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# THE IMPORTANCE OF POVERTY Early in Childhood

## Introduction

Using a poverty line set at 60% of New Zealand's median national income, nearly one in five New Zealand children (19%) was poor in 2011 (Figure 1, based on Perry, 2012). This poverty rate is considerably less than that of the United States and Canada, similar to that of Australia, the United Kingdom, Germany and France, and much greater than in Scandinavian countries. These rates are far from immutable; New Zealand's child poverty rate was much higher in 2004 before social policies were enacted which focused, in part, on the country's child poverty problem.

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Not all social scientists agree that poverty should be defined solely on the basis of income and family size; some instead argue for the utility of indicators based on material hardship. Townsend described poverty as income insufficient to enable individuals to 'play the roles, participate in the relationships, and follow the customary behaviour which is expected of them by virtue of their membership of society' (Townsend, 1992, p.10), and directed his research towards determining income levels that correspond to low scores on a 'deprivation index'. Using a list of 16 deprivation indicators, roughly one in five New Zealand children are deprived on at least six of the indicators (Figure 2, taken from Perry, 2012). This level of deprivation is a third higher than that for adults aged 25 to 64 and three times higher than that for New Zealand's elderly population (Figure 2).

Poor children begin school well behind their more affluent age mates, and, if anything, lose ground during the school years. On average, poor kindergarten children have lower levels of reading and maths skills and are rated by their teachers as less well behaved than their more affluent peers (Duncan and Magnuson, 2011). Children from poor families also go on to complete less schooling, work less and earn less than others.

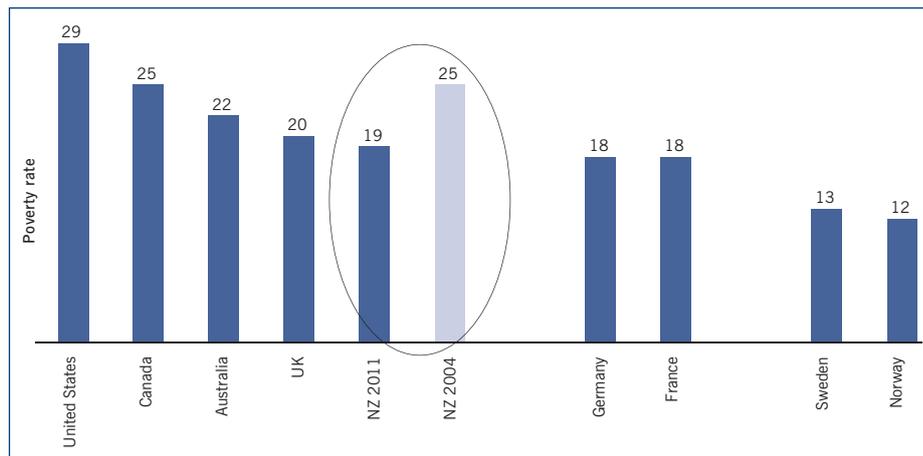
Social scientists have been investigating links between family poverty and subsequent child outcomes for decades. Yet careful thought about the timing of economic hardship across childhood and adolescence is almost universally neglected. Emerging research in neuroscience and developmental psychology suggests that poverty early in a child's life may be particularly harmful because the astonishingly rapid development of young children's brains leaves them sensitive (and vulnerable) to environmental conditions.

After a brief review of possible mechanisms and the highest-quality evidence linking poverty to negative childhood outcomes, we highlight emerging research linking poverty occurring as early as the prenatal year to adult outcomes as far as the fourth decade of life. Based on this evidence, we discuss how policy might better focus on poverty occurring very early in the childhoods of the poor.

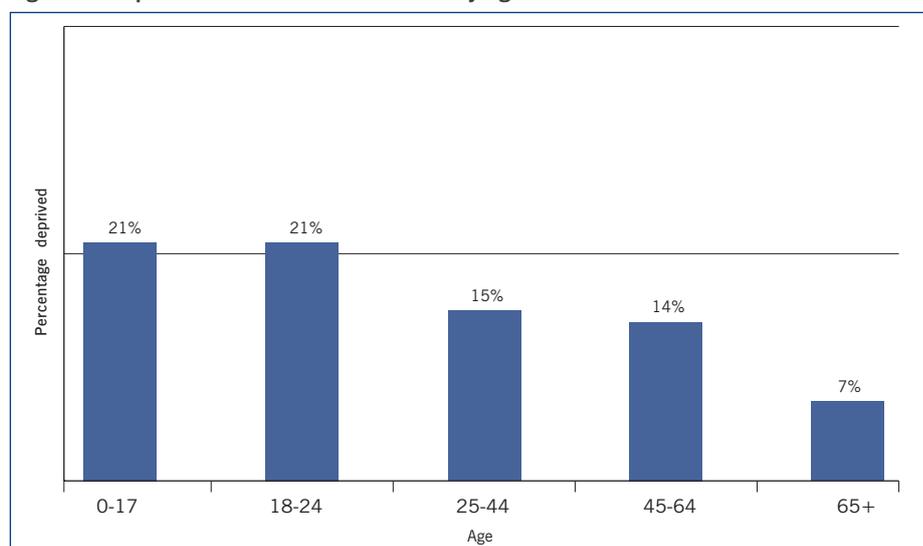
**Poverty and its consequences for children**

What are the consequences of growing up in a poor household? Economists, sociologists, developmental psychologists and neuroscientists emphasise different pathways by which poverty may influence children's development (Figure 3). Economic models of child development focus on what money can buy (Becker, 1981). They view families with greater economic resources as being better able to purchase or produce important 'inputs' into their young children's development (e.g. nutritious meals; enriched home learning environments and childcare settings outside the home; safe and stimulating neighbourhood environments), and higher-quality schools and post-secondary

**Figure 1: Income-based child poverty rates (%), 60% of median, in New Zealand and other countries**

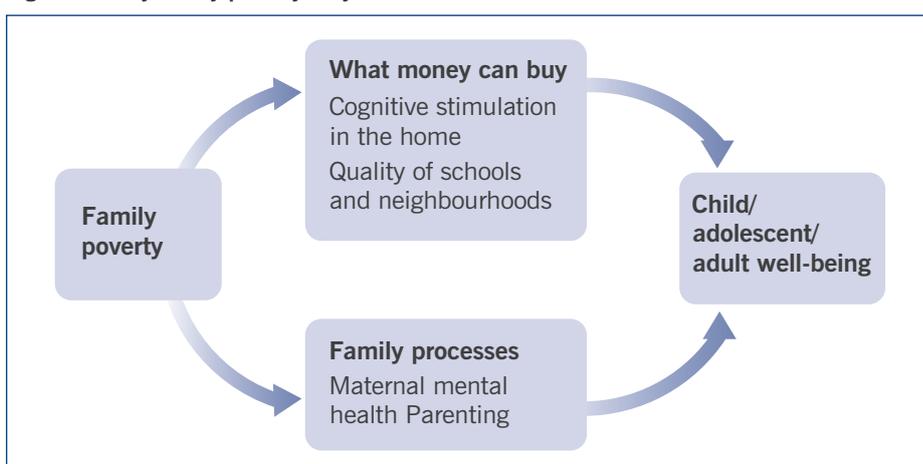


**Figure 2: Deprivation (6+ of 16 indicators) by age in New Zealand**



Source: Perry (2012)

**Figure 3: Why family poverty may hurt children**



education for older children. The cost of the inputs and family income constraints are therefore the key considerations for understanding poverty's effects on children.

Psychologists and sociologists point to the quality of family relationships to explain poverty's detrimental effects on children (Chase-Lansdale and Pittman, 2002). These theoretical models point out that higher incomes may improve

parents' psychological well-being and their ability to engage in positive family processes, in particular high-quality parental interactions with children. A long line of research has found that low-income parents are more likely than others to use an authoritarian and punitive parenting style and less likely to provide their children with stimulating learning experiences in the home. Poverty and economic insecurity take a toll on a parent's mental health, which may be an important cause of low-income parents' non-supportive parenting. Depression and other forms of psychological distress can profoundly affect parents' interactions with their children. But, as we argue below, it is not just the fact that these relationships exist that matters, but when.

### **Intensive programmes aimed at providing early care and educational experiences for high-risk infants and toddlers also support the idea that children's early years are a fruitful time for intervention.**

#### **Why early poverty may matter most**

It is not solely poverty that matters for children's outcomes, but also the timing of child poverty. For some outcomes later in life, particularly those related to achievement skills and cognitive development, poverty early in a child's life may be especially harmful. Emerging evidence from human and animal studies highlights the critical importance of early childhood for brain development and for establishing the neural functions and structures that will shape future cognitive, social, emotional and health outcomes (Knudsen et al., 2007; Sapolsky, 2004). Moreover, neuroscience studies show strong correlations between socio-economic status and various aspects of early brain function (e.g. Farah et al., 2006; Kishiyama et al., 2009).

Cunha and Heckman (2007) posit a cumulative model of the production of human capital which allows for the possibility of differing childhood

investment stages as well as roles for the past effects and future development of both cognitive and socio-emotional skills. In this model, children have endowments at birth of cognitive potential and temperament which reflect a combination of genetic and prenatal environmental influences. The Cunha and Heckman model highlights the interactive nature of skill-building and investments from families, preschools and schools, and other agents. It suggests that human capital accumulation results from 'self-productivity' – skills developed in earlier stages bolster the development of skills in later stages – as well as the dynamic complementarity that results when skills acquired prior to a given investment increase the productivity of that investment. These two principles

are combined in the hypothesis that 'skill begets skill'. This model leads to the prediction that economic deprivation in early childhood creates disparities in school readiness and early academic success that widen over the course of childhood.

Intensive programmes aimed at providing early care and educational experiences for high-risk infants and toddlers also support the idea that children's early years are a fruitful time for intervention. The best known of these are the Abecedarian programme, which provided a full-day, centre-based educational programme for children who were at high risk of school failure, starting in early infancy and continuing until school entry (Campbell et al., 2002), and the Perry Preschool programme, which provided one or two years of intensive centre-based education for preschoolers (Heckman et al., 2010). Both of these programmes have been shown to generate

impressive long-term improvements in subsequent education and employment. Perry also produced large reductions in adult crime.

#### **A causal story?**

Regardless of the timing of low income, isolating its causal impact on children's well-being is difficult. Poverty is associated with other experiences of disadvantage (such as poor schools or being raised by a single parent), making it difficult to know for certain whether it is poverty per se that really matters or other related experiences.

The only large-scale randomised interventions to alter family income directly were the US negative income tax experiments, which were conducted between 1968 and 1982 with the primary goal of identifying the influence of guaranteed income on parents' labour force participation. Maynard and Murnane (1979) found that elementary school children in the Gary, Indiana experimental group (whose families enjoyed a 50% boost in family income from the programme) exhibited higher levels of early academic achievement and school attendance than the control group. No test score differences were found for adolescents, although youth in the experimental group did have higher rates of high school completion and educational attainment. Maynard (1975) analysed data from two rural sites – in North Carolina and Iowa – and found test score gains for second- through eighth-graders in North Carolina but not Iowa.

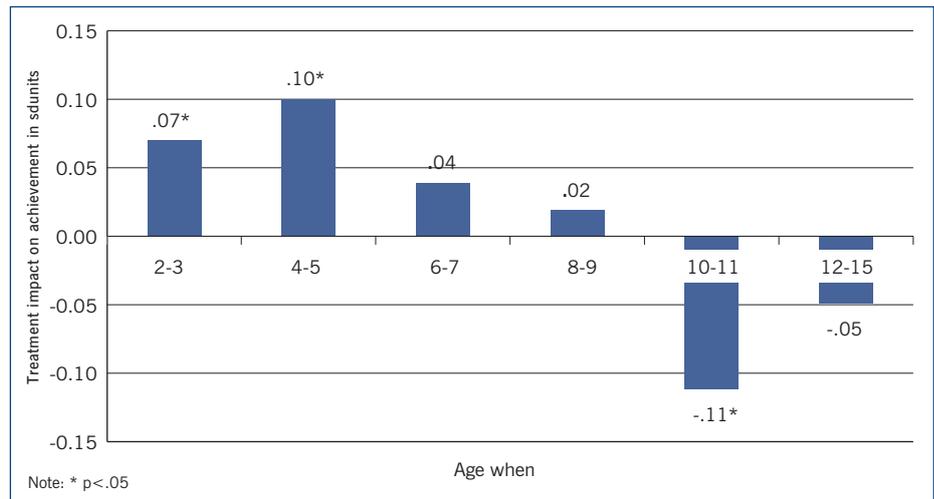
None of the results from the negative income tax experiments bears on the 'early is better' hypothesis, since none tracked the possible achievement impacts on preschool children. Welfare reform programmes undertaken during the 1990s provided income support to some working poor parents through wage supplements, and their experimental evaluations measured the test scores of both school-aged children and children who had not yet entered school when the programmes began (Morris et al., 2005). Data came from seven random-assignment welfare and anti-poverty policies, all of which increased parental

employment, while only some increased family income. All lasted between two and three years. The impacts of these programmes on children's school achievement varied markedly by age (Figure 4). Consistent with the idea that poverty early in childhood may matter the most, treatment-group children between the ages of two and five when the programmes began, most of whom would be making the transition into elementary school during or shortly after the programmes were in operation, scored significantly higher on achievement tests than their control group counterparts. A more sophisticated analysis of the data on younger children suggests that a \$3,000 annual income boost is associated with about one-fifth of a standard deviation gain in achievement test scores (Duncan, Morris and Rodrigues, 2011).

Strong evidence can sometimes be derived from non-experimental studies that take care to ensure they are comparing families who differ in terms of income, but are otherwise similar. Dahl and Lochner (2012) took advantage of the fact that between 1993 and 1997 the maximum US earned income tax credit increased substantially. This enabled the authors to compare the achievement test scores of children before and after the increase in the tax credit. Owing to the nature of their child-based data, the bulk of the children in their analyses were between the ages of 8 and 14 and none was younger than 5. They found improvements in low-income children's achievement in middle childhood that coincided with the policy change.

A second, Canadian-based quasi-experimental study took advantage of variation across Canadian provinces in the generosity of the national child benefit programme to estimate income impacts on child outcomes observed in Canadian achievement data (Milligan and Stabile, 2011). Among children residing in low-income families, policy-induced income increases had a positive and significant association with both maths and vocabulary scores. Both studies estimated similar effect sizes: a \$3,000 increment in annual family income was associated with a one-fifth standard deviation increase in test scores,

**Figure 4: Impacts of earnings supplement programmes on school achievement, by age of child**



Source: Morris et al. (2005)

an amount that was remarkably similar to that estimated in the Duncan, Morris and Rodrigues instrumental variable study. Interestingly, they also found that higher income was associated with a drop in maternal depression, which supports the 'family process' pathway in Figure 3.

#### Longer-run consequences?

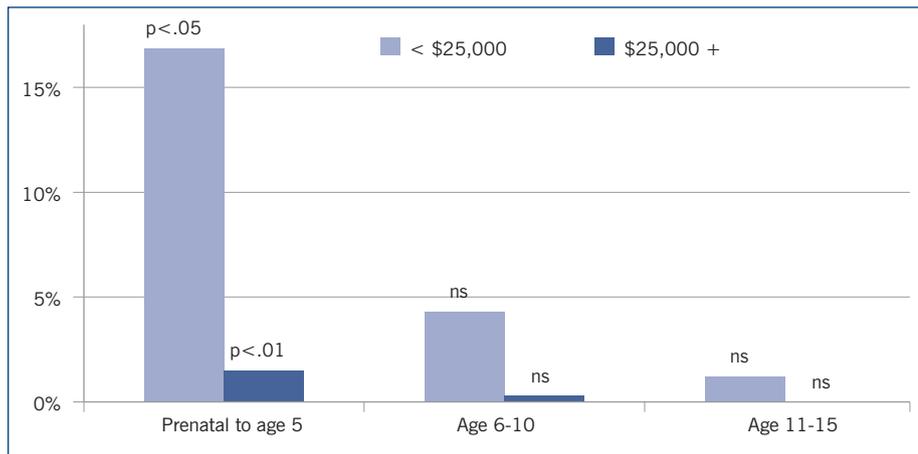
None of this past income literature has been able to examine family income early in a child's life in relation to that child's adult attainments. This limitation comes largely from the lack of data on both early childhood income and later adult outcomes. Only recently has research in both New Zealand and the United States been able to overcome this problem.

Gibb et al. (2012) use data from the Christchurch longitudinal study, which has followed a cohort 1,277 individuals born in Christchurch in 1977. They relate childhood income averaged between ages 1 and 10 to completed schooling and adult income, criminal offending, mental health and teen pregnancy. Low-income children scored worse on all of these measures relative to higher-income children. But when they adjusted for family background factors such as parental education, maternal age, family structure and abusive parenting, as well as childhood IQ and socio-emotional functioning, childhood income had a statistically significant relationship with only two adult outcomes: schooling and labour market success.

Duncan et al. (2010) used recently-released data from the US Panel Study of Income Dynamics, which has followed a nationally representative sample of US families and their children since 1968. The study is based on children born between 1968 and 1975, for whom adult outcomes were collected between the ages of 30 and 37. Measures of income were available in every year of a child's life from the prenatal period through to age 15. This enabled Duncan and his colleagues to measure poverty across several distinct periods of childhood, distinguishing income early in life (prenatal to age five) from income in middle childhood and adolescence. As with Gibb et al. (2012), they found striking simple associations between childhood income (in this case measured early in life) and adult outcomes. Compared with children whose families had incomes of at least twice the poverty-line level during their early childhood, poor children completed two fewer years of schooling, earned less than half as much money, worked 451 fewer hours per year, received \$826 per year more in food stamps, and are nearly three times as likely to report poor overall health. Poor males are more than twice as likely to be arrested. For females, poverty is associated with a more than five-fold increase in the likelihood of bearing a child out of wedlock prior to age 21.

Efforts to adjust for an extensive set of background control variables, all of which

Figure 5: Increase in adult earnings associated with a \$3,000 annual increase in income



Source: Duncan, Ziol-Guest and Kalil, 2010. Shown are estimated associations between adult earnings and \$3,000 increments to income in different childhood stage, with different associations estimated for families with incomes above and below \$25,000. "ns" = not statistically significant.

were measured either before or near the time of birth, showed that childhood income was most powerfully associated with adult earnings and work hours. And attempts to differentiate further by age showed that early childhood income appeared to matter much more than later income. For some measures, such as work hours, there appears even to be a negligible role for income beyond age five. Early income also appears to matter for completed schooling, but in this case adolescent family income seems to matter even more. In contrast, the strong association between overall childhood income and health and non-marital birth seems to be largely attributable to income during adolescence, rather than earlier in childhood.

More detailed analyses show that for families with average early childhood incomes below \$25,000, a \$3,000 annual boost to family income is associated with a 17% increase in adult earnings (Figure 5). Results for work hours are broadly similar to those for earnings. In this case, a \$3,000 annual increase in the prenatal to age-five income of low-income families is associated with 135 additional work hours per year after age 25. In contrast, increments to early-childhood income for higher-income children were not significantly associated with higher adult earnings or work hours. The implication is clear: if we hope that giving parents extra income will bolster their children's chances for success, early childhood is the time to do it.

### Refashioning income supports

Early childhood is a particularly sensitive period in which economic deprivation may compromise children's life achievement and employment opportunities. Research continues to confirm a remarkable sensitivity (and growing number) of developing brain structures and functions that are related to growing up in an impoverished home.

Strong experimental and quasi-experimental evidence links early poverty with child achievement. The effect sizes estimated in these studies are broadly similar. An annual income increase of \$3,000 sustained for several years appears to boost children's achievement by roughly one-fifth of a standard deviation. In the early grades, children's achievement increases by nearly one standard deviation per year, so 20% of a standard deviation amounts to about two months' advantage in school.

Very recent research in both New Zealand and the United States has linked poverty in childhood to adult earnings and work hours. In the case of the US study, which differentiated between income in early and middle childhood, the key finding – that income early in childhood appears to matter much more than income later in childhood for a range of employment outcomes – is quite consistent with the achievement studies.

Taken together, this research suggests that greater policy attention should be given to remediating situations involving deep and persistent poverty occurring early in childhood. In the case of welfare

policies, we should take care to ensure that sanctions and other regulations do not deny benefits to families with very young children. Not only do young children appear to be most vulnerable to the consequences of deep poverty, but mothers with very young children are also least able to support themselves through employment in the labour market.

A more generous, and perhaps smarter, approach would be enacting income transfer policies that provide more income to low-income families with young children. Optimal forms of state intervention will most likely vary between jurisdictions depending on the structure of existing tax, welfare, child support and employment policies, but some basic principles would include the following: in the case of work support programmes, this might mean extending more generous credits to low-income families with young children; in the case of child allowances and child tax credits, this could mean providing larger credits to families with young children.

Interestingly, several European countries gear time-limited benefits to the age of children. In Germany, a modest parental allowance is available to a mother working fewer than 20 hours per week until her child is 18 months old. France guarantees a modest minimum income to most of its citizens, including families with children of all ages. Supplementing this basic support is the Allocation de Parent Isolé (API) programme for single parents with children aged under age three. In effect, the API programme acknowledges a special need for income support during this period, especially if a parent wishes to care for very young children and forgo income from employment. The state-funded childcare system in France that begins at age three alleviates the problems associated with a parent's transition into the labour force.

In emphasising the potential importance of policies to boost income in early childhood, we do not mean to imply that focusing on this area is the only policy path worth pursuing. Obviously, investments later in life, including those that provide direct services to children and families, may also be well-advised. Economic logic requires a comparison

of the costs and benefits of the various programmes that seek to promote the development of disadvantaged children throughout the life course. In this context, expenditures on income-transfer and service-delivery programmes should be placed side by side and judged by

their costs and benefits, and society's willingness to pay for the outcomes they produce.

#### Acknowledgements

This article is based on the first Sir Frank Holmes Memorial Lecture delivered by

Greg Duncan on 26 November 2012 at Victoria University of Wellington. The authors are grateful to the Sir Frank Homes Fellowship for financial support, and to Professor Jonathan Boston for ensuring that the fellowship period for Duncan was so enjoyable and productive.

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