects, Costs and Benefits." *Working paper Series*, Centre Interuniversitaire sur le Risque, les Politiques Economiques et l'Emploi (CIRPEE), Montreal. Accessed 15 June 2013 at http://ideas.repec.org/p/lvl/lacicr/1101.html.

Leibowitz, A. 1974. "Home Investments in Children." *Journal of Political Economy* 82 (S2): S111-S131.

Lister, R. 2010. Poverty. Bristol: Policy Press.

Lizzeri, A., and M. Siniscalchi. 2008. "Parental Guidance and Supervised Learning." *Quarterly Journal of Economics* 123 (3): 1161-95.

Marmot, M.G., and R.G. Wilkinson. 1999. *Social Determinants of Health*. New York: Oxford University Press.

Mayer, S.E. 1997. *What Money Can't Buy: Family Income and Children's Life Chances*. Cambridge, MA: Harvard University Press.

Milligan, K., and M. Stabile. 2009. "Child Benefits, Maternal Employment, and Children's Health: Evidence from Canadian Child Benefit Expansions." *American Economic Review* 99 (2): 128-32.

——. 2011. "Do Child Tax Benefits Affect the Wellbeing of Children? Evidence from Canadian Child Benefit Expansions." *American Economic Journal: Economic Policy* 3 (3): 175-205.

Morris, P., G.J. Duncan, and E. Clark-Kauffman. 2005. "Child Well-Being in an Era of Welfare Reform: The Sensitivity of Transitions in Development to Policy Change." *Developmental Psychology* 41 (6): 919-32.

Morris, P., and C. Michalopoulos. 2000. *The Self-Sufficiency Project at 36 Months: Effects on Children of a Program That Increased Parental Employment and Income.* Ottawa: Social Research and Demonstration Corporation. Accessed 10 February 2013 at http://www.srdc.org/uploads/EngSSPChildOutcomes.pdf

Phipps, S., and L. Lethbridge. 2006. "Income and the Outcomes of Children." *Analytical Studies Branch Research Paper Series*, Ottawa: Statistics Canada.

Raphael, D. 2009. *Social Determinants of Health: Canadian Perspectives*. Toronto: Canadian Scholar's Press.

Roberts, P., P. Smith, and H. Nason. 2001. "Children and Familial Economic Welfare: The Effect of Income on Child Development." *Working paper*, Applied Research Branch of Strategic Policy. Ottawa; Human Resources Development Canada.

Romano, E., L. Babchishin, L. Pagani, and D. Kohen. 2010. "School Readiness and Later Achievement: Replication and Extension Using a Nationwide Canadian Survey." Developmental Psychology 46 (5): 995-1007.

Santos, R., M. Brownell, O. Ekuma, T. Mayer, and R. Soodeen. 2012. "The Early Development Instrument (EDI) in Manitoba: Linking Socioeconomic Adversity and Biological Vulnerability at Birth to Children's Outcomes at Age 5." Winnipeg: Manitoba Centre for Health Policy. Accessed 10 February 2013 at http://earlylearning.ubc.ca/documents/285/

Statistics Canada. 2012. "Income of Canadians 2010." Ottawa: Statistics Canada. Accessed 10 February 2013 at http://www.statcan.gc.ca/pub/75-202-x/75-202-x2010000-eng.htm

Thomas, E. 2006. "Readiness to Learn at School among Five-Year-Old Children in Canada." Children and Youth Research Paper Series, Statistics Canada, Ottawa.

Tough, P. 2012. How Children Succeed: Grit, Curiosity, and the Hidden Power of Character. Boston: Houghton Mifflin Harcourt.

Weinberg, B.A. 2001. "An Incentive Model of the Effect of Parental Income on Children." Journal of Political Economy 109 (2): 266-80.

Wilk, P., M.H. Boyle, M. Dooley, and E.L. Lipman. 2006. "The Effect of the Self-Sufficiency Project on Children." Social Research and Demonstration Corporation Working Paper Series 06-09, Toronto. Accessed 10 February 2013 at http://www.srdc.org/uploads/wilk_et_al-2006.pdf

Willms, D.J. 2002. Vulnerable Children. Edmonton: University of Alberta Press.

Yeung, W.J., M. Linver, and J. Brooks-Gunn. 2002. "How Money Matters for Young Children's Development: Parental Investment and Family Processes." Child Development 73 (6): 1861-79.

Notes

---

[1] Since the termination of the NLSCY, Canada has not collected any national longitudinal data specifically on children, unlike most other OECD, such as in the United States: the Early Childhood Longitudinal Study, and Children of the National Longitudinal Survey of Youth 1979; the United Kingdom: Millennium Cohort Study and the 1958 National Child Development Study; Australia: the Longitudinal Study of Australian Children; and New Zealand: Growing Up in New Zealand.

[2] To know more about these studies, consult the annoted bibliography that we prepared in support of this synthesis and available at: www-rdc-cdr.ca

[3] Canada has no official poverty line, and multiple measures of low income are calculated by Statistics Canada.

[4] The relationship depicted in Figure 1 displays a one-way relationship, with household income affecting child outcomes; however, child outcomes may also affect income or the ways income is expended. Recent work has also looked at dynamic models of the interaction between parents and children and may have interesting implications for research on the effect of income (see, for example, Weinberg 2001; Hao, Hotz, and Jin 2008; Lizzeri and Siniscalchi 2008; Burton, Phipps, and Curtis 2002).

[5] Alberta has chosen to vary the amount of the basic benefit of the CCTB that its residents receive, giving more to older children. http://www.cra-arc.gc.ca/bnfts/cctb/fq_pymnts-eng.html#q7 Accessed March 2014.