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HEALTH OUTCOMES FOR CHILDREN IN CANADA,  
ENGLAND, NORWAY AND THE UNITED STATES\*

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1. INTRODUCTION

It is well-known that child poverty rates are much higher in ‘English-speaking’ countries (16.3% in Canada in 1998; 15.4% in the UK in 1999; 21.9% in the US in 2000 – LIS Key Figures, 2004) than in Scandinavian countries (3.4% in Norway in 2000 – LIS Key Figures).<sup>1</sup> What is less well-studied is how other aspects of child well-being compare within the ‘Anglo’ cluster of welfare states (Esping-Anderson, 1990) and between English-speaking countries and Scandinavian countries.<sup>2</sup> This paper thus uses nationally representative microdata surveys to provide a broad descriptive over-view of selected health outcomes for children (aged 2–13) living in Canada, England, Norway and the United States in the late 1990s – over-all and for potentially vulnerable children. If there are significant differences in patterns of child health status across similarly affluent countries with different levels and kinds of state spending, this will point to the need for future research directed at better understanding connections between policy and child health.

Section “Comparing Child Health Outcomes” of the paper describes the health surveys employed and provides a comparison of over-all health status for children in the four countries. A range of child health outcomes, including aspects of both physical and emotional health are included. While second section compares health status for *all* children in the four countries,

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third section compares the health status of potentially ‘vulnerable’ children in each country (e.g., low-income children, children living in lone-mother or teen-mother families).

The four countries chosen for study are similarly affluent countries which have made different choices both about how much to spend and about how to structure programmes for families with children. While the cross-sectional data available here do not permit drawing any causal links between policies/spending and child health, fourth section provides an informal discussion of some policy differences across the countries which might relate to observed patterns of child health; the discussion is intended to offer hypotheses and suggest directions for further research rather than to draw conclusions. However, it is important to keep in mind throughout the discussion that the four countries studied here differ significantly in terms of demography, geography, history and culture. Canada and the US are huge geographically, and have more ethnically heterogeneous populations than Norway, for example. Results should be interpreted with some of these differences in mind – it may be easier to solve problems in some countries than in others. It is unlikely that it would ever be possible simply to ‘translate’ Norwegian legislation into English and use the same policy in Canada or the US since a policy which ‘works’ in one context may not be suitable in another. Final section concludes.

## 2. COMPARING CHILD HEALTH OUTCOMES

Since the goal of this paper is to compare a broad range of child health outcomes, both physical and emotional dimensions of health are included as are both ‘comprehensive’ summary measures and indicators of selected specific conditions. While we of course argue that these measures are all at least ‘reasonable,’ we make no attempt to argue that they constitute an ‘ideal’ list. Rather, they represent ‘reasonable choices’ given limited availability of comparable measures of child health status in the surveys.

### 2.1. *Data*

For over-all health status and most ‘physical’ health outcomes, we focus upon a sub-set of children aged 2–13 years. This choice is made as a ‘lowest common denominator’ across the countries (data are only available for children aged 2 and up in England; data are only available for children aged 13 or less in the US). Similar questions about aspects of mental health and emotional well-being were asked only about children aged between 4 and

11 years, hence an even more restricted sub-sample is used for these indicators.

For Canada, our primary data source is the 1998 National Longitudinal Survey of Children and Youth (NLSCY). The 1998 cross-section is representative of all Canadian children aged 0–15 years (with the exception of those living in the North, on reserves, or in institutions). In 1998, our sample of 2–13 year-olds includes 21,672 children. For the United States, our primary data source is the 1998 wave of the National Longitudinal Survey of Youth, Mother–Child Supplement (NLSY) with a sample of 4,366 children aged 2–13 years, with mothers aged 33–40 years by the end of 1997 (the mothers were the original target of the survey). However, to expand the set of health outcomes which can be studied by using the 1999 National Survey of America’s Families (NSAF), with a sample of 24,268 children aged 2–13. For England, we use the 1998 Health Survey for England (HSE), which is a cross-sectional survey designed to monitor trends in the nation’s health. In 1998, the sample size was 19,654 individuals including 6,077 children aged 2–13. Finally, the 1995 Health Survey for Norway (NHS) is representative of the full population (i.e., of all ages). Total sample size is 10,248 with 1,624 children aged 2–13 years (see Appendix A for more detail).

For most of the outcomes studied, available information about the child is provided by an adult in the household. In the NLSY, this is always the mother (since the survey is following the women and asks those with children questions about the children in this supplement). In the NSAF, the ‘most knowledgeable adult’ about the child answers questions (almost always a mother). In the Canadian data, information is obtained from the ‘person most knowledgeable about the child,’ the biological mother in over 90% of cases. In the English and Norwegian surveys, either parent may have responded to questions about the child.

## 2.2. *Aggregate Measures of Child Health Status*

Before considering our own microdata measures of child health status, we present, in Table I, some basic aggregate measures of child health status available from the World Bank and OECD. The basic patterns apparent set the stage for the microdata story to follow: child health status is lowest in the US and highest in Norway. For example, infant mortality rates are highest in the US (7.2 per 1000 live births), followed by the UK (5.9), Canada (5.5) and Norway (4.1). Child mortality rates (i.e., death before the age of 5) are also highest in the US (8.8 per 1000 children), followed in this case by Canada (7.0) and the UK (7.0) and Norway (5.3). The incidence of

TABLE I  
Aggregate indicators of child health status

	Canada	Norway	United Kingdom	United States
Infant mortality rate/1000 live births 1997 <sup>a</sup>	5.5	4.1	5.9	7.2
Child mortality rate (< 5 years) 1997 <sup>a</sup>	7.0	5.3	7.0	8.8
% of children <12 mos immunized for measles 1997 <sup>a</sup>	96.0	93.0	n/a	91.0
% of live births low birth weight (< 5.5 lbs) <sup>b</sup> 2000 (Canada 1999, Norway, 1998)	5.6	4.7	7.6	7.8

<sup>a</sup>World Development Indicators, 2006. <sup>b</sup>Source: *Society at a Glance*, OECD Social Indicators, 2003.

low-weight births is highest in the US (7.8%) and the UK (7.6%), followed by Canada (5.6%) and Norway (4.7%).

### 2.3. *Microdata Comparisons of Child Health Status*

While the general outline of the story is already apparent from the small number of aggregate indicators in Table I, the microdata health surveys enable us to investigate a much wider range of measures of child health status as well as to compare health outcomes for children at the bottom, middle and top of the country income distribution or for children currently living with lone parents, for example. In this way, we can add texture and detail to the story.

Specifically, we consider: (1) parent's report of the child's over-all health status, reported in 5 categories for each country; (2) child's experience of accidents/injuries requiring medical attention; (3) child disability status; (4) low birth weight; (5) asthma; (6) obesity; (7) hyperactivity; (8) anxiety/fear; (9) bullying; and (10) sadness/depression.

Details on the measurement of each of these aspects of child health in each of the surveys is provided in Appendix B. Separate appendix tables for *each* health outcome provide results for all children, for children in the top and bottom quartiles; additional tables describe results for children in lone-mother families. In each table, information is provided about the exact questions asked and response categories available in each survey. A careful read of these tables indicates, not surprisingly, for separate surveys

independently conducted in 4 different countries, that the wording of questions is not in all cases identical (nor were questions always asked in English, even in England or the US). While we have taken much care to choose outcomes for which survey questions seemed as close as possible, remaining differences would certainly be expected to influence estimates of child health status and make comparisons of levels of child health status across countries very difficult.

Comparisons of levels of health status across countries inevitably invite the criticism that the measures used are not *exactly* comparable. One way to minimize this concern is to compare the extent of inequality in health status within countries, for example by comparing health status at the top of the income distribution with health status at the bottom. These calculations are presented in the tables of Appendix B, but not emphasized in the paper because the procedure exaggerates the importance of small differences. For example, 2% vs. 1% has the same ratio as 50% vs. 25%, though it does not really seem reasonable to suggest that inequality of health status is the same in the two situations. Since Norway is the country with the smallest incidence of most health conditions, a comparison of the ratio of top to bottom often suggests that there is more inequality of health status in Norway than the other countries, though the absolute differentials are often very small.

TABLE II  
Summary comparison of health status. Children living in Canada, Norway,  
United States and England (standard errors in parentheses)

	Canada 98	Norway 95	United States 98/99	England 97
Proportion top health category	56.4 (0.67)	71.7 (1.39)	56.6 (0.63)	58.6 (0.78)
Proportion bottom two categories	1.6 (0.16)	0.80 (0.27)	4.1 (0.26)	1.0 (0.14)
Percent with non-sport accident/injury	8.7 (0.33)	6.9 (0.65)	9.2 (0.57)	7.4 (0.35)
Percent with activity limitation	4.3 (0.28)	2.6 (0.48)	5.1 (0.46)	9.5 (0.42)
Asthma	15.0 (0.48)	8.7 (0.77)	n/a	20.8 (0.57)
Low-weight birth	6.1 (0.33)	n/a	7.0 (0.52)	7.1 (0.38)
Obese	12.1 (0.80)	3.5 (0.69)	8.8 (0.67)	3.9 (0.36)
Never/anxious frightened	66.1 (0.68)	88.8 (1.04)	74.0 (1.01)	65.1 (0.83)
Never bullies	90.0 (0.51)	n/a	82.0 (0.93)	85.3 (0.65)
Never restless/hyperactive	42.0 (0.69)	n/a	65.3 (1.11)	40.6 (0.84)
Never sad	66.1 (0.66)	46.8 (1.84)	84.4 (0.88)	79.9 (0.71)

Table II offers a summary comparison of 10 indicators of the level of child health status for *all* children (aged 2–13 years, or aged 4–11 as noted on the table) in each of the four countries. And, given all of the caveats above, what is striking is that in all but one case (parental report of child sadness/depression), where data for Norway are available, Norwegian children appear to have better health status than children living in Canada, England or the US. Thus, more Norwegian children are reported to have health status in the ‘top’ category; fewer have health status in the bottom two categories.<sup>3</sup> Norwegian children are less likely to have accidents or injuries,<sup>4</sup> to have a limiting disability,<sup>5</sup> to have asthma<sup>6</sup> or to be obese.<sup>7</sup> Fewer Norwegian parents report their children to experience fear/anxiety. The *only* exception we have found is that fewer Norwegian parents report their children to be ‘always happy’ than is true in any of the other countries.<sup>8</sup> Though it is easy to raise difficulties with the comparisons, it seems hard to imagine that all of the bias would be in the direction of making the Norwegian outcomes look better than the others. In the end, we conclude that the health status of Norwegian children is better than that of children living in Canada, England or the United States.

Among the ‘English-speaking’ countries, patterns are less crystallized. No one country unambiguously dominates the other two and differences in health status are often small, though it may be fair to say that, overall, Canadian children have somewhat higher health status than children living in England or the US. For 5 of the 8 outcomes for which we have both Canadian and US data, Canadian children have better health status. In particular, Canadian children dominate in terms of the more ‘physical health’ outcomes. Thus, Canadian children have better over-all parental assessed health status, especially insofar as very bad health outcomes are less likely for Canadian than US children. Canadian children have fewer non-sport related accidents/injuries, fewer activity limitations, and they are less likely to have been born with low birth-weight. In terms of social/emotional outcomes, Canadian children are less likely to be ‘bullies’ than US children. However, US children rank ahead of Canadian children in terms of anxiety, restless/hyperactive behaviour and sadness/depression.

If we compare Canadian and English children, 3 outcomes are very similar (over-all health status, anxiety and hyperactivity); Canadian children have better outcomes in 4 cases; they are less likely to have activity limitations,<sup>9</sup> to have been low-birth weight babies or to have asthma and they are less likely to be bullies. English children have better outcomes than

Canadian children in 2 cases: they are less likely to have accidents/injuries and they are less likely to be sad/depressed.

### 3. A COMPARISON OF CHILD HEALTH STATUS FOR VULNERABLE CHILDREN

#### 3.1. *Children with Low Family Income*

In this section, we first compare across countries the health status of children who have equivalent gross incomes low enough to place them in the bottom 25% of their country's income distribution.<sup>10</sup> Notice, however, that there is a significant difference across the countries in the relationship between the cut-point for the bottom quartile and the common poverty standard of '50% of median equivalent income.' In the US, the ratio of bottom quartile cut point to 50% of median income is 1.15; in England it is 1.11; in Canada it is 1.24 and in Norway it is 1.38. This reflects different levels of income inequality in the four countries. Since there are not as many people with very low incomes in Norway, for example, we have to climb further up toward median income before we reach 25% of the population. This means that the bottom quartile of the Norwegian population are *relatively* more affluent than, in particular, the bottom quartile of the US population.

TABLE III

Summary comparison of health status – Children in the bottom quartile. Children living in Canada, Norway, United States and England (standard errors in parentheses)

	Canada 98	Norway 95	United States 98/99	England 97
Proportion top health category	51.1 (1.2)	66.3 (2.74)	48.3 (1.16)	51.8 (1.40)
Proportion bottom two categories	2.4 (0.31)	1.7 (0.75)	7.1(0.58)	1.6 (0.30)
Percent with non-sport accident/injury	9.4 (0.64)	5.6 (1.08)	11.4 (1.56)	8.0 (0.64)
Percent with activity limitation	4.7 (0.44)	4.4 (1.21)	6.4 (1.23)	12.0 (0.85)
Asthma	16.3 (0.90)	11.8 (1.65)	n/a	23.6 (1.04)
Low-weight birth	8.3 (0.81)	n/a	10.0 (1.35)	8.9 (0.74)
Obese	18.8 (2.0)	4.5 (1.44)	9.0 (1.57)	3.8 (0.60)
Never/anxious frightened	65.0 (0.12)	83.4 (2.21)	68.1 (1.56)	69.0 (1.37)
Never bullies	87.3 (0.93)	n/a	76.5 (2.44)	77.1 (1.33)
Never restless/hyperactive	37.6 (1.2)	n/a	53.1 (2.95)	32.0 (1.37)
Never sad	63.0 (1.2)	44.7 (3.30)	78.0 (2.28)	73.8 (1.35)

For nearly all aspects of health status and in all countries, lower-income children have lower health status than their more affluent peers (see Table III).<sup>11</sup> This is an extremely important point and is consistent with a large literature on the socioeconomic determinants of child health (see, for example, Blau, 1999; Dooley et al., 1998; Duncan and Brooks-Gunn, 1997; Mayer, 1997). But, even more relevant for this paper, not only is it true that fewer Norwegian children are found in the bottom quartile of the distribution, but it is also the case that those who have low income are more healthy on *every dimension* for which we have data than their counterparts in the other 3 countries.

It is worth noting at this point that the direction of causation between low income and child health status, particularly for very low status or serious disability is not obvious. The story we have principally been motivating is one in which low income generates conditions which lead to poor health status for children (e.g., through inadequate nutrition, poor housing, unsafe conditions). However, it is also very likely that having a child with serious health problems limits paid work possibilities for parents and thus increases the odds that we will find the family located toward the bottom of the country income distribution. And, to the extent that public supports for families with ill or disabled children vary (either in the form of cash transfers, paid time off, or home help or specialized daycare), we would still expect to see different associations between low income and low child health status in different countries.

Notice, as well, that children in the bottom quartile of the US income distribution fare relatively quite badly –7.1% are assessed as having fair/poor health compared to 2.4 in Canada, 1.7 in Norway or 1.6 in England. This is a somewhat larger differential across the countries than was apparent when all children were compared. Similar rankings are apparent for bottom quartile children having health status in the bottom 3 of the 5 categories (i.e., good/fair/poor health): 25.5% of US children, 16.8% of Canadian children, 11.0% of English children, but only 5.7% of Norwegian children.

Although sample size concerns mean that in general we need to examine child health status by quartile, over-all health status offers one possibility for providing a more detailed examination of child health status across the four population income distributions. In this case, we can report patterns by deciles rather than quartiles, though it is necessary to aggregate good/fair/poor health status to pass Statistics Canada standards for release of confidential data. Again, US children at the bottom of the income distribution fare particularly badly: 30.7% of those



in the bottom decile have good/fair/poor health compared to 18.7% of Canadian children; 12.1% of English children and 7.4% of Norwegian children. On the other hand, US children with incomes in the top decile are more likely than any others to have 'excellent' health (75.9% vs. 74.6% in Norway, 72.1% in Canada, 67.2% in England). Just as there is more inequality of income in the US, there appears to be more inequality of child health status.

### 3.2. *Children in Lone-Mother Families*

Children in lone-mother households<sup>12</sup> constitute another potentially 'at risk' group (and of course lone-mother families are also extremely likely to have low incomes). The probability of a child living in a lone-mother household is much higher in the US than in the other countries studied here (20.8% of our 2–13 year old children currently live with lone mothers in the US compared to 14.9% in Canada, 18.4% in England and 18.9% in Norway).<sup>13</sup> Table IV provides a summary comparison of our various measures of child health status for children currently living in lone-mother families in the four countries. In each country and for every outcome studied,<sup>14</sup> children living with lone mothers have lower health status than

TABLE IV

Summary comparison of health status – Children in lone mother households. Children living in Canada, Norway, United States and England (standard errors in parentheses)

	Canada 98	Norway 95	United States 98/99	England 97
Proportion top health category	50.9 (1.8)	68.0 (3.78)	47.9 (1.38)	51.8 (1.80)
Proportion bottom two categories	2.0 (0.38)	2.1 (1.17)	7.5 (0.69)	1.59 (0.41)
Percent with non-sport accident/injury	10.8 (1.0)	8.7 (1.94)	10.0 (1.10)	8.9 (0.89)
Percent with activity limitation	5.5 (0.76)	4.7 (1.87)	8.1 (1.03)	12.4 (1.09)
Asthma	18.1 (1.5)	11.4 (2.35)	n/a	25.9 (1.42)
Low-weight birth	6.5 (0.93)	n/a	10.6 (1.06)	9.4 (1.01)
Obese	17.1 (2.5)	5.8 (2.67)	10.7 (1.20)	4.1 (0.80)
Never/anxious frightened	60.2 (1.9)	84.7 (3.34)	66.7 (1.77)	67.7 (1.87)
Never bullies	83.1 (1.8)	n/a	74.7 (1.88)	78.7 (1.72)
Never restless/hyperactive	34.2 (1.8)	n/a	54.5 (2.20)	30.4 (1.80)
Never sad	52.2 (1.9)	54.4 (4.93)	78.5 (1.72)	72.1 (1.84)

other children. However, what is again particularly striking for the purposes of this paper is that, for all measures for which we have comparable data, children living with lone mothers in Norway once again have better health status than children in lone-mother families in the other 3 countries studied.<sup>15</sup>

### 3.3. *Children with Teen-Age Mothers*

The likelihood of children being born to teen-age mothers is considerably higher in the US than in other countries (8.6% of our 2–13 year old sample of children were born to a teen-aged mother in the US<sup>16</sup> compared to 6.0% in England, 4.2% in Norway and 2.1% in Canada).<sup>17</sup> Given the small sample sizes, we can only compare over-all health status for children born to teen-aged mothers (and we cannot make this break-down for Norway). In the US, it is clear that the probability of the child being in the top health category is lower if the mother was a teenager when the child was born (50.7% compared to 57.6%; in England); there is no significant difference in health status for either Canada or the UK.

## 4. ASSOCIATIONS BETWEEN POLICY AND CHILD HEALTH? – AN INFORMAL DISCUSSION

Given the rather startling differences in child health status apparent across 4 similarly affluent countries, the rather obvious question to ask is ‘why is this so?’ While the goal of this paper is primarily to provide a broad over-view of patterns of child health status across countries, this section of the paper provides some very preliminary and informal discussion of differences in policies which could potentially connect to observed differences in child health. Of course, it is *not* possible to draw conclusions about causal links between policies and child health from a descriptive analysis of cross-sectional data (inferring causality would ideally involve random assignment experiments to evaluate how specific programs affect child health – see, for example, Morris et al., 2004). Thus, the informal discussion which follows is intended only as suggestive of possibly fruitful directions for more in-depth and focused future research.

In thinking about how policy choices made in different countries might be associated with different health outcomes, the framework outlined by Whitehead et al. (2000) seems particularly useful: (1) policy can influence social position (e.g., the number of lone-mother families and/or teen-age

mother families can be affected by the availability of sex education and family planning and/or contraceptive services); (2) policy can influence the exposure to health risks associated with a given social position (e.g., daycare availability, minimum wage laws and social transfers can all influence the probability that a lone-mother family experiences poverty); (3) policy can mediate the extent to which exposure to a particular health risk actually leads to ill health (e.g., do poor children have equal access to medical care?).

The four countries studied here, while similarly affluent<sup>18</sup> have made some quite different policy choices which have plausible connections to the differences in child health documented above. Using the Whitehead/Burström/Diderichsen framework, the following sections present an informal discussion of some potentially relevant policy differences.

#### 4.1. *Policies Affecting Social Position*

As noted above, both lone-mother families and teen pregnancies are more likely in the US than in any of the other countries and children in either (or both) situations have lower health status in the US. Thus, a cross-country comparative analysis to improve our understanding of why more children find themselves in potentially vulnerable circumstances would seem worthwhile (e.g., are there differences across the countries in sex education programs and/or contraceptive availability?).

#### 4.2. *Policies Affecting the Health Risks Associated with Positions Poverty?*

Although there has been debate in recent years<sup>19</sup> both about the size of association and about causal connections, poverty, especially long-duration poverty, is generally regarded as a health risk. For example, Mayer writes:

“Parental income is positively correlated with virtually every dimension of child well-being that social scientists measure, and this is true in every country for which we have data. The children of rich parents are healthier ... (Mayer, 2002, p. 30).

As noted in the introduction, rates of child poverty vary dramatically across the four countries studied here, even for children in the same ‘social position.’ LIS data also indicate that in 2000, 49.5% of US children living in lone-mother families were poor compared to 40.7% in Canada, 43.5% in the UK<sup>20</sup> compared to 11.3% in Norway.

Thus, not only is the probability of being in a vulnerable situation higher in the US, but it is also the case that the 'health risk,' attached to that situation is higher. Note, moreover, that differences in poverty outcomes have demonstrated connections with policy choices. First, many policies can affect labour market options/outcomes. For example, macroeconomic policies, minimum wage or affirmative action laws, and public provision and/or support for daycare can affect *market* outcomes for families with children across countries, by making jobs available, by making jobs pay better and/or by helping to enable participation in paid work by parents. Second, choices about the structure and generosity of cash transfer programs can affect the extent to which market outcomes are mediated (and there may be interaction between market outcomes and transfer programs if incentives embedded in cash transfers affect paid work choices). Both Bradbury and Jantti (2001) and Rainwater and Smeeding (2003) demonstrate that fewer children are poor in Scandinavian countries than in Anglo countries *both* because market incomes are higher and because state transfers are higher.

#### 4.3. *Health Damaging Behaviours?*

While it is generally agreed that there is a causal connection between poverty and child health status, the size of the 'true' or 'pure' effect of poverty on child health is believed by some authors (e.g., Blau, 1999; Mayer, 1997) to be relatively small. Certainly, it seems unlikely that simply 'handing families more money' will solve all child health problems. Perhaps more plausible is the idea that low income often comes packaged with other attributes which may be limiting to child health (e.g., low education, parental stress, unsafe neighbourhoods, smoking). Notice, however, as emphasized by Mullahy et al. (2001) that these individual behaviours must be understood in the context of family, community, state or even system-level factors (e.g., the availability and marketing of cigarettes, the lack of safe places to exercise, the unemployment rate).

One possibility which might be pursued in future research is that 'health damaging behaviours' (Whitehead et al., 2002, use this term to describe, for example, smoking, poor nutrition, lack of exercise) are more common for members of families in the same social position (e.g., poor) but living in different countries. At the population level, there is some evidence of a 'healthier life-style' in Norway than any of the English-speaking countries. For example, OECD data (2002) indicate that in Norway, 6.0% of adults are obese<sup>21</sup> compared to 14.8% in Canada,

22.0% in the UK and 30.9% in the US. Patterns for adults are thus similar to those noted for children – presumably parents pass on both genes and nutrition/exercise habits to their children. Differences in obesity levels could connect to cultural differences (perhaps ski-ing is more likely in Norway or Canada), to public education programs, to the availability of state-provided recreational facilities or to standard hours in paid work (potentially limiting time available for exercise and/or increasing the use of high-fat convenience foods)? OECD data also indicate that while the proportion of adults who report themselves to be daily smokers is actually lower in both Canada (19.8%) and the US (19.0%) than in Norway (32.0%), UNDP data (2003) indicate that annual average cigarette consumption (1992–2000) is lowest in Norway (739 compared to 2,092 in the US and 1,820 in Canada).

It may also be true that parental stress levels are lower, because poverty rates are lower, because paid work hours are lower<sup>22</sup> and because policies supportive of ‘work/life balance’ are available in Norway but not in the English-speaking countries (see Phipps, 1999 for more detail). For example, longer and better-paid time off from paid work for parents with newborns is available in Norway than in Canada and the UK; the US does not provide paid time off for new mothers or fathers (Gauthier, 2003). Differences in maternity/parental leave are associated with differences in the initiation and duration of breast-feeding (Ruhm, 2000). Although data for Norway were not readily available, within the English-speaking countries studied here, the initiation of breast-feeding is more likely in Canada which has the longest and most-generously compensated leave programme of the 3 countries (78% – Statistics Canada, 2003) and least likely in the US (64% – U.S. Department of Health and Human Services, 2000). In the UK, 69% of infants are breast-fed at all (Hamlyn, 2002). Since breast-feeding has an acknowledged positive and long-lasting association with child health (Scariati et al., 1997), there is definite potential for a link from this policy difference to observed differences in child health which could be explored further.

It is also the case that in Norway, parents with children under the age of 12 (16 if disabled or chronically ill) receive up to 10 days with pay to care for a sick child (15 days for 2 children or more children and 20 days if they are single parents) – this may reduce the number of ill/infectious children going to school because parents cannot miss work. (Gornick and Meyers, 2003; Table 5.2). Finally, 37% of children aged one to two years attend publicly financed care in Norway compared to 5% in Canada, 2% in the UK and 6% in the US (Gornick and Meyers, 2003; Table 7.2).

It is possible that higher standards and/or greater regulation of daycare is evident in Norway which would associate with fewer accidents/more healthy child development?

#### 4.4. *Policies Which May Mediate Given Health Risks*

Ross et al. (2000) demonstrate that while there is a significant association between income inequality and mortality in the US, this relationship is not apparent for Canada. Their interpretation of this difference is that the relationship between income inequality and health in Canada is mediated by the different ways in which social and economic resources are distributed. Differences in health-care systems across the countries provide one obvious example of how it could be true that child health is better in one country than another, even given the same social position and the same risk factors. Total (public and private) expenditures on health as a percentage of GDP are highest in the US (13.0% of GDP in 2000) and lowest in the UK (7.3%) and Norway (7.8%). In Canada, 9.1% of GDP is spent on health care. Of course, it is likely that a larger share of total health spending is used for adults, especially elderly adults, than for children. One possible indication of resource allocation relevant for children is that the average length of stay in hospital for a normal delivery is 4.0 days in Norway compared to 2.0 days in both Canada and the US (OECD, 2002). Further, microdata used for this paper indicate that 'healthy baby doctor visits' may be more likely in Canada and Norway than in the US. That is, children aged 0–2 years are more likely to be taken to a doctor in Canada (95.3%) and Norway (90.5%) than in the US (83.5%),<sup>23</sup> though children in the US are more likely to be unhealthy.

Since only 44.3% of total health expenditures in the US come from government sources compared to 72.0% in Canada, 81.0% in the UK and 85.2% in Norway (OECD, 2002), it seems possible that an equally vulnerable child may be less likely to receive preventive or even necessary curative treatment in the US than in the other countries, and this may be one channel through which policy affects child health. Moreover, US data (CDC, 2003) indicate a clear socioeconomic gradient in the probability of pregnant mothers receiving early pre-natal care (i.e., 91% of mothers with some college receive care during the first trimester compared to 68% with less than high school). Such differences may be less apparent in the other countries where cost would not be an issue.

Of course, the possibilities for how different policies could explain differences in observed child health across countries are nearly endless! Stricter drunk driving legislation could reduce the number of children hurt in car accidents. Stricter environmental regulation could be associated with a lower prevalence of childhood asthma (for example, carbon monoxide emissions per capita are lower in Norway (8.7 metric tons) than in the UK (9.2), Canada (14.4) or the US (19.7)). The major point of this very speculative section of the paper is simply that, given significant differences in patterns of child health across similarly affluent countries which have been documented here, it would be fruitful for future research to exploit international variations in order to better understand connections between policy and child health.

## 5. CONCLUSIONS

Although there are difficulties in comparing health outcomes for children across countries, and research of this kind could benefit enormously by co-ordinated data collection exercises, results *consistently* indicate that Norwegian children have better health. This is true for every outcome we could find, but one; it is true for low-income Norwegian children compared to low-income children living elsewhere (though there are fewer low-income Norwegian children); it is true for children living with lone mothers in Norway (and there are nearly as many children with lone mothers as in the US).

While it is not possible to demonstrate any causal links between national policy differences and child health differentials with the cross-sectional microdata employed here, an informal discussion of differences in policies/programs which exist across the countries, situated within the literature on the social and economic determinants of health, is suggestive of links which should be more fully explored in future research.

## NOTES

<sup>1</sup> See, for example, Corak (2005), Micklewright (2003), Bradbury and Jantti (2001) and Rainwater and Smeeding (2003).

<sup>2</sup> Though. See Currie et al. (2004), Phipps (2002) and UNICEF (2004).

<sup>3</sup> The translated wording for the 5 response categories is not the same across the countries. In Canada and the US, the top category is 'excellent' health whereas in Norway and England the top category is 'very good' health. The 3 'English-speaking' countries nonetheless have remarkably similar patterns of response while the Norwegian answers stand out.

<sup>4</sup> We worried that ‘accidents/injuries’ could well happen when children participate in sports – an opportunity which might more likely be available to more affluent children. Thus, we exclude ‘sport-related’ injuries. Appendix B presents both ‘all injuries’ and ‘non-sport’ injuries; patterns are very similar.

<sup>5</sup> When an outcome was available in both US data sets, we present both numbers in Appendix B but choose to discuss the estimate which presents the ‘best’ picture of child health status in the US. In the case of ‘activity limitations,’ the NSAF and NLSY give rather different estimates. One potentially important difference in the survey questions is that the NSAF mentions ‘learning’ conditions while the NLSY does not.

<sup>6</sup> The wording of the asthma question is slightly different. In Canada and England, parents are asked if the child has ever had asthma ‘diagnosed by a professional’ while in Norway they are simply asked if the child has ever been ‘bothered by asthma.’ We tend to feel that this might lead to upwardly biased estimates of asthma in Norway, though some asthmatics have argued that if properly treated asthma need not ‘bother’ people with the condition.

<sup>7</sup> In other work (Phipps et al., 2004), we have emphasized the importance of measurement when making international comparisons of child obesity. With these data, we argue that comparisons are most valid for children in the age range of 6–11 years (for smaller children, even small errors in weighing or measuring can cause large discrepancies in classifying obesity). Since the Canadian and Norwegian surveys both use parent reports of child height/weight, these figures are comparable. Similarly, the US and English estimates are comparable, since interviewers measured most US children and all English children.

<sup>8</sup> Comparisons of child ‘happiness’ across the countries are particularly problematic. The Norwegian survey asks about whether the child is ‘happy/satisfied’ and 4 response categories are provided; the other countries ask about whether the child is ‘unhappy, sad or depressed’ and provide 3 response categories. We focus on a comparison of frequencies for ‘never’ being sad (or ‘always’ being happy) in Norway. While comparability might be particularly questionable in this case, we include the outcome as it is the one instance for which Norway does not look best and we did not want to bias findings by throwing it away.

<sup>9</sup> We are puzzled by the very high rate of activity limitation among English children.

<sup>10</sup> ‘Gross income’ includes transfers, but does not subtract taxes. This is the only option which is available in all the health microdata sets used here. ‘Equivalent’ income adjusts for differences in family size using the LIS equivalence scale. Cut-points are calculated for the full population rather than just the population of children using microdata from the Luxembourg Income Study. We look at children in the bottom quartile rather than children who are poor to ensure sufficient numbers of observations, particularly in Norway where there are relatively few children who are poor and sample size is small.

<sup>11</sup> Exceptions are that bottom quartile Norwegian children have fewer non-sport related accidents/injuries and are less likely to be obese. Since obesity is only calculated for 6–11 year olds, sample sizes are starting to become relatively small here (e.g., 88 children with the appropriate data in the top quartile). Moreover, as noted earlier, the Norwegian height/weight data are obtained by asking parents to re-call this information which is far from ideal. Hence, we do not emphasize this finding.

<sup>12</sup> ‘Lone-mother’ families are defined as those for whom there is no information about a ‘spouse’ rather than through the ‘marital status’ variable.

<sup>13</sup> This is one instance where the NLSY data yield rather different estimates than the NSAF for the US: NLSY data suggest that 26.1% of US children live with lone mothers. However, recall that the NLSY sample focuses on a sub-set of mothers, aged 33–41 years in 1998.

<sup>14</sup> The only exception is that children in lone-mother households in Norway are, on average, reported to be ‘happier’ than other children.

<sup>15</sup> Having ‘fair/poor’ health is equally likely in Canada and Norway.

<sup>16</sup> This figure is from the NSAF data.



<sup>17</sup> Micklewright (2003) reports that teenage births (per 1,000 women aged 15–19 years) are 52.1 in the US, 20.2 in Canada, 30.8 in the UK and 10.4 in Continental Europe.

<sup>18</sup> The US is the richest of the four countries studied, with GDP per capita of \$35,619 (in 2000 in US dollars); Norway has the second highest GDP per capita (\$30,166 US dollars in 2000, using PPP conversions); Canada and the UK are the least affluent with GDP per capita of \$27,993 in Canada and \$24,455 in the UK (again expressed in US dollars via PPP conversion).

<sup>19</sup> See Phipps (2003) for a recent review. Mayer (1997) and Duncan and Brooks-Gunn (1997) are key references in this area.

<sup>20</sup> UK data refer to 1999.

<sup>21</sup> Obesity is defined here as having a BMI greater than 30.

<sup>22</sup> ILO data indicate that average annual hours of work per person in 1995 were considerably lower in Norway than in the other countries: 1,780 in Canada, 1,414 in Norway, 1,740 in the UK and 1,952 in the US.

<sup>23</sup> Recall that English data for 0–2 year-olds are not available.

## 7. APPENDIX A: DATA DETAILS

The National Longitudinal Survey of Children and Youth (NLSCY) is an ongoing survey of Canadian children designed to help analyse child development and well-being. There are four cycles of data available to date with interviews in 1994, 1996, 1998 and 2000 with the expectation of continued biennial interviews until the children reach the age of 25. In addition to the longitudinal file, cross-sectional data are available for each survey year yielding nationally representative results when the sampling weights are applied. Children are aged 0–17 in 2000. Additional children are added to cross-sectional files in each survey year in order to maintain a nationally and provincially representative sample.

The sample for the NLSCY was originally drawn from the Labour Force Survey (a monthly survey by Statistics Canada used to produce labour force information). The survey uses a multistage probability sample where each province is an independent sample. Through stratification, cities, small urban areas and rural areas are broken down into clusters of dwellings from which households are surveyed. From the LFS, households containing children could be selected for the NLSCY. Note that the LFS excludes those living in institutions and on Indian Reserves. In cycle one, 22,831 children were interviewed which included about 5,000 children from households of those in the National Population Health Survey. These children were dropped from the second cycle due to budget constraints. In cycle one, up to four children per household were interviewed but by cycle two, only two children per household were interviewed (for those households with more than two children, those interviewed were randomly selected). Again, this

was due to budget constraints. However there was a large increase in the number of children 0–5 year olds interviewed leading to a total sample of 20,025 children in cycle two. For cycle three, no new siblings of children already in the survey were interviewed (as they were in cycle two) but new children selected from the Labour Force Survey households and birth registries increased the sample size to 31,194 0–15 year olds. For our study, we focus on children aged 2–13 years in 1998.

### *7.1. National Survey of American Families*

The National Survey of American Families (NSAF) is part of a project designed to help monitor changes in social programs along with changes in the well-being of children and families across the United States. The 1999 NSAF is the second in a series of cross-sectional household surveys (a third is planned for 2002) which is nationally representative of children, adults under 65 years of age and their families.

The NSAF uses a random-digit dialling technique to select households along with a supplementary area sample in person as there are a disproportionate number of families with low-incomes who do not own a telephone. For budget reasons, if there was more than one child under 6 years of age then only one was randomly selected. Similarly, only one child 6–17 years of age was selected so there are a maximum of two children surveyed for each household. Data were collected through the most knowledgeable adult (mka) about the child as well as additional information on the mka him/herself and any spouse/partner of the mka. The total sample size of children 0–17 years of age is 35,938 from 29,587 households. In this study we exclude children over 13 years of age as well as emancipated minors (of which there are 26).

### *7.2. The National Longitudinal Survey of Youth*

The National Longitudinal Survey Youth (NLSY), 1979 is an ongoing survey which gathers information on men and women aged 14–21 as of the end of 1978. Beginning in 1979 and continuing annually until 1994 and biennially since, information on labour, health and other characteristics of this group has been collected and used to make inferences about the entire US population born in the same time period. Since 1986, the children of females in the original sample have been assessed every 2 years for a variety of well-being and achievement indicators.

The original sample was represented by a multi-stage probability sample originally drawn by the Bureau of the Census. From a total of 235 sample areas across the US representing every state and the District of Columbia, a single primary sampling unit (PSU) was chosen to represent that area. Within the PSU, a probability sample of households was chosen to get a nationally representative sample. Originally, there were 6,283 females in the NLSY sample. By 1998, the most recent year for which child information is available, there were 4,299 females of which 3,221 were mothers with a total of 5,343 children under the age of 15 included the survey. For this study, we include children 2–13. Weighted results from these data will be nationally representative of all children 0–13 born to mothers who were 33–40 by December 31, 1997.

### *7.3. Health Survey for England – 1998*

The Health Survey for England is a cross-sectional health survey carried out annually since 1990. It is designed to monitor trends in the nation's health through a large range of health questions. Each person in the household is included in the survey with a maximum of two children aged 2–15 (a random selection is made for households with three or more children 2–15). In 1998, the sample size was 19,654 individuals including 3,746 aged 2–15. Information in the survey includes household income, size and area of residence as well as labour force and education information for the adults.

### *7.4. Norwegian Health Survey – 1995*

The 1995 Health Survey for Norway is designed to analyse the overall health of Norwegians as well as study differences in health among groups within the population. Information is collected on health conditions, health-care utilization and factors which may influence health at the household and individual level. The survey represents the population of all age groups with a sample size of 10,248 with 2,146 aged 0–15 years. Along with information on health and health-care utilization, the survey includes education, labour force and income variables.

## 1. APPENDIX B

TABLE B.1

Parental assessment of overall health (ages 2-13)

Actual question asked	Response	Response frequency (%)		Ratio - top quartile to bottom quartile	
		All children	Top quartile		Bottom quartile
Canada 1998 In general, would you say (your child's) health is:	1. Excellent	56.4	67.4	51.1	1.32
	2. Very good	30.6	25.1	32.1	0.78
	3. Good	11.4	6.4	14.4	0.44
	4. Fair	1.4	1.1 <sup>a</sup>	2.4 <sup>a</sup>	0.46
	5. Poor	0.19			
Norway 1995 How would you describe his/her health? Would you say it is:	1. Very good	71.7	74.8	66.3	1.13
	2. Good	25.6	23.6	28.0	0.84
	3. Neither good nor bad	1.9	1.1	4.0	0.28
	4. Poor	0.76	0.56	1.7	0.33
	5. Very poor	0.0	0.0	0.0	-
United States 1999 (NSAF) Now, I'd like to talk about (child's) health status. In general, would you say (child's) health is...	1. Excellent	56.6	68.8	48.3	1.42
	2. Very good	26.6	22.4	26.2	0.85
	3. Good	12.7	7.6	18.4	0.41
	4. Fair	3.6	0.91	6.3	0.14
	5. Poor	0.49	0.28	0.82	0.34
England 1997 How is (child's) health in general. Would you say it was	1. Very good	58.6	66.8	51.8	1.29
	2. Good	33.1	28.6	37.0	0.77
	3. Fair	7.4	4.3	9.7	0.44
	4. Bad or	0.83	0.23	1.3	0.18
	5. Very bad	0.14	0	0.30	0.0

<sup>a</sup>Due to small cell sizes, Statistics Canada would not release fair and poor percentages by quartile. The categories were, therefore, combined.

TABLE B.II  
 Accident/injuries indicators (ages 2-13)

	Actual question asked	Response frequency (%)		Ratio - top quartile to bottom quartile
		All children	Top quartile	
Canada 1998	The following questions refer to injuries, such as a broken bone, bad cut or burn, head injury, poisoning or sprained ankle, which occurred in the past 12 months, and were serious enough to require medical attention by a doctor, nurse, or dentist. Was the child injured in the past 12 months?	11.4	11.5	1.03
Norway 1995	(Has your child had medical attention) due to treatment for an injury or accident that occurred during the past 12 months?	8.3	8.7	1.27
United States 1998 (NLSY)	During the past 12 months, has your child had any accidents or injuries that required medical attention?	11.7	12.7	1.01
England 1997	Now I would like to ask you questions about accidents that may have happened to (name) recently. By this I mean accidental events which resulted in injury or physical harm to (name). In the last 6 months, that is since (date 6 months ago), has (name) had any kind of accident which caused (name) to see a doctor or go to the hospital?	11.3	13.0	1.11

TABLE B.IIB  
 Accident/injuries (excluding sport related) indicators (ages 2-13)

Actual question asked	Response frequency (%)			Ratio - top quartile to bottom quartile	
	All children	Top quartile	Bottom quartile		
Canada 1998	1. Yes The following questions refer to injuries, such as a broken bone, bad cut or burn, head injury, poisoning or sprained ankle, which occurred in the past 12 months, and were serious enough to require medical attention by a doctor, nurse, or dentist. Was the child injured in the past 12 months?	8.7	7.9	9.4	0.84
Norway 1995	1. Yes (Has your child had medical attention) due to treatment for an injury or accident that occurred during the past 12 months?	6.9	7.1	5.6	1.27
United States 1998 (NLSY)	1. Yes During the past 12 months, has your child had any accidents or injuries that required medical attention?	9.2	9.9	11.4	0.87
England 1997	1. Yes Now I would like to ask you questions about accidents that may have happened to (name) recently. By this I mean accidental events which resulted in injury or physical harm to (name). In the last 6 months, that is since (date 6 months ago), has (name) had any kind of accident which caused (name) to see a doctor or go to the hospital?	7.4	8.2	8.0	1.03

TABLE B.III  
Limited in activity (ages 2-13)

	Actual question asked	Response			Ratio - top quartile to bottom quartile
		All children	Top quartile	Bottom quartile	
Canada 1998	Does (your child) have any long-term conditions or health problems which prevent or limit his/her participation in school, at play, or in any other activity for a child of his/her age?	1. Yes 4.3	4.3	4.7	0.91
Norway 1995	Does s/he suffer from any illness or disorder of a more long-term nature, and congenital disease or the effect of an injury [which cause] difficulties getting through the day (school/homework) or taking part in games and activities?	1. Yes 2.6	2.2	4.4	0.5
United States (NLSY) 1998 <sup>a</sup>	Does (your child) have any physical, emotional or mental difficulties that limit his/her ability to: (a) attend school on a regular basis? or (b) do regular schoolwork? or (c) do usual childhood activities such as play, or sport or games?	1. Yes 5.1	6.1	6.4	0.95
United States (NSAF) 1999	Does (child) have a physical, learning or mental health condition that limits (his/her) participation in the usual kinds of activities done by most children (his/her) age/limits his/her ability to do regular school work?	1. Yes 8.5	5.3	12.9	0.41
England 1997	Does (name) have any long-standing illness, disability or infirmity? By long-standing I mean anything that has troubled you over a period of time, or that is likely to affect you over a period of time? Does this illness or disability limit (name)'s activities in any way?	1. Yes 9.5	7.8	12	0.65

<sup>a</sup>For the United States NLSY, there were three separate questions asked (a,b,c). If the response was yes for any of the three questions then the child was considered to be limited in activity.

TABLE B.IV  
Low-birth weight<sup>a</sup> (ages 2–13)

	Actual question asked	Response (< 5.5 lbs)	Response frequency (%)		Ratio – top quartile to bottom quartile
			All children	Top quartile	
Canada 1998	What was his/her birth weight in kilograms and grams or pounds and ounces?	1. Yes	6.1	3.9	8.3 0.47
United States 1998 (NLSY)	Weight of child at birth in ounces	1. Yes	7	6.8	10 0.68
England 1997	We are interested in the birth-weight of the children taking part in this survey. Can you tell me what was (name)'s weight at birth.	1. Yes	7.1	5.7	8.9 0.64

<sup>a</sup>Note: Babies born less than 5.5 pounds.



TABLE B. V  
Asthma (ages 2-13)

	Actual question asked	Response	Response frequency (%)		Ratio - top quartile to bottom quartile
			All children	Top quartile	
Canada 1998	Has (your child) ever had asthma that was diagnosed by a health professional?	1. Yes	15	14	16.3
Norway 1995	Is s/he, or has s/he ever been bothered by asthma?	1. Yes	8.7	9.3	11.8
England 1997	Did a doctor ever tell (name) that he/she has asthma?	1. Yes	20.8	20	23.6

TABLE B. VI  
Anxious/frightened indicators (ages 4-11)

	Actual question asked	Possible response	Response frequency (%)			Ratio – top quartile to bottom quartile
			All children	Top quartile	Bottom quartile	
Canada 1998	How often would you say that (your child) is too fearful or anxious?	1. Never or not true 2. Sometimes or somewhat true 3. Often or very true	66.1 29.1	66.8 30.1	65.0 30.7	1.03 0.98
Norway 1995	Has s/he been constantly frightened or anxious?	1. Not at all 2. A little troubled 3. Quite troubled 4. Extremely troubled	4.0 88.8 9.5 1.5	3.1 88.6 11.4 0.0	4.4 83.4 13.4 2.7	0.70 1.06 0.85 0.0
US 1998 (NLSY)	He/she is too fearful/anxious.	1. Not true 2. Sometimes true 3. Often true	74.0 23.6 2.4	71.7 25.4 2.9	66.0 29.0 5.0	1.09 0.88 0.58
US 1999 (NSAF) ages 6-11	I am going to read a list of items that sometimes describe children. For each item please tell me if it has been often true, sometimes true or never true for (child) during the past month – He/she has been nervous, high-strung, or tense	1. Never true 2. Sometimes true 3. Often true	71.7 25.1 3.2	75.4 22.8 1.8	68.1 26.4 5.5	1.11 0.86 0.33

TABLE B.VI  
Continued

Actual question asked	Possible response	Response frequency (%)			Ratio – top quartile to bottom quartile
		All children	Top quartile	Bottom quartile	
England 1997 We'd like you to tell us something about your child's behaviour over the last 6 months. For each item, please circle the number for not true, somewhat true, or certainly true to show how true the item is of your child – Many worries, often seems worried Many fears, easily scared	1. Not true	71.9	75.7	69.0	1.10
	2. Somewhat true	22.5	21.3	23.4	0.91
	3. Certainly true	5.6	3.1	7.5	0.41
	1. Not true	65.1	70.0	60.1	1.16
	2. Somewhat true	28.7	26.5	30.8	0.86
	3. Certainly true	6.2	3.5	9.1	0.38

TABLE B. VII  
Cruel/bullies indicators (ages 4-11)

	Actual question asked	Possible responses	Response frequency (%)			Ratio – top quartile to bottom quartile
			All children	Top quartile	Bottom quartile	
Canada 1998	How often would you say that (your child) is cruel, bullies or is mean to others?	1. Never or not true 2. Sometimes or somewhat true 3. Often or very true	90.0 9.7	94.9 5.1 <sup>a</sup>	87.3 12.7 <sup>a</sup>	1.09 0.40
United States (NLSY) 1998	He/She bullies or is cruel to others	1. Not true 2. Sometimes true 3. Often true	82.0 17.0 1.1	78.8 19.7 1.5	76.5 21.3 2.2	1.03 0.93 0.68
England 1997	We'd like you to tell us something about your child's behaviour over the last 6 months. For each item, please circle the number for not true, somewhat true, or certainly true to show how true the item is of your child – Often fights with other children or bullies them	1. Not true 2. Somewhat true 3. Certainly true	85.3 11.6 3.2	92.0 7.7 0.36	77.1 16.4 6.5	1.19 0.47 0.06

<sup>a</sup>Due to small cell sizes, Statistics Canada would not release all category percentages by quartile. Two categories were, therefore, combined.

TABLE B. VIII  
Restless/overly active indicators

	Actual question asked	Possible responses	Response frequency (%)			Ratio – top quartile to bottom quartile
			All children	Top quartile	Bottom quartile	
Canada 1998	How often would you say that (your child) can't sit still, is restless, or hyperactive?	1. Never or not true 2. Sometimes or somewhat true 3. Often or very true	42	46	37.6	1.22
United States (NLSY) 1998	He/She is restless or overly active, cannot sit still	1. Not true 2. Sometimes true 3. Often true	41.8 16.2 65.3	44 10 64.2	42.1 20.3 53.1	1.05 0.49 1.21
England 1997	We'd like you to tell us something about your child's behaviour over the last 6 months. For each item, please circle the number for not true, somewhat true, or certainly true to show how true the item is of your child – Restless, overactive, cannot stay still for long	1. Not true 2. Somewhat true 3. Certainly true	28.4 6.3 40.6	28.6 7.2 53.4	38.2 8.7 32	0.75 0.83 1.67
			37	34.2	38.1	0.9
			22.4	12.4	29.9	0.42

TABLE B.IX  
Happiness indicators (ages 4–11)

	Actual question asked	Possible responses	Response frequency (%)			Ratio – top quartile to bottom quartile
			All children	Top quartile	Bottom quartile	
Canada 1998	How often would you say that (your child) seems to be unhappy, sad or depressed?	1. Never or not true 2. Sometimes or somewhat true 3. Often or very true	66.1	67.1	63.0	1.07
Norway 1994	How much of the time in the past 4 days has s/he been happy and satisfied?	1. All the time 2. Most of the time/a large part of the time 3. Some of the time/a little of the time 4. None of the time	32.6	32.1	35.1	0.92
			1.4	0.75	2.0	0.38
			46.8	51.4	44.7	1.15
			50.7	48.0	51.2	0.94
			2.3	0.0	4.1	0.0
United States (NLSY) 1998	He/She is sad, unhappy or depressed?	1. Not true 2. Sometimes true 3. Often true	0.15	0.54	0.0	–
			84.4	85.6	78.0	1.10
			15.0	14.0	20.6	0.68
England 1997	We'd like you to tell us something about your child's behaviour over the last 6 months. For each item, please circle the number for not true, somewhat true, or certainly true to show how true the item is of your child – Often unhappy, downhearted or tearful	1. Not true 2. Somewhat true 3. Certainly true	0.63	0.46	1.4	0.33
			79.9	87.9	73.8	1.19
			15.9	10.8	20.3	0.53
			4.3	1.3	6.0	0.22

TABLE B.X  
Obesity (ages 6–11)

	Actual question asked	BMI > obese threshold	Response frequency (%)			Ratio – top quartile to bottom quartile
			All children	Top quartile	Bottom quartile	
Canada 1998	What is the child's height in metres and centimetres? What is the child's weight in kilograms and grams?	Yes	12.1	5.3	18.8	0.28
Norway 1994	How tall is s/he without shoes? How much does s/he weight, without clothes or shoes?	Yes	3.5	5.5	4.5	1.22
United States (NLSY) 1998	I'd like to find out (child's name) weight. Would you prefer to weigh him/her yourself or shall I do it? I'd like to find out how tall (child's name) is. Would you prefer to measure him/her yourself or shall I do it?	Yes	8.8	7.1	9	0.79
England 1997 <sup>a</sup>	I would like to measure height and weight	Yes	3.9	3.6	3.8	0.95

<sup>a</sup>For the English survey, the child is weighed and measured by the interviewer. Obesity is defined using Cole et al (2000) standards.

TABLE B.XI  
Parental assessment of overall health (ages 2–13)

	Actual question asked	Response	Response frequency (%)	
			All children	Lone-mom households
Canada 1998	In general, would you say (your child's) health is:	<ol style="list-style-type: none"> <li>1. Excellent</li> <li>2. Very good</li> <li>3. Good</li> <li>4. Fair</li> <li>5. Poor</li> </ol>	56.4	50.9
			30.6	33.0
			11.4	14.1
			1.4	1.8
			0.19	0.16
Norway 1995	How would you describe his/her health? Would you say it is:	<ol style="list-style-type: none"> <li>1. Very good</li> <li>2. Good</li> <li>3. Neither good nor bad</li> <li>4. Poor</li> <li>5. Very poor</li> </ol>	71.7	68.0
			25.6	26.3
			1.9	3.6
			0.76	2.1
			0.0	0.0
			56.6	47.9
United States 1999 (NSAF)	Now, I'd like to talk about (child's) health status. In general, would you say (child's) health is...	<ol style="list-style-type: none"> <li>1. Excellent</li> <li>2. Very good</li> <li>3. Good</li> <li>4. Fair</li> <li>5. Poor</li> </ol>	26.6	27.6
			12.7	17.0
			3.6	6.6
			0.49	0.91
England 1997	How is (child's) health in general. Would you say it was	<ol style="list-style-type: none"> <li>1. Very good</li> <li>2. Good</li> <li>3. Fair</li> <li>4. Bad or</li> <li>5. Very bad</li> </ol>	58.6	51.8
			33.1	36.5
			7.4	10.2
			0.83	1.2
			0.14	0.39



TABLE B.XII  
Accident/injuries indicators (ages 2-13)

	Actual question asked	Response		Response frequency (%)	
		All children	Lone-mom households	All children	Lone-mom households
Canada 1998	The following questions refer to injuries, such as a broken bone, bad cut or burn, head injury, poisoning or sprained ankle, which occurred in the past 12 months, and were serious enough to require medical attention by a doctor, nurse, or dentist. Was the child injured in the past 12 months?	1. Yes		11.4	12.4
Norway 1995	(Has your child had medical attention) due to treatment for an injury or accident that occurred during the past 12 months?	1. Yes		8.3	10.3
United States 1998 (NLSY)	During the past 12 months, has your child had any accidents or injuries that required medical attention?	1. Yes		11.7	11.9
England 1997	Now I would like to ask you questions about accidents that may have happened to (name) recently. By this I mean accidental events which resulted in injury or physical harm to (name). In the last 6 months, that is since (date 6 months ago), has (name) had any kind of accident which caused (name) to see a doctor or go to the hospital?	1. Yes		11.3	13

TABLE B.XIIB  
 Accident/injuries (excluding sport related) indicators (ages 2-13)

	Actual question asked	Response	Response frequency (%)	
			All children	Lone-mom households
Canada 1998	The following questions refer to injuries, such as a broken bone, bad cut or burn, head injury, poisoning or sprained ankle, which occurred in the past 12 months, and were serious enough to require medical attention by a doctor, nurse, or dentist. Was the child injured in the past 12 months?	1. Yes	8.7	10.8
Norway 1995	(Has your child had medical attention) due to treatment for an injury or accident that occurred during the past 12 months?	1. Yes	6.9	8.7
United States 1998 (NLSY)	During the past 12 months, has your child had any accidents or injuries that required medical attention?	1. Yes	9.2	10
England 1997	Now I would like to ask you questions about accidents that may have happened to (name) recently. By this I mean accidental events which resulted in injury or physical harm to (name). In the last 6 months, that is since (date 6 months ago), has (name) had any kind of accident which caused (name) to see a doctor or go to the hospital?	1. Yes	7.4	8.9

TABLE B.XIII  
Limited in activity (ages 2-13)

	Actual question asked	Response	Response frequency (%)	
			All children	Lone-mom households
Canada 1998	Does (your child) have any long-term conditions or health problems which prevent or limit his/her participation in school, at play, or in any other activity for a child of his/her age?	1. Yes	4.3	5.5
Norway 1995	Does s/he suffer from any illness or disorder of a more long-term nature, and congenital disease or the effect of an injury [which cause] difficulties getting through the day (school/homework) or taking part in games and activities?	1. Yes	2.6	4.7
United States (NLSY) 1998 <sup>a</sup>	Does (your child) have any physical, emotional or mental difficulties that limit his/her ability to: (a) attend school on a regular basis? (b) do regular schoolwork? (c) do usual childhood activities such as play/sport/games?	1. Yes	5.1	8.1
United States (NSAF) 1999	Does (child) have a physical, learning or mental health condition that limits (his/her) participation in the usual kinds of activities done by most children (his/her) age/limits his her ability to do regular school work?	1. Yes	8.5	12.4
England 1997	Does (name) have any long-standing illness, disability or infirmity? By long-standing I mean anything that has troubled you over a period of time, or that is likely to effect you over a period of time? Does this illness or disability limit (name)'s activities in any way?	1. Yes	9.5	12.4

<sup>a</sup>For the United States NLSY, there were three separate questions asked (a,b,c). If the response was yes for any of the three questions then the child was considered to be limited in activity.

TABLE B.XIV  
Low birth weight<sup>a</sup> (ages 2–13)

	Actual question asked	Response (< 5.5 lbs)	Response frequency (%)	
			All children	Lone-mom households
Canada 1998	What was his/her birth weight in kilograms and grams or pounds and ounces?	1. Yes	6.1	6.5
United States 1998 (NLSY)	Weight of child at birth in ounces	1. Yes	7	10.6
England 1997	We are interested in the birthweight of the children taking part in this survey. Can you tell me what was (name)'s weight at birth	1. Yes	7.1	9.4

<sup>a</sup>Note: Babies born less than 5.5 pounds.

TABLE B.XV  
Asthma (ages 2–13)

	Actual question asked	Response	Response frequency (%)	
			All children	Lone-mom households
Canada 1998	Has (your child) ever had asthma that was diagnosed by a health professional?	1. Yes	15.0	18.1
Norway 1995	Is s/he, or has s/he ever been bothered by asthma?	1. Yes	8.7	11.4
England 1997	Did a doctor ever tell (name) that he/she has asthma?	1. Yes	20.8	25.9

TABLE B. XXVI  
Anxious/frightened indicators (ages 4–11)

	Actual question asked	Possible responses	Response frequency (%)	
			All children	Lone-mom households
Canada 1998	How often would you say that (your child) is too fearful or anxious?	<ol style="list-style-type: none"> <li>1. Never or not true</li> <li>2. Sometimes or somewhat true</li> <li>3. Often or very true</li> </ol>	66.1	60.2
Norway 1995	Has s/he been constantly frightened or anxious?	<ol style="list-style-type: none"> <li>1. Not at all</li> <li>2. A little troubled</li> <li>3. Quite troubled</li> <li>4. Extremely troubled</li> </ol>	88.8	84.7
US 1998 (NLSY)	He/she is too fearful/anxious	<ol style="list-style-type: none"> <li>1. Not true</li> <li>2. Sometimes true</li> <li>3. Often true</li> </ol>	74.0	66.2
US 1999 (NSAF) ages 6–11	I am going to read a list of items that sometimes describe children. For each item please tell me if it has been often true, sometimes true or never true for (child) during the past month – He/she has been nervous, high-strung, or tense	<ol style="list-style-type: none"> <li>1. Never true</li> <li>2. Sometimes true</li> <li>3. Often true</li> </ol>	23.6	30.4
England 1997	We'd like you to tell us something about your child's behaviour over the last 6 months. For each item, please circle the number for not true, somewhat true, or certainly true to show how true the item is of your child – Many worries, often seems worried Many fears, easily scared	<ol style="list-style-type: none"> <li>1. Not true</li> <li>2. Somewhat true</li> <li>3. Certainly true</li> </ol>	71.9	67.7
			22.5	23.5
			5.6	8.8
		<ol style="list-style-type: none"> <li>1. Not true</li> <li>2. Somewhat true</li> <li>3. Certainly true</li> </ol>	65.1	60.1
			28.7	30.7
			6.2	9.2

TABLE B.XVII  
Cruel/bullies indicators (ages 4–11)

	Actual question asked	Possible responses	Response frequency (%)	
			All children	Lone-mom households
Canada 1998 <sup>a</sup>	How often would you say that (your child) is cruel, bullies or is mean to others?	1. Never or not true 2. Sometimes or somewhat true 3. Often or very true	90.0 9.7 0.27	83.1 16.1 0.82
United States (NLSY) 1998	He/She bullies or is cruel to others	1. Not true 2. Sometimes true 3. Often true	82.0 17.0 1.1	74.7 23.4 1.8
England 1997	We'd like you to tell us something about your child's behaviour over the last 6 months. For each item, please circle the number for not true, somewhat true, or certainly true to show how true the item is of your child – Often fights with other children or bullies them	1. Not true 2. Somewhat true 3. Certainly true	85.3 11.6 3.2	78.7 15.3 6.0

<sup>a</sup>Due to small cell sizes, Statistics Canada would not release all category percentages by quartile. Two categories were, therefore, combined.

TABLE B.XVIII  
Restless/overly active indicators

	Actual question asked	Possible responses	Response frequency (%)	
			All children	Lone-mom households
Canada 1998	How often would you say that (your child) can't sit still, is restless, or hyperactive?	<ol style="list-style-type: none"> <li>1. Never or not true</li> <li>2. Sometimes or somewhat true</li> <li>3. Often or very true</li> </ol>	42.0	34.2
United States (NLSY) 1998	He/She is restless or overly active, cannot sit still	<ol style="list-style-type: none"> <li>1. Not true</li> <li>2. Sometimes true</li> <li>3. Often true</li> </ol>	41.8	42.4
England 1997	We'd like you to tell us something about your child's behaviour over the last 6 months. For each item, please circle the number for not true, somewhat true, or certainly true to show how true the item is of your child – Restless, overactive, cannot stay still for long	<ol style="list-style-type: none"> <li>1. Not true</li> <li>2. Somewhat true</li> <li>3. Certainly true</li> </ol>	16.2	23.5
			65.3	54.5
			28.4	35.1
			6.3	10.4
			40.6	30.4
			37.0	39.5
			22.4	30.1

TABLE B.XIX  
Happiness indicators (ages 4-11)

	Actual question asked	Possible responses	Response frequency (%)	
			All children	Lone-mom households
Canada 1998	How often would you say that (your child) seems to be unhappy, sad or depressed?	<ol style="list-style-type: none"> <li>1. Never or not true</li> <li>2. Sometimes or somewhat true</li> <li>3. Often or very true</li> </ol>	66.1 32.6 1.4	52.2 44.9 2.9
Norway 1994	How much of the time in the past 4 days has s/he been happy and satisfied?	<ol style="list-style-type: none"> <li>1. All the time</li> <li>2. Most of the time/a large part of the time</li> <li>3. Some of the time/a little of the time</li> <li>4. None of the time</li> </ol>	46.8 50.7 2.3 0.15	54.4 43.7 1.9 0
United States (NLSY) 1998	He/She is sad, unhappy or depressed?	<ol style="list-style-type: none"> <li>1. Not true</li> <li>2. Sometimes true</li> <li>3. Often true</li> </ol>	84.4 15.0 0.63	78.5 20.0 1.6
England 1997	We'd like you to tell us something about your child's behaviour over the last 6 months. For each item, please circle the number for not true, somewhat true, or certainly true to show how true the item is of your child - Often unhappy, downhearted or tearful	<ol style="list-style-type: none"> <li>1. Not true</li> <li>2. Somewhat true</li> <li>3. Certainly true</li> </ol>	79.9 15.9 4.3	72.1 22.1 5.9



TABLE B.XX  
Obesity (ages 6–11)

	Actual question asked	BMI > obese threshold	Response frequency (%)	
			All children	Lone-mom households
Canada 1998	What is the child's height in metres and centimetres? What is the child's weight in kilograms and grams?	Yes	12.1	17.1
Norway 1994	How tall is s/he without shoes? How much does s/he weight, without clothes or shoes?	Yes	3.5	5.8
United States (NLSY) 1998	I'd like to find out (child's name) weight. Would you prefer to weigh him/her yourself or shall I do it? I'd like to find out how tall (child's name) is. Would you prefer to measure him/her yourself or shall I do it?	Yes	8.8	10.7
England 1997 <sup>a</sup>	I would like to measure height and weight	Yes	3.9	4.1

<sup>a</sup>For the English survey, the child is weighed and measured by the interviewer. Obesity is defined using Cole et al (2000) thresholds.

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