GROWING UP IN SCOTLAND:
The Circumstances of
Persistently Poor Children

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GROWING UP IN SCOTLAND

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Matt Barnes, Jenny Chanfreau and Wojtek Tomaszewski

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Introduction

The Child Poverty Bill, which defined success in eradicating child poverty, created a framework to monitor progress at a national and local level (House of Commons, 2009). The bill established four child poverty targets to be met by 2020/21 and a 'persistent poverty' measure. The Scottish Government will be accountable to these targets.

Current research on child poverty in Scotland has focused on understanding child poverty as a static concept, rather than exploring distinctions according to poverty duration. Consequently little is known about the persistence of child poverty and the circumstances of persistently poor Scottish children. This report uses data from the *Growing Up in Scotland* study (GUS) to explore the circumstances and outcomes of young children who experience persistent poverty. The report investigates three distinct research questions:

• How many children experience persistent poverty?

• Which children are most likely to be persistently poor?

• What are the outcomes of children from persistently poor families?

Findings in this report are based on data from interviews with the cohort child's main carer across the first four years of GUS, covering the period from 2005/06 to 2008/09. Data for both the birth and child cohort children are used in the report. This means that the most recent sweep of GUS captures information about birth cohort children aged 3-4 years and child cohort children aged 5-6 years.

Measuring persistent poverty

We use a relative measure of low income to define poverty which mirrors the Scottish Government's most often used poverty indicator. Children are defined as income poor if they live in a household that has income below 60 per cent of the median equivalised population household income. We define children as persistently poor if they have lived in a low-income household at three or four of the four annual GUS interviews.

GUS collects information on household income via a question which asks the mother of the GUS child to indicate the total income of her household from 17 income bands, ranging from 'Less than £3,999' to '£56,000 or more'. This is a rather different approach to that used in specialist income surveys, which ask questions about a variety of income sources to all adults in the household. Clearly, using just one question to measure household income is not ideal and other research has also found that when using a single question women with children tend to underestimate their household's income. It is important to note therefore that using a poverty measure based on income collected in this way may well impact on findings, and this should be borne in mind when interpreting the analysis presented in this report.

How many children experience persistent poverty?

Approximately three in ten young Scottish children were income poor according to the four separate annual sweeps of GUS from 2005/06 to 2008/09. Poverty is clearly dynamic. Some children experienced poverty for longer durations and some for shorter durations, whilst others avoided poverty altogether. Two fifths of GUS children (42 per cent of each cohort) experienced poverty at least once in the four-year period suggesting that poverty touches more Scottish children than standard, point-in-time estimates may imply.

One in four (24 per cent) 3-4 year-olds and one in five (21 per cent) 5-6 year-olds were persistently poor over the period (that is, poor in three or four years from 2005/06 to 2008/09). Four in five children who are poor in 2008/09 had been persistently poor over the previous four years.

It is important to note that we are not able to compare our estimates of persistent poverty in Scotland with estimates of persistent poverty in Great Britain. Although estimates of persistent poverty among young Scottish children appear higher than estimates of persistent poverty among children in Great Britain there are a number of reasons why we are not comparing like for like. For example, estimates from Great Britain come from other surveys, such as the Families and Children Study (Barnes *et al.,* 2008) and the British Household Panel Study (DWP, 2009a), which collect information about children of all ages and use a different, more detailed way of asking families about their income.

Which children are most likely to be persistently poor?

The risk of being persistently poor varies according to children's background circumstances. Unsurprisingly, parental work status played a key role. Children most at risk of persistent poverty, when controlling for a range of background circumstances, were those living in workless households and those with low 'average work intensity' (a measure of the amount of work parents do across the period). For example, the vast majority of children (89 and 85 per cent of the birth and child cohorts respectively) with parents with low average work intensity (which corresponds to the situation of a family where all parents worked, at most, in only one of the four years under investigation) were persistently poor.

Other children at risk of persistent poverty included those in lone-parent families, larger families, families with a mother from ethnic minority communities, families with parents with no or low education, families that lived in rented housing (particularly social-rented) and families that lived in multiply-deprived areas. Of course some of these factors may not be driving persistent poverty, they may be consequences of being poor, and for others the relationship with poverty is inherently complex.

What are the outcomes of children from persistently poor families?

One of the reasons GUS asks only limited information about income is to allow the interviewer sufficient time to ask mothers about a range of issues regarding their children. We looked at five indicators of child disadvantage, including being overweight, concerns over language development, and social, emotional and behavioural problems – and explored whether persistently poor children were at greater risk. We also counted how many of these disadvantages children have and focused on children that face multiple problems.

Children in persistently poor families were more likely to face disadvantages than children in temporary poor families. For example, children in both cohorts were more likely to have accidents or injuries, and suffer from social emotional and behavioural difficulties, the longer they had been poor. However, when controlling for other family and area factors in our statistical models, the direct relationship between the duration of low income and child outcomes disappeared. Furthermore, there was no relationship between any experience of poverty over the period and child outcomes. Instead we saw a range of other factors being associated with child outcomes, including gender, family size and mothers' ethnicity and health.

What is important to note here is that the effects of living in poverty are complex and not necessarily captured solely by an indicator of low income or the duration of low income (particularly when using the imperfect measure of income collected in GUS). Poverty can manifest itself in many ways, and many of the effects of poverty are captured by characteristics such as low parental education and living in a lone-parent family – both associated with persistently-poor families. Therefore our research suggests that the impact of poverty appears to be evident through the association with other family disadvantages, rather than low income per se, and that the presence and accumulation of these disadvantages can have negative impacts on outcomes for young children.

The children are perhaps too young for the data to pick up direct effects of persistent poverty – which may only be seen directly later on in childhood – particularly for measures such as BMI, as young children develop at such different rates. Further more detailed information on disadvantages more germane to younger children may in fact reveal differences at this younger age, but these measures are not available in the GUS data. Also, previous research has shown that mothers try to shield the effect of poverty from their children and they are perhaps more likely to do this or more succesful in doing this when their children are very young.

Implications for policy

The evidence from GUS suggests that persistent poverty is concentrated in a minority, but still a substantial proportion (over one in five), of young Scottish children. Our study adds to a wealth of other research that suggests that poverty in childhood can have negative effects on children's well-being. Despite this evidence, there are no concerted policy measures to tackle persistent poverty above those designed to tackle poverty in general.

This research has further supported the assertion that being without work, and in particular regular work, is a key influence on poverty. However, given that families without work are also likely to experience a range of other disadvantages – including low education and poor health, and often require quite complex childcare arrangements to be able to work – employment policy needs to operate alongside policies designed to contend with these other hardships. If finding work is key to the chances of escaping persistent poverty, policy needs to ensure that when work is found it is secured and sustained. Job retention and job progression are also key.

Although work is often seen as the best protection from poverty, this research has also shown that work does not always protect families from persistent poverty, particularly where there is only one worker in the household. Also, policy must recognise that work is not always possible for all parents at all times, particularly during periods of ill health and concentrated times of caring for young children. This implies that other types of support may be required. And given this research has shown links between persistent poverty and maternal health, low education and family composition, it may be that targeted and tailored support for families and mothers with specific circumstances may be appropriate.

This research has shown that poverty is a complex and dynamic phenomenon and that measuring poverty, and its impacts, is not straightforward. Understanding poverty through survey data requires a range of robust indicators, ideally measured over time. GUS provides a useful source of data for exploring poverty among young children in Scotland and there is undoubtedly scope for further research of this rich dataset. Some suggestions for further research include exploring families' transitions into and out of poverty, and the role of financial stress on parenting.

chapter
INTRODUCTION

1

GROWING UP IN SCOTLAND:

The Circumstances of Persistently Poor Children

The aim of this report is to investigate the circumstances and outcomes of young children who experience persistent poverty using longitudinal data from the Growing Up in Scotland (GUS) survey. This chapter will begin with a brief overview of the UK and Scottish policy targets on child poverty and an introduction to the concept of persistent poverty. The chapter will then outline the aims of the research questions, before introducing the data which will be used.

1.1 Child poverty targets and persistent poverty

The UK Government has made a commitment to end child poverty by 2020 (HM Treasury, 2004) and also to focus effort on improving the lives of the most disadvantaged members of society (Cabinet Office, 2006). At the heart of the Government's target to eradicate child poverty is evidence to suggest that living in poverty is linked to detrimental outcomes for families with children both now and in the future. There is a wealth of evidence that links living on a low income to other disadvantages. For example, the latest *Opportunity for All* report shows that children born into poverty are more likely to have a lower birth weight, higher infant mortality and poorer health than better off children (DWP, 2007a). Research has also shown a relationship between poverty in childhood and well-being as adults, demonstrating that child poverty can leave a damaging long-term legacy regardless of other family circumstances (Blanden and Gibbons, 2006).

Initial progress seemed to indicate that the UK Government had succeeded in arresting and reversing the long-term trend in rising child poverty, lifting approximately 700,000 children out of relative poverty between 1998/99 and 2004/05 (DWP, 2006), including approximately 90,000 Scottish children (SG, 2009). However, there are some commentators who predict that the Government will fail to meet its commitment to end child poverty by 2020 (Hirsch, 2006). Additionally Brewer *et al.,* (2007) estimated that the Government was falling behind in attempts to meet a provisional target to reduce child poverty by a half by 2010.

The Scottish Government's latest statistics on child poverty reveal that approximately 20 per cent of children are living below the low-income threshold[1] (SG, 2009). One of the reasons it is difficult to eradicate child poverty is that current social and economic policies are failing to reach families with the most severe and persistent (or recurrent) economic problems.

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[1] Measures of income poverty and the definition of poverty used in this project are discussed in Chapter 2.

Government figures for the latest period (2003-2006) show that one in ten children in the UK lived in households with persistently low income before housing costs – defined as living in low income for three or more years of a four-year period. This figure rises to 14 per cent of children living in persistent poverty when housing costs are taken into account (DWP, 2009b). However, over a 15-year period there has been a steady reduction in the proportion of children living in persistently low income households (DWP, 2009a).

In June 2009 the UK Government published The Child Poverty Bill, which defined success in eradicating child poverty and created a framework to monitor progress at a national and local level (House of Commons, 2009). The bill proposed that Scottish and UK Governments draw up strategies for meeting the targets of eradicating child poverty. It also established four child poverty targets to be met by 2020/21 and a 'persistent poverty' measure. Research to date on child poverty in Scotland has focused on measuring child poverty using point in time methods rather than distinctions according to the length of time in poverty. Consequently little is known about the persistence of child poverty and the circumstances of persistently poor Scottish children.

1.2 Aims of this report

The introduction of the Growing Up in Scotland survey in 2005 enables analysts to study the duration and dynamic nature of child poverty, because the same children are followed over time. The aim of this research is to gain an understanding of the background characteristics of children in persistent poverty and the relationship with a range of child outcomes, such as cognitive ability, health and social behaviour.

The report seeks to answer the following distinct research questions:

• How many children experience persistent poverty?

• Which children are most likely to be persistently poor?

• What are the outcomes of children from persistently poor families?

Persistent poverty is defined using methodology that reflects, as closely as possible, the Government's Households Below Average Income (HBAI) series (DWP, 2009b) – we also discuss the limitations of the GUS data for measuring household income. The project explores a variety of characteristics of persistently poor children and how they compare to other children, notably those in temporary poverty and those who avoid poverty. Various circumstances of the children, their parents and their family background are investigated, including family size and composition, parents' work status, education and health, and tenure and characteristics of the local area.

There is a wealth of information on the living standards of children who are currently poor, but rather less evidence on the association between living standards and persistent poverty. The analysis presented in this report looks directly at these issues and pays particular attention to the likely impact of living in persistent poverty on outcomes for children.

1.3 The Growing Up in Scotland (GUS) survey

This report is based on analysis of the first four sweeps (2005/06 to 2008/09) of GUS. Commissioned by the then Scottish Executive Education Department (SEED), with fieldwork managed by the Scottish Centre for Social Research (ScotCen), GUS is a large-scale longitudinal social survey following the lives of 8,000 Scottish children from early years through to their teens.

The survey was designed to examine the characteristics, circumstances and behaviour of children from birth to late adolescence, to inform policies affecting children and their families in Scotland. The main subject areas covered by GUS are childcare, education, social work, health and social inclusion.

The representative sample of children in Scotland was drawn from Child Benefits records and consists of two cohorts of children. The birth cohort consists of 5,000 infants born between June 2004 and May 2005 and aged 10 months in the first sweep. The child cohort consists of 3,000 toddlers born between June 2002 and May 2003 and aged 34 months in the first sweep.

The GUS survey is carried out through face-to-face interviews with the child's main carer, although the second sweep of the study also included a separate interview with the main carer's resident partner. GUS also collects some information directly from the children including measures of physical growth and assessments of cognitive ability. The GUS families are followed up annually until the target child is 5 years old and subsequently, at key stages in the child's development.

The analysis in this report uses information from families that took part in all of the first four sweeps of GUS. Some families who initially took part in GUS did not do so for all of the subsequent sweeps. In fact, in both GUS cohorts approximately one in four of the original Sweep 1 sample failed to participate in at least one subsequent sweep. There are a number of reasons why respondents drop out from longitudinal surveys and such attrition is not random. However we use the longitudinal weights supplied with the GUS dataset in our analysis to adjust for this.[2]

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2   For further information about weighting in GUS see the user guides on the GUS website
     www.growingupinscotland.org.uk

chapter

**HOW MANY CHILDREN EXPERIENCE
PERSISTENT POVERTY?**

2

This chapter sets out how we define persistently poor children using GUS data. It begins with a brief discussion of using low income as an indicator of poverty. It then describes how household income is collected in GUS and how this compares to the data collection methods of other surveys. There follows a description of the poverty threshold used in this project and how persistent poverty is defined. The section concludes with an analysis of the prevalence of persistently poor children over the first four sweeps of GUS, covering the period from 2005/06 to 2008/09.

Key findings from this chapter are:

- Relative low income is used as an indicator of poverty (Section 2.1).
- GUS collects income in a different way than other social surveys used to estimate income poverty.
- The GUS surveys find approximately three in ten young Scottish children to be living in income poor households at any one point in time (Section 2.3).
- We define persistent poverty as living in a low-income household at three or four of the four annual sweeps of GUS from 2005/06 to 2008/09 (Section 2.4).
- Using this definition we find that one in four 3-4 year-olds and one in five 5-6 year-olds were persistently poor (Section 2.5).
- When considering just those children living in a poor household in 2008/09, we see that the majority, four in five, had been living in persistent poverty over the previous four years (Section 2.5).

2.1 Using low income to conceptualise poverty
Traditionally, the understanding of poverty has focused on the lack of resources at the disposal of an individual or household to ensure a suitable standard of subsistence or living. Despite the abundance of theoretical work in the conceptualisation of poverty, it is only relatively recently that the UK and Scottish Governments have adopted an official low-income threshold (for children) following the announcement of the target to eradicate child poverty by 2020.

This 'official' conceptualisation of poverty is provided in the annual series of statistics called *Households Below Average Income (HBAI)*, first published in 1988[3] by the UK Government, and its Scottish equivalent *Scottish Households Below Average Income (SHBAI)*, first published in 2006 (for the latest versions see DWP, 2009b and SG, 2009). The concept of poverty used in the *HBAI* and *SHBAI* series is regarded primarily according to '*potential living standards as determined by disposable income*' (DWP, 2007b). However, it has been pointed out in the literature that it is problematic to determine what is meant by a minimum level of subsistence, or living standards, and to equate this with a sum of money from which this can be achieved (e.g. Gordon *et al.,* 2000).[4]

An alternative method of measuring poverty according to income levels is through the construction of relative poverty lines. This approach defines as income poor those who fall a certain distance below an average income level. Similarly to other approaches, relative measures of poverty have attracted some critique.[5] However, despite the criticism, the relative poverty lines remain the most commonly used approach to the measurement of poverty.

This project will define poverty according to the Scottish Government's most often used poverty indicator – that is, relative low income or more precisely below 60 per cent of median equivalised household income before housing costs. The construction of this measure using GUS data is described in the following sections while technical details are further explained in Appendix 1.

2.2 Measuring household income in GUS
Before categorising households as income poor or not, we need to be able to establish the amount of income each of them receives. We measure total household income using the single question asked to the mother (or main carer) of the GUS child. This question asks the mother to indicate the total income of their household from all sources before tax – including benefits, interest from savings and so on. Respondents are asked to choose from 17 income bands, ranging from 'Less than £3,999' to '£56,000 or more'. The wording of the income question in GUS is provided below.

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3   Prior to the HBAI series the Government produced the Low Income Families (LIF) statistics, which concentrated on showing the numbers of people living on, or below 140 per cent of supplementary benefit/income support.

4   An alternative way of looking at poverty is through expenditure rather than income and deprivation of essential items. Income and expenditure reveal different aspects of poverty and each has its own strengths and weaknesses. Atkinson (1989) argues that an income measure is about a right to a minimum level of resources, while expenditure is about a standard of living that can be achieved. Income does not completely reflect actual or potential living standards and recently the Government has incorporated material deprivation in its measure of child poverty (DWP, 2003). On the other hand, patterns of expenditure may be highly dependent on the spending preferences of households.

5   For instance, Callan and Nolan (1994) demonstrate that the method cannot take into account improvements in living standards of low-income groups that are shared by the rest of the population or differences in average living conditions across countries. Furthermore, Veit-Wilson (1998) argues that relative income poverty lines represent nothing more than an abstract statistical construct without independent validity as an empirical indicator of poverty.

Methodology box 2.1

I would now like to ask you some questions about your employment and income. As with all your answers, the information you give will be entirely confidential.

This card shows different income levels as weekly, monthly and annual amounts*.

Which of the letters on this card represents the **total** income of your household from **all** sources before tax – including benefits, interest from savings and so on?

Just tell me the letter beside the row that applies to you.

Q Less than £3,999	J £23,000 - £25,999
T £4,000 - £5,999	D £26,000 - £28,999
O £6,000 - £7,999	H £29,000 - £31,999
K £8,000 - £9,999	A £32,000 - £37,999
L £10,000 - £11,999	W £38,000 - £43,999
B £12,000 - £14,999	G £44,000 - £49,999
Z £15,000 - £17,999	N £50,000 - £55,999
M £18,000 - £19,999	E £56,000 or more
F £20,000 - £22,999	

* Only the annual amounts are shown here.

The first thing to note is that the width of the income bands differs, with wider bands towards the top of the income scale. As shown in Table 2.1, this results in a relatively even spread of each cohort sample across the bands; the majority of the bands contain between four and seven per cent of each of the cohorts.[6]

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6   For instance, Callan and Nolan (1994) demonstrate that the method cannot take into account improvements in living standards of low-income groups that are shared by the rest of the population or differences in average living conditions across countries. Furthermore, Veit-Wilson (1998) argues that relative income poverty lines represent nothing more than an abstract statistical construct without independent validity as an empirical indicator of poverty.

Table 2.1   Distribution of total annual household income, GUS 2008/09

Band	Birth Cohort		Child Cohort	
	Per cent	Unweighted count	Per cent	Unweighted count
Less than £3,999	0	14	0	6
£4,000 - £5,999	3	94	2	38
£6,000 - £7,999	3	100	4	63
£8,000 - £9,999	4	104	5	76
£10,000 - £11,999	4	122	4	69
£12,000 - £14,999	7	205	5	102
£15,000 - £17,999	6	215	7	118
£18,000 - £19,999	4	143	4	79
£20,000 - £22,999	5	199	6	111
£23,000 - £25,999	7	239	6	125
£26,000 - £28,999	6	239	6	120
£29,000 - £31,999	6	246	5	109
£32,000 - £37,999	9	384	8	177
£38,000 - £43,999	8	334	9	192
£44,000 - £49,999	7	293	7	167
£50,000 - £55,999	6	270	6	132
£56,000 or more	13	592	15	365
Total	100	3,793	100	2,049

The way GUS collects income information is different from the more specialised income surveys. For example, the Family Resources Survey (FRS), used as the basis for HBAI and SHBAI, asks each adult household member about their own income and totals household income from all sources. The FRS also verifies income amounts during the survey interview, for example by asking respondents to show details of pay slips and benefit awards.

Clearly there are likely to be differences in quality when just one question collects information on total income, when this is asked about the household rather than the individual, and when banded income is used. Research by Micklewright and Schnepf (2007) shows that differences in quality are more noticeable at the lower ends of the income distribution. They also found that when using a single question more accurate estimates of household income are generally obtained from men compared with women, and from respondents with income from employment rather than mainly from benefits or pensions. There is also evidence of income being underestimated by women with children.

On the other hand, there are indications that prior questioning on sources of income (as is the case in GUS) might improve the reporting of income. Furthermore, the loss of information in using income bands rather than a continuous measure is minor when looking at the lower end of the income distribution as most of the loss of variation is in the top (uncapped) category. Overall, the loss in accuracy of income estimates obtained from a single question tends not to be 'catastrophic' (Micklewright and Schnepf, 2007, p.20) and have to be weighed against the cost and feasibility of collecting detailed income information in GUS given the competing demands from other topics in the survey. However, using a poverty measure based on income collected in this way may well impact on findings, and hence this should be borne in mind when interpreting the analysis presented in this report.

2.2.1 Equivalising household income

Clearly the standard of living provided by a household's income depends on the size and composition of the household. For example, given two households with £1000 a month income (and everything else equal), we would not expect a lone mother with one child to have the same living standards as a couple with four children. The £1000 has to provide for more people in the couple household and hence we would expect their standard of living to be lower.

To better reflect how a household's financial resources relate to the living standards of its members, we use 'equivalised' income. The equivalisation of income is the process by which total income is adjusted for the number of adults and the number of children of different ages in the household. This enables a comparison of the potential living standards of different types of household.[7] There are a number of equivalisation methods and the one used in this report is the so-called 'modified OECD' equivalence scale, which is also used in the SHBAI series. To equivalise income using banded income, we apply the equivalisation calculation to the mid-point of each band. Clearly there is no mid-point of the top unbounded category (£56,000 and above), so here we used a value of £60,000. Appendix 1 to the report explains in detail the process of income equivalisation applied in this project.

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7   An underlying assumption of income equivalisation that has been questioned by much research is that household income is shared equally amongst household members. Research indicates that women often prioritise the needs of other family members over their own and many poor parents tend to protect their children from the effects of poverty (for example Goode, Callender and Lister, 1998; Millar and Glendinning, 1989; and Middleton *et al.,* 1997) although, as Marsh and McKay (1994) showed, parents do not always succeed in this. While the assumption of equal sharing does not always hold and families differ in the extent to which they pool and share their resources equally, larger households do benefit from economies of scale and this report equivalises income to account for this.

2.3 Measuring income poverty using GUS

We define our poverty threshold in the same way as used in official government statistics; that is, we define a household as poor if its equivalised weekly household income before housing costs is below 60 per cent of the population median income.[8] Clearly we can not obtain the population median from the GUS dataset, as this covers only two cohorts of young children. Therefore, for each corresponding year of GUS, we obtain estimates of median equivalised income for the Scottish population from the Government's SHBAI series.[9] We then calculate 60 per cent of this figure to obtain the low income, or 'poverty', thresholds.[10]

GUS households with income below the poverty threshold are categorised as income poor for each sweep of data. Table 2.2 shows the income below which different family types and sizes would have been considered income poor in 2007/08 (corresponding to Sweeps 3 and 4 of GUS), using the 60 per cent of median income reported in SHBAI for 2007/08 (SG, 2009). This shows, for example, that the poverty threshold is just under £11,000 a year for a lone parent with one child under 14.

Table 2.2   Low income or 'poverty' thresholds, annual income, 2007/08

	Couple family	Lone parent family
One child under 14	£14,714	£10,668
Two children under 14	£17,167	£13,120
One child under 14, one aged 14 or over	£18,761	£14,714
Three children under 14	£19,619	£15,573
Two children under 14, one aged 14 or over	£21,213	£17,167

8   The official definition uses net income from all sources while GUS collects total gross income information. However, the difference between gross and net income is smallest towards the bottom of the income distribution (as a higher proportion of low income households' income fall below the personal allowance thresholds for income tax and national insurance and/or come from means-tested non-taxable benefits). As this study uses a low-income indicator rather than the whole income distribution the effect of GUS only collecting gross income should not be substantial in this analysis.

9   So, for GUS 2005/06 we obtain income estimates from SHBAI 2005/06, for GUS 2006/06 we obtain income estimates from SHBAI 2006/07, and for GUS 2007/08 we obtain income estimates from SHBAI 2007/08. The SHBAI for 2008/09 is not yet in the public domain, and hence for GUS 2008/09 we obtain income estimates from SHBAI 2007/08.

10 This report includes all families, including those where one or both parents were self-employed. While HBAI has noted that the reported incomes among the self-employed group can be anomalous in relation to their living standards, HBAI analyses also include the self-employed (DWP, 2009).

The poverty rates for children in GUS for 2005/06 to 2008/09 are presented in Figure 2.1, along with estimates for families with young children in Scotland and the UK based on analysis of FRS data.[11] The apparently higher proportion of income poor families in GUS compared with comparable families with young children in Scotland is likely to be due to the differences in how the income information is collected. As discussed earlier, GUS collects information on household income using a single question generally asked of the mother, who we know tend to report lower incomes.

Figure 2.1   Percentage of children living in income poverty 2005/06-2008/09, according to FRS and GUS
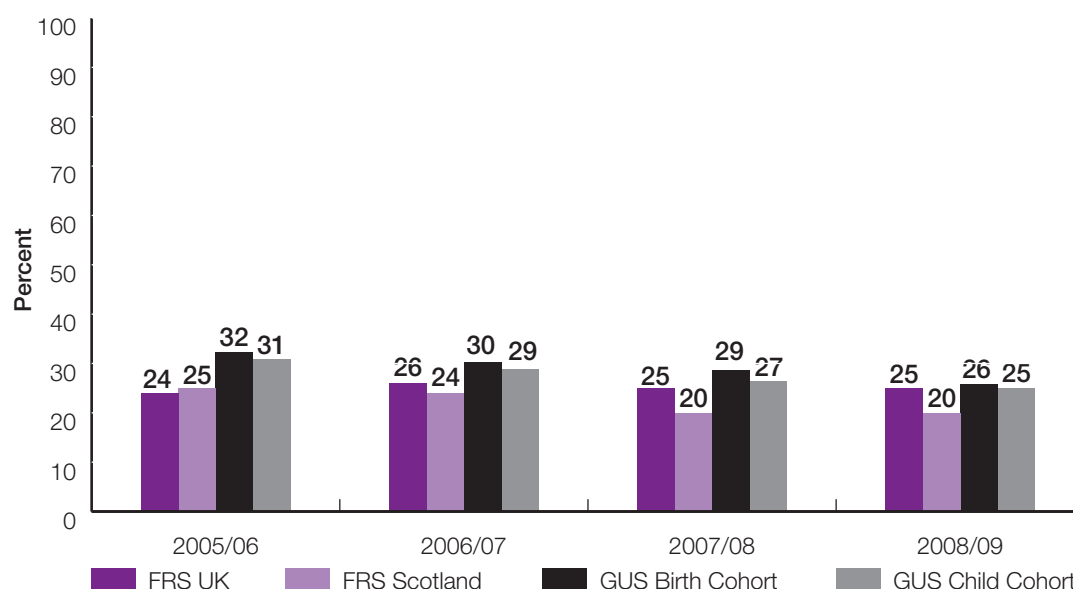
FRS Base: All families with children aged 4 and under in UK and Scotland
GUS Base: All families

2.4 Measuring persistent poverty in GUS

Research on low income has found that individuals experience different durations of low income (see e.g. DWP, 2007b; Smith and Middleton, 2007, which includes a summary of ways in which persistent poverty is measured). This implies that the low-income population is heterogeneous, comprised of those who experience low income for varying lengths of time. This report uses four years of GUS data to investigate issues of persistent poverty.

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11 Analysis carried out by Scottish Government.

The choice of the length of period over which to observe household income is restricted by the availability of GUS data. At the time of the analysis four sweeps of GUS data were available, covering the period from 2005/06 to 2008/09, and we use them all in this research. Having a short observation period means that there is relatively little information from which to categorise patterns of low income. Categorizing patterns of low income over short periods is complicated by the fact that some starts and ends of poverty spells are not observed in the data (the problem of 'censoring'). However, having a short observation period means that attrition is less of an issue and the sample for whom four waves of data are available are more representative (and larger) than samples using longer observation periods.

This research therefore uses a relatively straightforward summary measure of persistent poverty. The methodology used to identify persistently poor families mirrors that developed for the HBAI series (DWP, 2007b) and used in *Opportunity for All* (DWP, 2007a). This methodology counts the number of times a child was observed to be poor at the four consecutive annual GUS interviews.[12]

Figure 2.2 presents a count of the number of times a family had income below the low-income threshold between 2005/06 to 2008/09 – from a minimum of zero (not below the low-income threshold in any of the four years) to a maximum of four (below the low-income threshold in all of the four years).

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12 As the observations are annual it is possible that a child could have been poor in between interviews and this would not be captured in our analysis.

Figure 2.2   Number of times families were living in poverty, 2005/06-2008/09
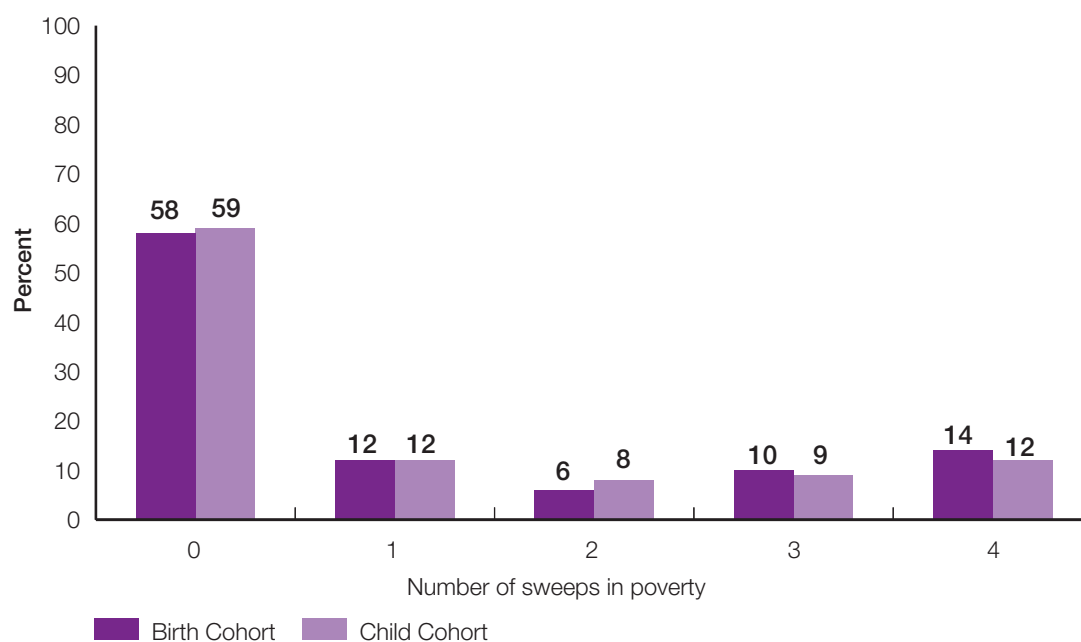
Base: Families who took part in all sweeps of GUS

Note: 20 per cent of the birth cohort and 21 per cent of the child cohort did not answer the income question in all four sweeps. These households are excluded from Figure 2.2.

Based on the number of times a family is in income poverty, our longitudinal poverty status classifies GUS children into three categories:

• 'Not poor' – Not poor at any of the four annual interviews

• 'Temporary poor' – Poor at one or two interviews

• 'Persistently poor' – Poor at three or four interviews

Persistent poverty, therefore, is defined as having low income at three or four of the four annual GUS interviews from 2005/06 to 2008/09.[13]

Before presenting the proportion of children in each category, the next stage of categorisation sought to impute information for those households with missing income information in one wave of GUS. This affected one in five GUS panel households and meant that we were able to improve the sample size for later analysis.

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13 None of the analysis takes into account how poor families were when they are poor (the shortfall of income below the poverty line) or the extent to which income was above the poverty line during periods that families were not poor.

2.4.1 Poverty status imputation

As mentioned above, not all panel households answered the income question in every sweep – 20 per cent of the birth cohort and 21 per cent of the child cohort had missing income information. However, the majority of these households had in fact answered the income question in three of the four sweeps. We therefore decided to impute the longitudinal poverty status for these households and the procedure we used is explained in detail in Appendix 1.

Table 2.3 shows the unweighted sample size in each cohort; those who reported income in all sweeps; the number with missing income in one sweep only and the final sample size after imputation. As the table shows, we were able to impute for the vast majority of households (480 of the 550 in the birth cohort, and, 261 of the 304 in the child cohort).

Table 2.3 **Birth and child cohort sample sizes before and after poverty status imputation**

	Birth cohort	Child cohort
Complete sweep 1-4 panel sample	3,844	2,100
With income in all sweeps	3,118	1,680
Missing income in 2-3 sweeps	176	116
Missing income in 1 sweep (impute)	550	304
Imputations made	480	261
Final analysis sample	3,598	1,941

2.5 The incidence of persistently poor children in Scotland

Over one fifth of GUS children (24 per cent of the birth cohort and 21 per cent of the child cohort) were in persistent poverty during the period 2005/06 to 2008/09. Nearly six in ten (58 per cent of each cohort) GUS children lived in families which had income above the low-income threshold in all of the four years, while one in five (18 per cent of the birth cohort and 20 per cent of the child cohort) were poor in one or two years – the temporary poor.[14] The number of GUS children in each of the longitudinal poverty categories is also given in Table 2.4 and demonstrates adequate sample sizes for further analysis.[15]

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14 The temporary poor group of families is not homogenous and contains, amongst other categorisations, families that have escaped or entered poverty over the period. These two groups of families in particular are likely to have quite distinct outcomes related to their poverty transitions and further investigation of these families is beyond the scope of this report.

15 Including imputed households in the final classification of longitudinal poverty status changed the incidence estimates only very slightly. For example, 58 per cent of the birth cohort and 59 per cent of the child cohort were not poor prior to imputation and 58 per cent of each cohort were not poor after imputation.

Table 2.4   Longitudinal poverty status of GUS children, 2005/06-2008/09

Longitudinal poverty status	Birth Cohort		Child Cohort	
	Per cent	Unweighted count	Per cent	Unweighted count
Not poor	58	2,333	58	1,261
Temporary poor	18	611	20	356
Persistently poor	24	654	21	324
All	100	3,598	100	1,941

The proportion of GUS children (42 per cent of each cohort) that experienced poverty at least once in a four year period is similar to that found by Barnes *et al.,* (2008) for British families with children using FACS data from 2001 to 2004. However, disproportionately more GUS children experience persistent poverty (24 per cent of the birth cohort and 21 per cent of the child cohort, compared with 12 per cent of the FACS families).

There are a number of reasons for these differences across the two surveys, most notably the different way income is collected and the different samples of children across the two surveys. FACS uses a similar methodology to collect income as the FRS, so collects far more detailed information than GUS. Here it is worth mentioning how using banded income, rather than actual income, may result in fewer observed changes in income from one year to the next – which may also help to explain why more children remain in poverty (and hence are persistently poor). Assuming the family composition remains the same, a larger change in household income is required for a GUS family to move across the poverty threshold as they would have to report a different band from the previous year. When actual income is used, a very small change in household income can push a family across the low income threshold.

Another difference between the two studies is that GUS focuses on families with at least one 'young' child (i.e. aged 3-4 years or 5-6 years in 2008/09), whereas FACS includes families with dependent children of any age. It is possible that families with young children are more likely to be income poor as they are more likely to have one parent not in paid work, due to childcare responsibilities. Also, the higher poverty rates found in GUS, whether due to the aforementioned reason or simply measurement error, are also more likely to lead to higher persistent poverty rates by definition.

Previous research has shown that cross-sectional survey measures underestimate the number of families who experience poverty over time (Barnes *et al.,* 2008). Again, we see here that although approximately 3 in 10 households were poor at any one sweep of GUS, when looked at over a four-year period we see that over 4 in 10 experienced poverty at least once.

Table 2.5 illustrates the duration of poverty for children who are currently poor (that is, poor in the last sweep of GUS in 2008/09). Here we see that the majority of poor children (82 per cent of the birth cohort and 76 per cent of the child cohort) have been living in persistently poor households over the previous four years. This suggests that poverty can be a lasting experience, although the previously mentioned issues with the way GUS collects income may mean that households are less likely to report a change in income.[16]

Table 2.5   Longitudinal poverty status of GUS children income poor in the latest sweep (2008/09)

Longitudinal poverty status	Birth Cohort		Child Cohort	
	Per cent	Unweighted count	Per cent	Unweighted count
Not poor	N/A	N/A	N/A	N/A
Temporary poor	18	156	24	104
Persistently poor	82	541	76	280
All poor in 2008/09	100	697	100	304

Despite various limitations with the way GUS collects income information, this longitudinal measure of poverty can be used to compare GUS children with different durations of living in low-income households. The rest of this report adopts these categories to investigate the circumstances of children living in persistent poverty. This begins by looking at the types of children who are persistently poor (Chapter 3) and then moves on to focus on their health and developmental outcomes (Chapter 4).

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16 Although other surveys capture income more precisely, it can lead to researchers highlighting small changes in income that push a household over the poverty line, even though it is unlikely to result in a marked change in household living standards. In fact very small income fluctuations are often not a useful way to re-categorise a household's poverty status, and some analysts use a move across the income threshold accompanied by a 'substantial' change in income (say 5 per cent) to identify a transition in to or out of poverty.

3

chapter
WHICH CHILDREN ARE MOST LIKELY TO BE PERSISTENTLY POOR?

The aim of this chapter is to identify the children most likely to be persistently poor and compare these with children in short-term poverty and those who avoid poverty. Various background characteristics of children are explored, including family size and composition, parents' work status, education, health, tenure and characteristics of the local area. We first provide a descriptive picture of the types of children in each poverty category. We then use multivariate regression analysis to unravel which characteristics are related to an increased risk of persistent poverty when holding other, potentially confounding, characteristics constant.

The key findings from this chapter are:

- Certain children were more likely than others to experience persistent poverty. These included those in lone-parent families, larger families, families with a young mother, families with parents with low education, and families who live in rented housing, particularly social-rented housing (Section 3.1).

- Some of these factors may not be driving persistent poverty, they may be consequences of being poor, and for others the relationship with poverty is inherently complex. Multivariate analysis – designed to identify the risk of persistent poverty, while controlling for the impact of possibly confounding influences – shows that family work status is the factor that bears most on the risk of persistent poverty. Being continuously out of work is the key driver of persistent poverty (Section 3.2).

3.1 The types of children most at risk of persistent poverty

This section looks at the risk of poverty duration according to a range of socio-demographic and socio-economic characteristics. Particular attention is paid to identifying the types of children most at risk of persistent poverty. In this section we look descriptively at the association between each characteristic and poverty duration. This provides an early indication of some of the underlying factors that may be linked to persistent poverty.

We identified a number of factors that are likely to be associated with poverty duration, covering socio-demographic background, socio-economic characteristics and features of the local area. Some of these were measured just once during the period under investigation, such as ethnicity. Other factors are more dynamic by nature and we take advantage of the fact that GUS is a longitudinal study to construct measures of change (so called time-varying factors), such as changes in the number of children in the family (perhaps due to a new born or an older child leaving home). Table 3.1, along with the relevant section in Appendix 1, presents a detailed description of all factors and explains how they were measured using the GUS data.

Table 3.1   Factors included in analysis of risk of poverty duration

Variable	Year measured	Categories
Socio-demographic		
Sex of child	sweep 1	Boy, Girl
Ethnic group of mother	sweep 1	White, Ethnic minority communities
Age of mother at birth of GUS child	sweep 1	Under 25, 25-29, 30-34, 35 and over
Family type transitions	sweep 1 to sweep 4	Stable couple, Couple who separated, Stable lone parent, Lone parent who re-partnered
Number of children at Sweep 1	sweep 1	1, 2, 3 or more
Change in the number of children	sweep 1 to sweep 4	No change, Increase, Decrease
GUS child is mother's firstborn	sweep 1	Yes, No
Mother's health status	sweep 1 and sweep 4	No health problems (at sweeps 1 or 4), Reduced health problems (at sweep 1 but not at sweep 4), Developed health problems at (not at sweep 1 but at sweep 4), Persistent health problems (at both sweep 1 & 4)
Socio-economic		
Average Work Intensity	sweep 1 to sweep 4	A measure of household employment. See Appendix 1 for detailed description
Mother's education	sweep 1	Higher grade or above, Standard grade or lower
Father's education	sweep 1	Higher grade or above, Standard grade or lower
Social class at Sweep 1	sweep 1	Managerial/professional, occupations, Intermediate, Small employer/own account, Lower supervisory/technical occupations, Semi-routine and routine occupations, No-one in employment
Family has a car	sweep 1 to sweep 4	At none of the sweeps, At 1-3 sweeps, At all four sweeps
Whether family uses childcare	sweep 1 to sweep 4	Not using at Sweeps 1 & 4, Started using, Stopped using, Using at Sweeps 1 & 4
Tenure	sweep 1	Owner occupier, Social renter, Private renter, Other
Local area		
Urbanization	sweep 1	Large urban, Other urban, Towns, Rural
Area deprivation level (SIMD quintiles)	sweep 1	Least deprived quintile, 2nd quintile, 3rd quintile, 4th quintile, Most deprived quintile

Tables 3.2 – 3.4 present the risk of poverty duration for each group of factors. The results are presented separately for the birth and child cohorts. However, since the patterns of associations are generally very similar for both cohorts, we do not refer to specific cohorts when describing the results (unless the cross-cohort differences are significant).

Table 3.2 presents the risk of poverty duration by socio-demographic background. There are no differences with respect to the sex of the child but children from ethnic minority communities are more at risk of persistent poverty than White children.[17] Children with young mothers (under 25) faced a higher risk of persistent poverty than those with older mothers; as did those that had lived in a lone-parent family at any time during the observation period (compared to those permanently living in a couple family).

17 The results related to ethnicity should be interpreted with a degree of caution due to a small number of children from ethnic minority communities in the GUS sample.

Table 3.2   Risk of poverty duration by socio-demographic background
Row % (per cohort)

	Birth cohort				Child Cohort			
	Not poor	Temporarily poor	Persistently poor	Unweighted count	Not poor	Temporarily poor	Persistently poor	Unweighted count
Sex of child								
Boy	59	17	24	1,817	60	20	20	959
Girl	58	19	23	1,715	60	20	20	921
Ethnic group of mother								
White	59	18	23	3,452	60	20	20	1,838
Ethnic minority	34	17	49	80	44	13	44	42
Age of mother at birth of GUS child								
Under 25	22	27	50	625	28	34	39	345
25-29	61	19	20	816	59	21	19	423
30-34	74	13	12	1,243	75	13	12	671
35 and over	72	14	14	848	75	12	13	441
Family type transitions								
Stable couple	73	15	12	2,883	76	15	9	1,471
Couple who split up	30	30	39	159	34	36	30	68
Lone parent who partnered	13	38	49	158	16	44	40	98
Stable lone parent	7	20	73	332	14	27	59	243
Number of children at sweep 1								
1	62	18	21	1,650	61	23	16	612
2	62	18	20	1,253	65	19	16	870
3+	44	19	37	629	46	18	35	398
Change in the number of children								
No change	58	19	23	2,251	62	20	18	1,340
Increase	62	16	21	1,143	59	19	22	444
Decrease	27	24	49	138	36	21	43	96
GUS child is mother's firstborn								
No	56	18	25	1,831	58	19	23	1,006
Yes	60	18	22	1,701	62	21	17	874
Mother's health status								
No health problems	62	18	21	2,624	63	19	17	1,379
Reduced health problems	50	21	29	233	50	20	31	130
Developed health problems	50	19	31	369	57	19	24	185
Persistent health problems	45	19	36	306	46	24	29	186
All	**58**	**18**	**24**	**3532**	**60**	**20**	**20**	**1880**

Children in stable lone-parent families were in the family type most at risk of persistent poverty. For example, 73 per cent of birth-cohort children who were in lone-parent families throughout the period were persistently poor, compared with only 12 per cent of children from stable couple-families. Children from larger families also faced a higher risk of persistent poverty as did children whose mother reported health problems or disability, particularly if these were longer-term.

Table 3.3 looks at socio-economic factors. As expected, socio-economic status of the main earner is a very strong predictor of persistent poverty. Virtually all families where no-one was in employment were poor at some point, and about 8 out of 10 of such families experienced persistent poverty. Among the families where the main earner was employed, the risk of persistent poverty decreased in line with increases in socio-economic status of the job. For example, only about 3 per cent of the families where the main earner was employed in a professional/managerial job experienced persistent poverty, compared with about a quarter of the families where the main earner had a semi-routine or routine occupation.

Similarly, the average work intensity (AWI)[18] in the household strongly shapes the risk of persistent poverty and poverty in general. Only about 10 per cent of families where all adults worked full-time for virtually the whole period under investigation (AWI>75%) were affected by any form of poverty, and only 1 per cent of such families experienced persistent poverty. The results were almost as low in the case of the families with AWI in the range 51-75%. Families with AWI of 26-50% had markedly higher risks of persistent poverty – about half of such families experienced poverty at some point and one in five were persistently poor. As expected, the families who only used up to a quarter of their workforce potential faced highest risk of poverty: almost 9 out of 10 such families lived in persistent poverty and virtually all of the remaining 10 per cent experienced temporary poverty at some point between 2005/06 and 2008/09.

It is evident that the risk of persistent poverty is related to parent's education: Higher grades or above offers a good protection against persistent poverty both in the case of mothers' and fathers' education. Ownership of a car was also linked to the risk of persistent poverty (although this, like other factors, could also be an outcome of poverty). Also, families who did not use childcare faced persistent poverty. This could be for a variety of reasons; including having one parent at home caring for a very young child who looks after the family through choice or being constrained by uneconomical childcare costs. Finally, social renters faced a higher risk of persistent poverty than private renters and owner-occupiers.

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18 AWI measure is based on the average use of household workforce, i.e. the ratio of people in employment to the total number of adults available to work. See Appendix 1 for the full definition and examples of calculating AWI.

Table 3.3   Risk of poverty duration by socio-economic background
Row % (per cohort)

	Birth cohort				Child Cohort			
	Not poor	Temporarily poor	Persistently poor	Unweighted bases	Non poor	Temporarily poor	Persistently poor	Unweighted bases
Mother's education								
Higher grade or above	70	16	14	2,755	69	18	13	1,466
Standard grade or lower	28	24	49	777	31	26	42	414
Father's education								
Higher grade or above	69	17	14	2,590	69	17	14	1,393
Standard grade or lower	34	21	45	942	37	27	37	487
Social class at sweep 1								
Managerial/professional	87	10	3	1,434	88	9	3	753
Intermediate occupations	65	22	13	263	66	29	5	139
Small employer/own account	60	23	18	334	65	23	12	176
Lower supervisory/ technical occupations	68	21	11	473	69	25	7	246
Semi-routine and routine occupations	45	28	27	621	48	29	23	330
No-one in employment	0	18	81	407	2	24	75	236
Average work intensity[19]								
76-100%	89	10	1	623	89	9	1	348
51-75%	80	16	4	1,316	81	15	4	659
26-50%	47	30	22	685	49	32	19	378
0-25%	1	10	89	327	1	15	85	173
Family has a car								
At all four sweeps	73	16	10	2,877	75	16	9	1,540
At 1-3 sweeps	17	32	51	343	17	40	43	167
At none of the sweeps	9	15	76	312	9	24	67	173
Whether family uses childcare								
Both at sweep 1 & 4	68	17	15	2,022	68	18	14	1,250
At sweep 1 but not at sweep 4	46	18	36	208	60	20	19	262
At sweep 4 but not at sweep 1	52	22	26	768	37	27	36	219
Neither at sweep 1 nor at sweep 4	37	18	45	534	32	24	43	149
Tenure								
Owner occupier	80	13	6	2,526	82	14	4	1,353
Social renter	14	27	59	732	15	34	51	393
Private renter	33	26	41	183	32	24	44	101
Other	31	29	40	91	36	22	42	33
Total	**58**	**18**	**24**	**3532**	**60**	**20**	**20**	**1880**

19 In the case of AWI, the unweighted bases are lower than for other characteristics. This is because the AWI indicator is a complex variable, derived using several different questions (see Appendix 1 for details), some of which were particularly affected by non-response. For this reason, the poverty estimates for AWI have been calculated separately, using smaller bases (2951 cases for Birth Cohort and 1558 cases for Child cohort).

Table 3.4 shows the risk of poverty duration by indicators of the local area. Overall, families living in cities faced higher risk of poverty in general, and persistent poverty in particular, than families living in towns or in rural areas. The risk of persistent poverty was proportionate to the area deprivation level, represented by the value of the Scottish Index of Multiple Deprivation characterising the area: the higher the SIMD value, the higher risk of poverty.

Table 3.4   Risk of poverty duration by area indicators
Row % (per cohort)

	Birth cohort				Child Cohort			
	Not poor	Temporarily poor	Persistently poor	Unweighted count	Non poor	Temporarily poor	Persistently poor	Unweighted count
Urbanization								
Large urban	55	17	28	*1,187*	57	22	21	*593*
Other urban	56	19	25	*1,180*	59	18	23	*627*
Town	60	20	20	*481*	63	22	15	*279*
Rural	67	19	14	*684*	65	18	16	*381*
Area deprivation (SIMD quintiles)								
Least deprived	87	9	4	*809*	87	10	3	*451*
2	72	17	11	*778*	74	18	9	*444*
3	63	18	19	*729*	61	21	18	*393*
4	46	22	32	*580*	46	24	31	*284*
Most deprived	29	23	48	*636*	28	28	44	*308*
Total	**58**	**18**	**24**	***3532***	**60**	**20**	**20**	***1880***

3.2 Modelling the key risk factors behind the duration of poverty

Having investigated the separate relationships between the poverty duration and each of the factors, we now turn to multivariate analysis where we include all factors in a single statistical model. The main aim of this analysis is to identify which factors are associated with poverty duration, when accounting for other, potentially confounding, variables. We do so by specifying a statistical model using the poverty categories defined previously – 'no poverty', 'temporary poverty', 'persistent poverty'. Whereas some studies have used multinomial logistic regression for this analysis, we recognize here that the poverty categories are intrinsically ordered and hence we use an ordinal logistic regression model, and compare each poverty category to a 'shorter-duration poor' group (i.e. comparing short-term poor to those who avoid poverty, and then long-term poor to short-term poor).[20] The factors are represented by the same indicators that were used in the previous section (see Table 3.1 for details). Table A2.1 in Appendix 2 presents the odds ratios from the ordinal logistic models, estimated for each cohort separately. The interpretation of odds ratios is explained in Appendix 1.

It is important to note that the analysis presents significant *relationships* between the characteristics of families and the risk of persistent poverty – the analysis does not unravel any *cause and effect* in the relationship. For example, if there is a relationship between tenure and persistent poverty, where families in social rented housing are more likely to experience persistent poverty, the analysis cannot unravel whether living in social rented housing is a cause of persistent poverty. There may also be moderating factors, which may themselves increase the chance of a family experiencing persistent poverty. The main point to note is that the analysis presented here does not provide cause, furthermore respondents were not asked to attribute cause themselves.

Previous research (e.g. by Adelman *et al.,* (2003), Berthoud *et al.,* (2004), Middleton (2006) and Barnes *et al.,* (2006)) found that factors associated with persistent poverty include work status, ethnicity, health and age. Similar factors were found to play a role in the current research.

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20 The statistical analysis and approach used in this report represents one of many available techniques capable of exploring this data. Other analytical approaches may produce different results from those reported here.

Factors significantly associated with persistent poverty in both cohorts were (see Table A2.1 for detail):

• Work intensity, low average work intensity

• Socio-economic status, low socio-economic status of the main earner

• Family type, children that had lived in a lone-parent family at any point during the observation period

• Age of mother, children with young mothers (under 25)

• Education, children whose parents (particularly mothers) had a lower level of education

• Tenure, children who lived in social-rented accommodation

• Local area, children who lived in deprived areas

Low average work intensity (0-25%) was by far the strongest predictor of increased risk of persistent poverty. This is not surprising, as this level of AWI corresponds to persistently workless families or those with working parents in only one of the four years under investigation on average. Also, socio-economic status of the main earner strongly influenced the risk of persistent poverty: the families where the main earner had lower socio-economic status faced higher risk of a longer experience of poverty than other families.

Some of the factors only had a significant effect in one data cohort. Notably, ethnicity appears to be a highly significant factor in the birth cohort, but not in the child cohort, which may be due to a smaller sample size in the latter case. Families with more than one child faced a higher risk of poverty in the child cohort but not the birth cohort.

Finally, it needs to be noted that some of the results of the regression analysis, such as the effect of decrease in the number of children or the child being the first child in the family, despite being significant are rather difficult to interpret and worthy of further investigation.[21]

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21 For example, the positive effect of decrease in the number of children on the risk of poverty may be related to family separation, which may lead to drop in available income, or the death of a child, which could lead to a parent ceasing employment either permanently or temporarily thus affecting income.

chapter
**WHAT ARE THE OUTCOMES OF CHILDREN
FROM PERSISTENTLY POOR FAMILIES?**

4

There is a wealth of information on the living standards of families with children who are in poverty, but rather less evidence on the association between living standards and persistent poverty. The analysis presented in this chapter looks directly at these issues and pays particular attention to the likely impact of living in persistent poverty on outcomes for children. The research will explore the impacts of persistent poverty on child outcomes, focusing on measures of cognitive, behavioural, emotional and health outcomes. We measure the child outcomes at the latest available time-point, GUS sweep 4, and hence represent an assessment of child well-being at the end of the period under investigation.

We provide descriptive analyses that illustrate the relationship between a child's longitudinal poverty status and each of the child outcomes. We also explore the relationship with multiple negative child outcomes. Again regression analyses are used to unravel whether persistent poverty is related to an increased risk of each, and multiple, child outcomes when other potentially confounding factors are taken into account. These potentially confounding factors include the socio-demographic variables described in the previous chapter. Throughout the chapter the main comparisons of child outcomes are made between children living in families in persistent poverty and children living in families in temporary poverty.[22]

The key findings from this chapter are:

• Persistently poor GUS children appear more likely to have a range of negative outcomes, including being overweight (birth cohort only), had accidents (child cohort only), language development concerns (birth cohort only), general development concerns (both cohorts), social, emotional and behavioural difficulties (both cohorts) and multiple negative outcomes (both cohorts) (Section 4.1).

• However, when other factors are taken into account the relationship between poverty duration and child outcomes disappears. Instead we see a range of factors being associated with outcomes for these children, including gender and ethnicity of the child, family size and health of the mother (Section 4.1).

4.1 The duration of poverty and child outcomes
In this section we introduce the child outcomes that we will look at in the report. There are five in total, spanning a range of areas including being overweight, concerns over language development, and social, emotional and behavioural problems. We also explore how many of these problem outcomes children have and focus in on children that have multiple problems.

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22 Using the latest sweep of GUS to identify child outcomes means that there may be some blurring of the relationship with the longitudinal poverty groups. This is because some of the persistently poor children, as defined in this research, may not be living in a poor family in 2008/09 (the definition states that to be persistently poor a child has to be living in a poor family for three or more out of four years). Likewise, a temporary poor child may be living in a poor family in 2008/09. However, these potential inconsistencies are likely to average out and not have a major effect on the analysis.

We compare the prevalence of child outcomes across the three poverty duration categories – no poverty, short-term (or temporary) poverty, and persistent poverty – using bar charts. We use coloured bars if the relationship between poverty duration and the child outcome is statistically significant. Likewise, we use white bars to denote no significant relationship between poverty duration and the child outcome.[23] Each statistical test is carried out separately for the birth cohort and the child cohort. Clearly these charts only focus on two-way relationships and in the subsequent section we see whether these relationships hold when taking other, potentially confounding factors into account.

4.1.1 Body Mass Index

The primary reason for concern about children's diets and physical activity is the effect that these have on health, both in childhood and later life, in particular in relation to being overweight and obese. Overweight and obesity are terms that refer to an excess of body fat and they usually relate to an increased weight-for-height ratio. GUS measures children's height and weight and these can be used to calculate Body Mass Index (BMI).

BMI takes into account weight and height: it is calculated as weight (kg) divided by squared height (m^2). Using cut-off points derived from internationally collected data, BMI values can be used to indicate the proportion of children who are underweight, normal weight, overweight and obese. For our analysis we derive a binary categorical variable which has the following categories:

• Neither overweight nor obese

• Overweight including obese

Information on children's height and weight was previously collected in GUS sweep 2 with key findings presented in an earlier report (Bradshaw *et al*., 2008). That report found that most children were of 'normal weight' but around one in five were overweight (including obese). Girls were more likely than boys to be overweight, as were children living in lone parent families, White children and children with a long-standing illness. However, research has shown that different nutritional patterns among infants and young children may take some time to manifest themselves in the form of excess weight or obesity in later childhood (Ong *et al*., 2000). Therefore it is not necessarily the case that differences in BMI would become immediately apparent in younger children, as some changes in weight may take a longer time to emerge. Hence being able to look at BMI at sweep 4, particularly for the child cohort, is of interest.

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23 We use the chi-square test to test for statistical siginficance at the 95% confidence level. It should also be noted, given the relationship between statistical significance and sample size, that the birth cohort is almost twice as big as the child cohort.

Figure 4.1 shows the percentage of children overweight, including obese, by poverty duration. Being persistently poor was associated with an increased risk of being overweight for the birth cohort, although the difference between persistently poor children and those that avoided poverty was only four percentage points. There was no significant relationship between poverty duration and being overweight for the child cohort despite the same percentage point difference (although the relationship was significant at the 10 per cent confidence level).

Figure 4.1   Percentage of children overweight by poverty duration

% of children overweight including obese
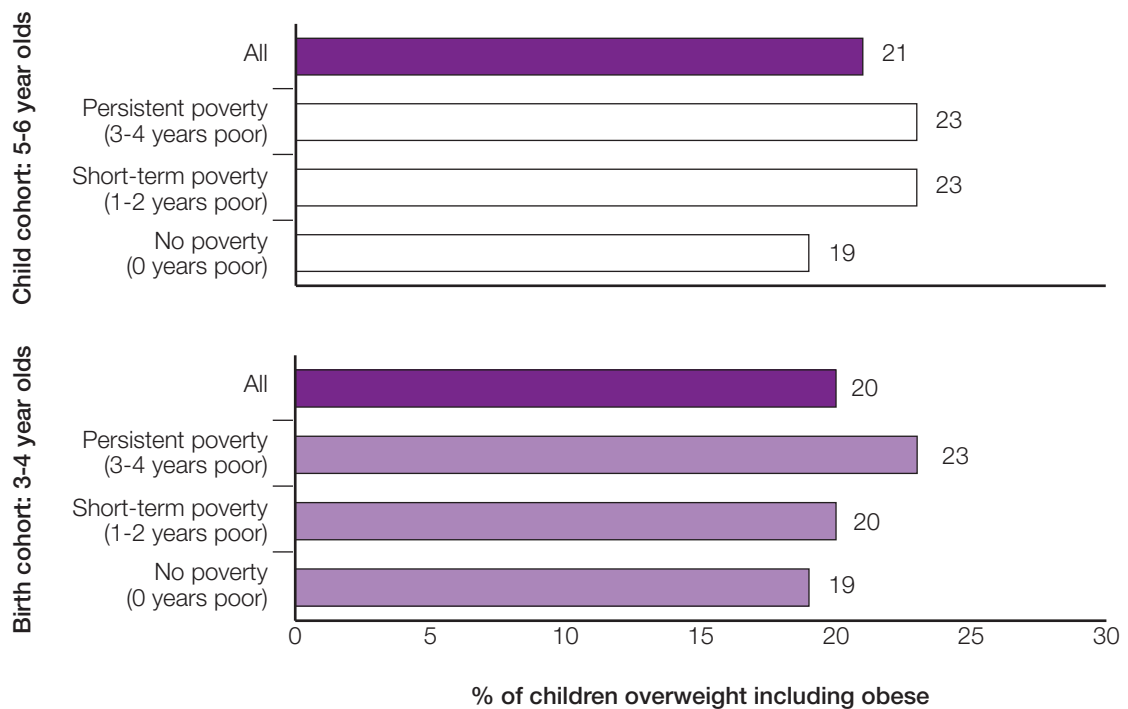
Base: Birth cohort panel children (weighted 3275, unweighted 3327)
        Child cohort panel children (weighted 1805, unweighted 1817)
Note: Overweight measured using Body Mass Index (BMI)
Note: Coloured bars indicate statistically significant (p<0.05) relationship between poverty duration and BMI.
        White bars indicate no statistically significant (p<0.05) relationship between poverty duration and BMI.
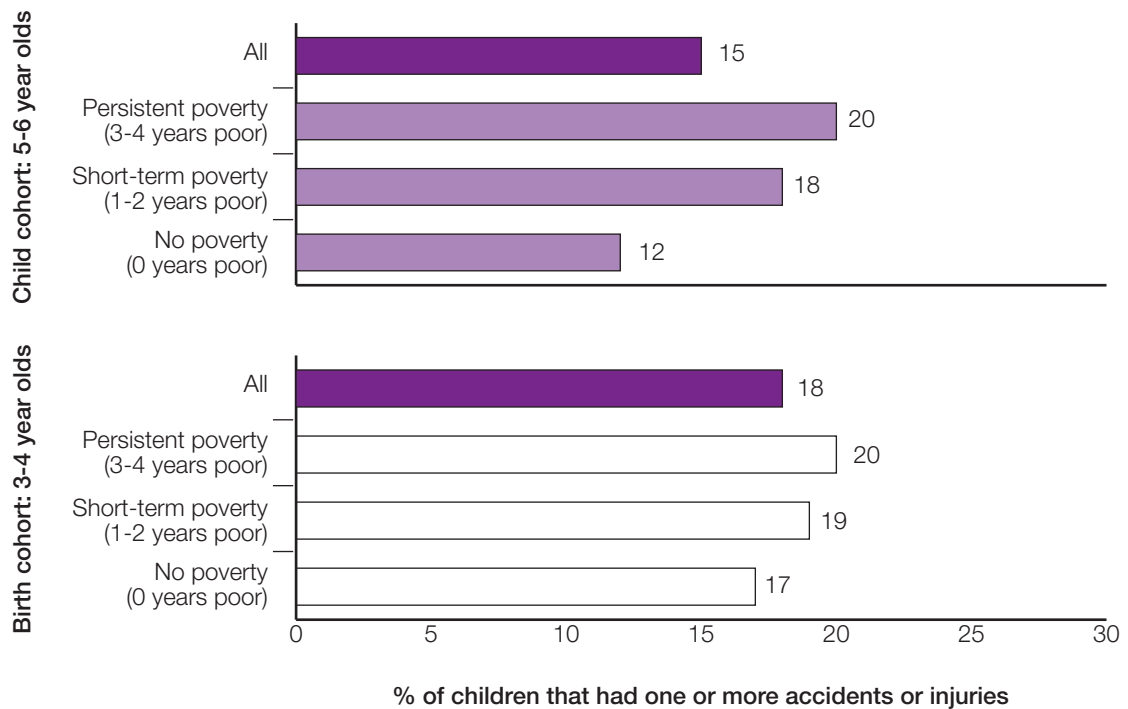
4.1.2 Number of accidents/injuries

As well as collecting information on BMI, GUS mothers were asked if in the last year their child had experienced an accident or injury which had required medical attention. Previous analysis of GUS showed that toddlers were much more likely than babies to require NHS treatment or advice as a result of accidents, as were a slightly higher percentage of boys than girls. However, in general only a minority of parents reported that an accident or injury had necessitated such attention (in sweep 4 this was 15% of parents in the birth cohort and 18% of parents in the child cohort).

For our analysis we derive a binary categorical variable which has the following categories:

- Child has had an accident or injury that resulted in medical attention in past year
- Child has not had an accident or injury that resulted in medical attention in past year

Figure 4.2 shows the percentage of children that had an accident or injury in the last year according to poverty duration. Children in the child cohort were more likely to have had an accident or injury if their family had spent some time in poverty. Whether the poverty experience was temporary or persistent appears to make little difference. There was no significant relationship between poverty duration and having accidents or injuries for the birth cohort (although the relationship was significant at the 10 per cent confidence level).

Figure 4.2 Percentage of children that had one or more accidents or injuries in the last year by poverty duration

Child cohort: 5-6 year olds

All	15
Persistent poverty (3-4 years poor)	20
Short-term poverty (1-2 years poor)	18
No poverty (0 years poor)	12

Birth cohort: 3-4 year olds

All	18
Persistent poverty (3-4 years poor)	20
Short-term poverty (1-2 years poor)	19
No poverty (0 years poor)	17

0   5   10   15   20   25   30

% of children that had one or more accidents or injuries

Base: Birth cohort panel children (weighted 3565, unweighted 3598)
        Child cohort panel children (weighted 1941, unweighted 1932)
Note: Coloured bars indicate statistically significant (p<0.05) relationship between poverty duration and accidents/injuries.
        White bars indicate no statistically significant (p<0.05) relationship between poverty duration and accidents/injuries.

4.1.3 Child speech and language development

GUS mothers were asked whether they had any concerns with their child's speech and language (e.g. the child's language was developing slowly, or it is hard for other people to understand the child). We categorised children according to whether there were concerns or not.

• Mother does not have concerns with child's speech and language

• Mother has concerns with child's speech and language

Around one in seven (15 per cent) of the birth cohort and one in nine (11 per cent) of the child cohort had speech and language concerns. Figure 4.3 shows how this varies according to poverty duration. The incidence of language and speech problems increased with poverty duration for the birth cohort and this relationship was statistically significant. Although there appears to be an increased incidence for any experience of poverty among the child cohort, this was not statistically significant (although it was at the 10 per cent confidence level).

Figure 4.3   Percentage of children whose mother has concerns about their language development by poverty duration

% of children with language concerns
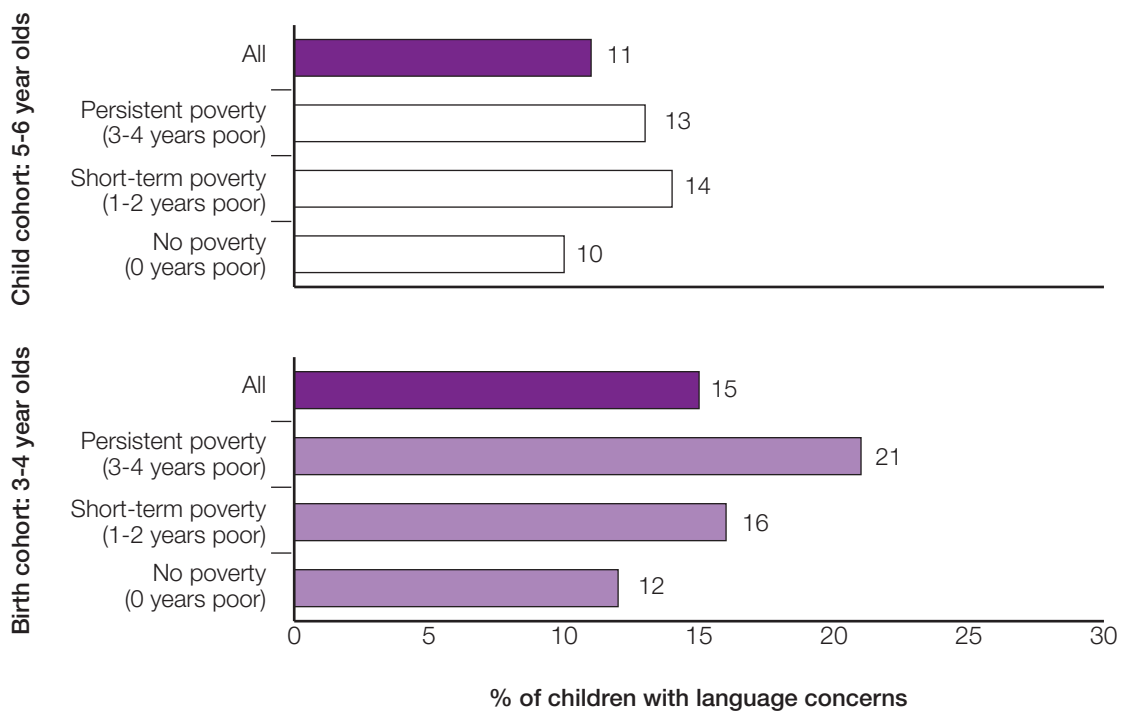
Base: Birth cohort panel children (weighted 3564, unweighted 3596)
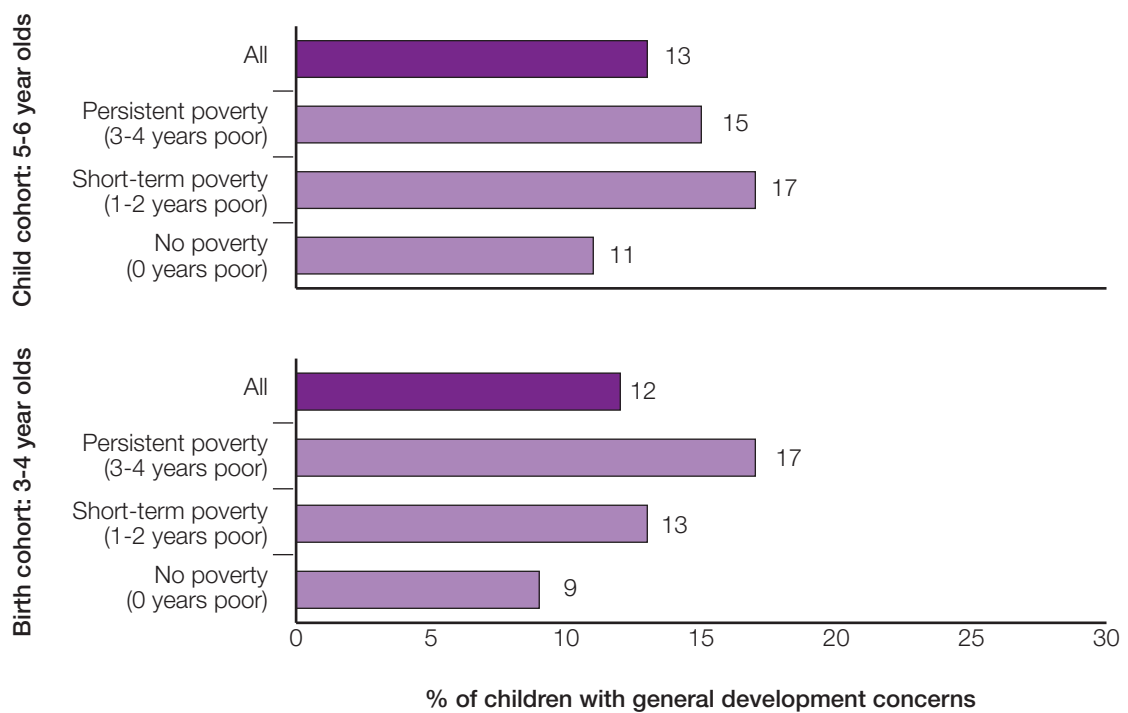   Child cohort panel children (weighted 1931, unweighted 1941)
Note: Coloured bars indicate statistically significant (p<0.05) relationship between poverty duration and language concerns.
         White bars indicate no statistically significant (p<0.05) relationship between poverty duration and language concerns.

4.1.4 General development

GUS mothers were also asked about other areas of their child's development, learning or behaviour. About 1 in 8 thought their child had other general development concerns (Figure 4.5). For both the birth and child cohort there was a significant relationship with poverty duration. A longer poverty duration suggested a higher incidence of development concerns for the younger children, whereas it was any experience of poverty for the older children.

Figure 4.4   Percentage of children whose mother has concerns about their general development by poverty duration

% of children with general development concerns

Base: Birth cohort panel children (weighted 3566, unweighted 3598)
         Child cohort panel children (weighted 1931, unweighted 1941)
Note: Coloured bars indicate statistically significant (p<0.05) relationship between poverty duration and general development concerns.
         White bars indicate no statistically significant (p<0.05) relationship between poverty duration and general development concerns.

4.1.5 Social, emotional and behavioural difficulties

Children's social, emotional and behavioural development is captured in GUS via the Strengths and Difficulties Questionnaire (SDQ). The SDQ is a brief behavioural screening questionnaire designed for use with 3-16 year olds. The scale includes 25 questions which are used to measure five aspects of the child's development – emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and pro-social behaviour. A score is calculated for each aspect, as well as an overall 'difficulties' score which is generated by summing the scores from all the scales except pro-social.

The overall difficulties score is what we use in this analysis. It is calculated by adding together responses to 20 items from the following components:

- emotional symptoms (5 items)

- conduct problems (5 items)

- hyperactivity/inattention (5 items)

- peer relationship problems (5 items

A higher score indicates greater evidence of difficulties. There are established thresholds indicating 'borderline' (score of 14-16) or 'abnormal' scores (score of 17 or above) (Goodman, 1997). We have created a measure that identifies:

- Children with borderline or above difficulties (SDQ of 14 or higher)

- Children below the borderline (SDQ of below 14)

Figure 4.4 presents the percentage of children with at least borderline difficulties according to poverty duration. For both cohorts there was a significant relationship between poverty duration and likelihood of difficulties, with almost one in four persistently poor children with a borderline score or above.

Figure 4.5   Percentage of children with at least borderline social, emotional and behavioural difficulties by poverty duration

% of children with borderline or above difficulties
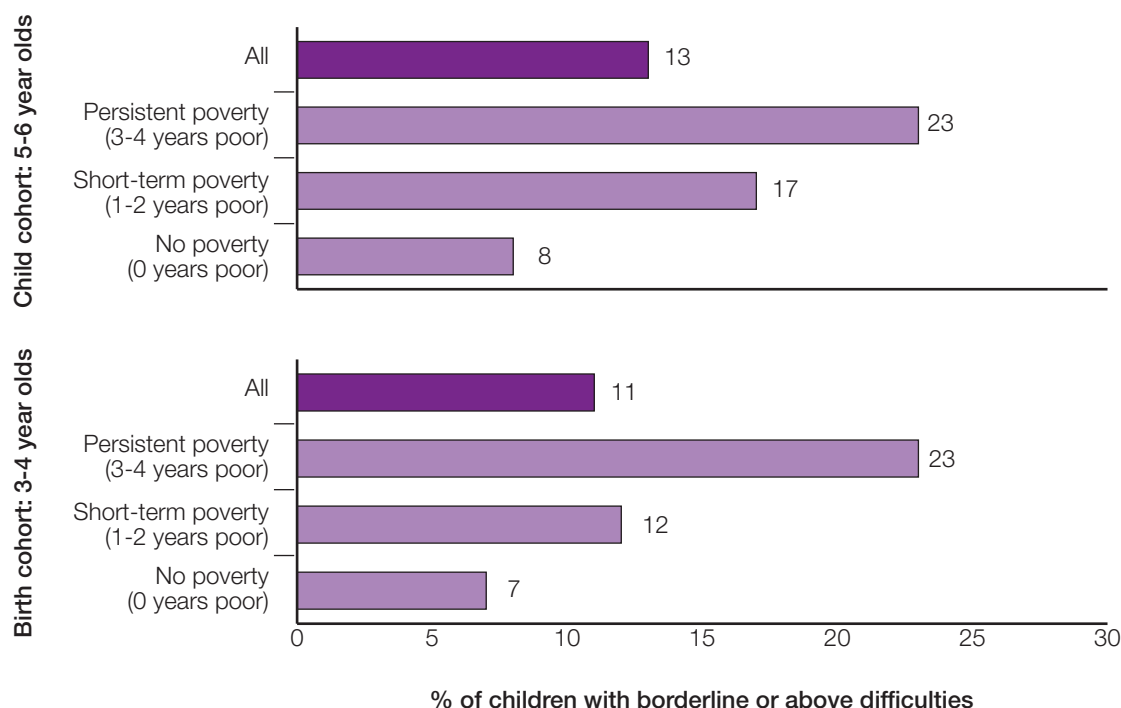
Base: Birth cohort panel children (weighted 3515, unweighted 3553)
            Child cohort panel children (weighted 1907, unweighted 1923)
Note: Coloured bars indicate statistically significant (p<0.05) relationship between poverty duration and difficulties.
            White bars indicate no statistically significant (p<0.05) relationship between poverty duration and difficulties.

4.1.6 Multiple outcomes

There is evidence to suggest that children who live in families with multiple problems are themselves much more likely to have negative outcomes. Albeit based on older children than in GUS, children aged 13 to 14 years who live in families with five or more problems (such as neither parent in work, poor housing conditions, parents with mental health problems) are 36 times more likely to be excluded from school than children in families with no problems and six times more likely to have been in care or to have contact with the police (HM Treasury and DFES, 2007). Similar findings were reported by Oroyemi *et al.,* (2009).

We have seen in the previous chapter that persistently poor children were also likely to live in families that were workless, of low social class, living in rented accommodation and multiply deprived areas. Here we explore whether children were more likely to experience multiple negative child outcomes the longer they lived in poverty.

We construct a measure of multiple problems by counting the number of negative outcomes each child has. So each child has a score from zero to five based on the number of outcomes that we have used in our analysis above:

- Child is overweight, including obese (using the Body Mass Index)

- Child had an accident or injury in the past year (reported by mother)

- Mother has concerns about child's language development (reported by mother)

- Mother has concerns about child's general development (reported by mother)

- Child has borderline or above social, emotional or behavioural difficulties (using the Strengths and Difficulties questionnaire)

Figure 4.6 looks at the percentage of children who experienced multiple problems (two or more) according to their longitudinal poverty status. There is a relationship between poverty and multiple outcomes for both sets of children, but the duration of poverty appears to matter most for the younger children, where we see a steep increase in the risk of multiple problems the longer they have been in poverty.

CHAPTER **4**

What are the outcomes of children from persistently poor families?

Figure 4.6   Percentage of children whose have multiple problems by poverty duration
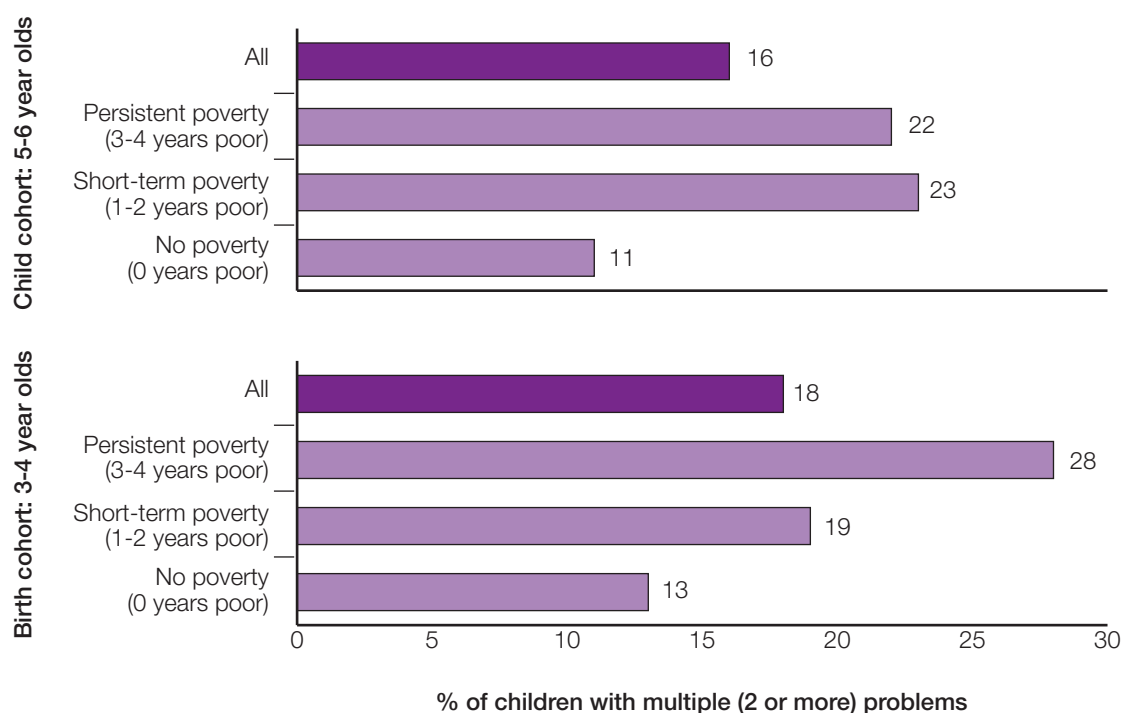
% of children with multiple (2 or more) problems

Base: Birth cohort panel children (weighted 3565, unweighted 3598)
         Child cohort panel children (weighted 1930, unweighted 1941)
Note: Coloured bars indicate statistically significant (p<0.05) relationship between poverty duration and multiple problems.
         White bars indicate no statistically significant (p<0.05) relationship between poverty duration and multiple problems.

4.2 The association between the duration of poverty and child outcomes

The statistical analysis is based on logistic regression models and is used to determine whether the duration of poverty is associated with the indicators of child well-being used above. These were:

- Child is overweight, including obese (using the Body Mass Index)

- Child had an accident or injury in the past year (reported by mother)

- Mother has concerns about child's language development (reported by mother)

- Mother has concerns about child's general development (reported by mother)

- Child has borderline or above social, emotional or behavioural difficulties (using the Strengths and Difficulties questionnaire)

- Child has multiple problem outcomes (two or more of the above five outcomes)

In the analysis we seek to assess the importance of the duration of poverty by directly contrasting children living in persistent and temporary poverty. We also control for a range of background characteristics of children to explore the importance of the duration of poverty against other factors that could impact on child outcomes. Existing research using cross-sectional data has identified a range of factors that are associated with child outcomes, such as family size and parental health (Oroyemi *et al.,* 2009; Barnes *et al.,* 2008).

These factors are measured at the start of our observation period (2005-06) and used along with poverty durations to 'predict' child outcomes measured later in this period. Table 3.1 in the previous chapter shows a detailed list of the contextual variables used in the research. Of course these contextual variables are not complete and there are other factors that could be related to child outcomes that are not collected in GUS. Also, we choose not to use measures of child outcomes collected earlier in the study to predict outcomes at sweep 4. This is particularly because some were not collected in sweep 1 but also because the measures are too highly correlated with the sweep 4 outcome and using them as predictor variables would cause some difficulties with the modelling.[24] We also omit parental work intensity from our predictor variables because of the high correlation between that and poverty (see previous chapter).

Before describing the results it is important to stress again that our analyses cannot show causation, just associations in the data. However, by taking advantage of the longitudinal nature of GUS we limit the possibility of reciprocal causation, for example child outcomes measured in sweep 4 cannot be a direct cause of contextual variables measured in sweep 1. In this way, although still not formally testing causality we may be more confident about the direction of the relationships we find.

Because one of our goals is to assess the importance of the duration of poverty, we set up our analytical models to directly compare living in persistent poverty with a more temporary experience. This was done by setting 'short-term poverty' as the reference category in the regression models. In this way, we can directly compare the difference between a short-term experience of poverty and avoiding poverty on the one hand, and between short-term and a more persistent experience on the other.

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24 Specifically, it would run us into what is known in economic literature as the problem of endogenity of dependent variables.

CHAPTER **4**

What are the outcomes of children from persistently poor families?

The regression analysis looking at the influence of poverty duration relative to other factors on the various outcome measures is presented in Table A2.2 (birth cohort) and Table A2.3 (child cohort) in Appendix 2. The first point to make is that poverty duration is not significantly associated with child outcomes in either of the models.[25] This is rather a surprising finding, particularly as previous analysis of GUS found persistent low income to be associated with cognitive ability at age 2-3 years (Bromley, 2009).[26] However this finding can be explained in a number of ways. First we should reiterate that our measure of poverty may not be precise, most notably because GUS collects income information using just one question rather than as part of a detailed exercise. Also there is the possibility of the poverty duration and child outcome measurements not being in sync, for example persistently poor children may not be in poverty in the year the outcome is measured.

There is a wealth of evidence to suggest that poor children face other disadvantages (Oroyemi *et al.,* 2009) and that this can reduce life chances in adulthood (Feinstein, 2003). However, most of this evidence relates to children older than those in GUS. This suggests that because the GUS children are still young, the effect of persistent poverty may not have manifested itself yet. Also the nature of the GUS disadvantage measures means that we may not necessarily expect to see large differences between children at this young age, either because variations in children are not large or the measures are not detailed enough to pick up smaller differences which may be occurring in relation to poverty impact. So, although we do not observe a direct impact of persistent poverty now, it may be that we will do in a few years time, when the GUS children are slightly older.

We mentioned earlier that previous research on family poverty has shown that mothers try to shield the effect of poverty from their children. It may be that mothers are more likely to do this, or that their efforts are more successful, when their children are very young. However, it may simply be that the child outcomes that we look at do not have a strong relationship with poverty, at least for young children, and that these outcomes are mostly driven by non-economic factors. Looking at Table A2.2 and A2.3 we indeed see that a range of non-economic factors are significant in the models. These include gender and ethnicity of the child, family size and health of the mother.

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25 We also ran models to test the relationship between poverty *per se*, that is either temporary or persistent poverty against no poverty, and found that in all models there was no relationship between any experience of poverty over the period and child outcomes.

26 However, it needs to be noted that this latter study used a different measure of persistent low income and a much more detailed measure of cognitive ability, capable of detecting quite small nuances in ability. Accordingly, a different statistical method (linear regression) was used in this study.

Some relationships were common for both cohorts of children. Boys were more likely than girls to experience the majority of negative outcomes we focus on (see Appendix 1 for explanation of how to interpret odds ratios). In both cohorts, girls were more likely to have a high BMI but less likely to have the other negative outcomes. Children from larger families were at risk of language problems. Also, children whose mother developed health problems during the observation period were at risk of social, emotional and behavioural difficulties and having multiple negative outcomes.

Other relationships were only evident for children of a particular age. For example, birth cohort children from ethnic minority communities were more likely to have social, emotional and behavioural difficulties, as were children whose mother had low education, whereas child cohort children from families whose parents had split up during the observation period were more likely to face multiple negative outcomes than those whose parents remained together.

chapter
CONCLUSIONS
5

This chapter summarises the main findings of the study, highlighting the main risk factors for children who experience persistent poverty, and draw out the key distinctions between persistently poor children and those that experience poverty only temporarily. Drawing on these findings, the discussion points towards the areas on which policy may need to focus in order to reduce and prevent persistent poverty among families with children.

The main objectives of this study were to measure persistent poverty among young children in Scotland, to investigate the risk factors associated with being persistently poor, and establishing whether persistent poverty is linked to other negative outcomes for children. The study used data from the first four annual sweeps of the Growing Up in Scotland study (GUS). The first sweep of GUS was carried out in 2005/06 on two cohorts of children; a birth cohort who were aged between 0 and 1 year at the time, and a child cohort who were aged 2-3 years. Much of the analysis in this research used data from children who took part in all four sweeps.

The study used the GUS data to identify children in persistently poor households by mirroring, wherever possible, methodology adopted by DWP in their low-income dynamics research (DWP, 2009a). This report defined persistently poor households as those with income below 60 per cent of median household income in at least three of the four years under investigation. Using this methodology 24 per cent of birth cohort children, and 21 per cent of child cohort children, were defined as being persistently poor over the period 2005/06 to 2008/09.

Certain children were more likely than others to experience persistent poverty. When controlling for other characteristics of the family, work status had the biggest influence on whether a family would experience persistent poverty. Other factors associated with an increased likelihood of persistent poverty were living in a lone parent family, having a mother with an ethnic minority community background, having parents with no or low qualifications, living in social rented housing and living in a deprived area.

Children in persistently poor families were seen to have worse outcomes than children in temporary poor households. For example, children in both cohorts were more likely to have accidents or injuries, and suffer from social, emotional and behavioural difficulties, the longer they had been poor. However, when controlling for other family and area factors in our statistical models, the direct relationship between the duration of low income and child outcomes disappeared. Instead we saw a range of other factors being associated with child outcomes, including gender, family size and mothers' ethnicity and health.

What is important to note here is that the causes, and effects, of living in poverty are complex and not necessarily captured solely by an indicator of low income – or persistent low income in the case of this research. Poverty can manifest itself in many ways, and many of the effects of poverty are captured by what we have termed 'predictors' or 'risk factors' of poverty. We have identified a number of these in Chapter 3 of this report, including low parental education and living in a lone parent family. In Chapter 4 these were shown to be associated with negative child outcomes in our statistical models – whereas our 'indicator' of persistent poverty was not. Therefore our research suggests that the impact of poverty appears to be evident through the association with other family disadvantages, rather than low income *per se*, and that the presence and accumulation of these disadvantages can have negative impacts on outcomes for young children.

It is also important to point out that different risk factors can be both cumulative and interactive in their effects on children. As we have seen in Chapter 3, persistently poor children experience more risks than other children. For example persistently poor children were also likely to come from families with low parental education and poor parental health. Clearly the accumulation of multiple risks in poor families can have a compound effect on child outcomes (Oroyemi *et al.,* 2009). Additionally, these risk factors can have greater negative effects on child outcomes for poor children than for non-poor children (Klebanov, 1998).

All this is not to say that there were no limitations with our research, which could have had implications for our findings. Most notable was the way GUS, due to the scope of the study, measures income, asking the mother to estimate total household income and identifying it using income bands. This clearly is not as accurate as asking for detailed income information, as used in other specialist surveys such as the Family Resources Survey. Other elements of family resources are difficult to capture when using low income to approximate poverty, such as children's consumption, living arrangements and parental expenditures on children.

So what do the findings mean for policy? The evidence from GUS suggests that persistent poverty is concentrated in a minority, but still a substantial proportion (over one in five), of young Scottish children. The concerns about persistent poverty are obvious and our study adds to a wealth of other research that suggests that poverty in childhood can have negative effects on children, which in turn can affect future generations – with substantial costs to the individual, their families and society in general.

Despite this evidence, there are no concerted policy measures to tackle persistent poverty above those designed to tackle poverty in general. One reason for this is because poverty is still commonly viewed using a point-in-time perspective. This approach treats the poor as a homogenous group. Taking a dynamic approach shows that people experience different forms of poverty, such as persistent poverty, and policy needs to adapt to the diverse experiences of poverty.

It is generally acknowledged in the poverty literature that there are certain factors that increase and maintain the risk of persistent poverty, and these were shown to play a role here too. These include being a lone parent, having poor health or a disability, and having a large number of children. These then are the types of family that policy makers may focus on to provide targeted or tailored support.

These factors are also linked to a parent's inability to work. Being without paid work, and in particular regular work, is often cited as the key influence on poverty. This research has further supported this assertion. Given that workless families are also likely to experience the range of other disadvantages listed above, employment policy needs to work alongside policies designed to contend with these other hardships.[27]

If finding work is key to the chances of escaping persistent poverty, policy needs to ensure that when work is found it is secured and sustained. Much other poverty research has found that transitions out of poverty, and worklessness, are often short-lived. Indeed some transitions out of poverty are so short-lived they have very little impact on living standards. It is therefore not enough for policy to simply help people find work. Job retention and job progression are also key (Browne and Paull, 2010).

Given the significant numbers of very young children in poverty, many of whom experience enduring poverty in early years of childhood, there is a case for employment policy to focus on would-be and new parents. Given that this research has suggested that avoiding worklessness is key to preventing persistent poverty, attention on fathers' employment may be necessary, given that mothers would be unlikely to be able to work around times of childbirth. However, this research has also shown that having just one parent in work is often not enough to keep couple families above the poverty line – so issues around mothers' employment becomes pertinent when their children get older. Indeed, recent employment policy for lone parents decrees that they are now obliged to look for work to claim benefit when their youngest child reaches primary school age.

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27 See Hills (2007) for an example of how labour market and housing policies can work together to enhance employment opportunities.

Despite calls for a focus on work, although work is often seen as the best protection from poverty, this research has shown that work does not always protect families from persistent poverty, particularly where there is only one worker in the household. Here a discussion of welfare benefits, childcare and wage rates is relevant, but this is beyond the scope of this report. Policy must also recognise that work is not always possible for all parents at all times, particularly during periods of ill health and concentrated times of childcare.

Finally, although a large number of family background variables were controlled for in our analysis there may be many more that can impact on children's outcomes. For example, the economic stress associated with parents living in poverty can interfere with positive parent-child interactions. As another example, children living in poor families can be socially isolated and burdened with the stigma associated with poverty (EKOS Ltd, 2009). Other possible correlates of child outcomes include parents' personality, parenting practices and the time and quality of care that children receive from their parents and carers.

References

Adelman, L., Middleton, S. and Ashworth, K. (2003) *Britain's Poorest Children: Severe and Persistent Poverty and Social Exclusion*, London: Save the Children.

Atkinson, A. B. (1989) *Poverty and Social Security*, Hertfordshire: Harvester Wheatsheaf.

Barnes, M., Lyon, N. and Conolly, A. (2006) *The living standards of children in bad housing*, London: National Centre for Social Research.

Barnes, M., Conolly, A. and Tomaszewski, W. (2008) *The circumstances of persistently poor families with children: Evidence from the Families and Children Study (FACS)*. Department for Work and Pensions Research Report No 487.

Berthoud, R., Bryan, M. and Bardasi, E. (2004) *The dynamics of deprivation: the relationship between income and material deprivation over time*, DWP Research Report No. 219, Leeds: Corporate Document Services.

Blanden, J. and Gibbons S. (2006) *The persistence of poverty across generations: A view from two British cohorts,* Bristol: The Policy Press.

Bradshaw, P., Martin, C. and Cunningham-Burley, S. (2008) *Growing Up in Scotland: Exploring the experiences and outcomes of advantaged and disadvantaged families*, Scottish Government.

Brewer, M., Goodman, A., Muriel, A. and Sibeta, L. (2007) *Poverty and inequality in the UK: 2007*, IFS Briefing Note No.73, London: Institute for Fiscal Studies.

Bromley, C (2009) *Growing Up in Scotland: The impact of children's early activities on cognitive development*,

Browne, J. and Paull, G. (2010) *Parents' work entry, progression and retention, and child poverty*, DWP Research Report No. 626. Leeds: Corporate Document Services.

Cabinet Office (2006) *Reaching Out: An Action Plan on Social Exclusion*, London: Cabinet Office.

Callan, T. (eds.), *Poverty and Policy in Ireland*, Dublin: Gill and Macmillan.

Callan, T. and Nolan, B. (1994), "The meaning and measurement of poverty" in Nolan, B. and Callan, T. (eds.), *Poverty and Policy in Ireland*, Dublin: Gill and Macmillan.

DWP (2003) *Measuring child poverty*, London: Department for Work and Pensions.

DWP (2007a) *Opportunity for all*, London: DWP.

DWP (2007b) *Households Below Average Income (HBAI) 1994/95-2005/06 (Revised)*, Leeds: Corporate Document Services.

DWP (2009a) *Low-Income Dynamics: 1991-2007 (Great Britain)*, London: Department for Work and Pensions.

DWP (2009b) *Households Below Average Income (HBAI) 1994/95-2007/08*.

Ekos Ltd (2009) *The Experience of Rural Poverty in Scotland*, Edinburgh: Scottish Government Social Research

Feinstein, L. (2003) 'Inequality in the Early Cognitive Development of British Children in the 1970 Cohort', *Economica*, Vol. 70, pp. 73-97.

Goode, J., Callender, C. and Lister, R. (1998) *Purse or wallet? Gender inequalities and income distribution within families on benefits*. London: Policy Studies Institute.

Goodman, R. (1997) 'The Strengths and Difficulties Questionnaire: A Research Note', *Journal of Child Psychology and Psychiatry*, 38, 581-586.

Gordon, D., Adelman, L., Ashworth, K., Bradshaw, J., Levitas, R., Middleton, S., Pantazis, C., Patsios, D., Payne, S., Townsend, P. and Williams, J. (2000) *Poverty and Social Exclusion in Britain*, York: Joseph Rowntree Foundation

Hills, J. (2007) *Ends and Means: The future roles of social housing in England*, CASE report 34, London: Centre for Analysis of Social Exclusion.

Hirsch, D. (2006) *What will it take to end child poverty: Firing on all cylinders*, Joseph Rowntree Foundation. York Publishing Services.

HM Treasury (2004) *Child Poverty Review*, Norwich: HMSO.

HM Treasury and DFES (2007) *Policy Review of Children and Young People: A discussion paper*, Norwich: HMSO.

House of Commons (2009) *Child Poverty Bill* http://services.parliament.uk/bills/2008-09/childpoverty.html

Klebanov, P. K. (1998) "The Contribution of Neighborhood and Family Income to Developmental Test Scores over the First Three Years of Life." *Child Development* 69:1420–1436.

Marsh, A., and MacKay, S. (1994) *Poor Smokers*. London: Policy Studies Institute.

Micklewright, J. & Schnepf, S.V. (2007) *How reliable are income data collected with a single question?* Southampton Statistical Sciences Research Institute: Applications & Policy Working Paper A07/08.

Middleton, S. (2006) *Poverty Policy in the UK*, Paper for the All Party Parliamentary Group.

Middleton, S., Ashworth, K. and Braithwaite, I. (1997) *Small Fortunes: Spending and Parental Sacrifice*, York: Joseph Rowntree Foundation.

Millar, J. and Glendinning, C. (1989), 'Gender and poverty', *Journal of Social Policy*, 18 (3), 363-81.

Ong, K., *et al*., (2000) 'Association between postnatal catch-up growth and obesity in childhood: prospective cohort study' *British Medical Journal*, 2000; 320:967-971.

Oroyemi, P., Damioli, G., Barnes, M. and Crosier, T. (2009) *Understanding the Risks of Social Exclusion across the Life Course: Families with children*, London, Social Exclusion Task Force, Cabinet Office

SG (2009) *Poverty and income inequality in Scotland: 2007/08*. Scottish Government.

Smith, N. and Middleton, S. (2007) A Review of Poverty Dynamics Research in the UK, Joseph Rowntree Foundation.

Veit-Wilson, (1998) *Setting Adequacy Standards: How Governments Define Minimum Incomes*, Bristol: Policy Press.

Appendix 1: Technical terms and procedures

Income equivalisation

There are a number of equivalisation methods and the one used in this report is the modified OECD equivalence scale. The modified OECD scale is most often presented with a single adult as the reference point but the HBAI series follows the UK convention of taking an adult couple household as the reference point and we do the same here. To equivalise income using banded income, we apply the equivalisation calculation to the mid-point of each band. That is, we assign participants the income that falls at the mid-point of the band that they have indicated their income falls into; and equivalise on the basis of that mid-point. Clearly there is no mid-point of the top unbounded category (£56,000 and above), so here we used a value of £60,000.

In HBAI two separate versions of the modified OECD scales are used, one for income Before Housing Costs (BHC) and one for income After Housing Costs (AHC). The BHC scale is used in this study and the values of the scales are shown in the table below.

Equivalence scale (BHC)	
Person	Equivalence score
Couple	1
Lone parent	0.67
A child aged under 14 years	0.2
Children aged 14 years and over (or adult)	0.33

The construction of household equivalence values from these scales is straightforward. An adult couple is the reference point, with an equivalence value of 1.0. Each child aged under 14 is given a weight of 0.2 and each child aged 14 years and over is given a weight of 0.33 (as is any additional adult). For example, the equivalence value for a family containing two parents, a GUS target child and a 14-year-old child would be 1.53 from the sum of the scale values:

1.0 + 0.2 + 0.33 = 1.53

This implies that this family needs 53 per cent more income than a childless couple to have the same standard of living. For further information on the equivalisation process, see DWP (2009b).

Income imputation procedure

The longitudinal poverty status is imputed for households with missing income information in one of the four sweeps. First, the GUS children which can be assigned to a longitudinal poverty category based solely on the three sweeps for which we have income information are categorised. If a GUS family was income poor in all three sweeps their imputed longitudinal poverty status is 'persistently poor'. Families who had missing income information on one sweep, were income poor in one sweep and not poor in two sweeps are assigned the 'temporary poor' longitudinal poverty status.

Secondly, the families who were not poor in the three sweeps for which we have income information are considered. These families could therefore have a longitudinal poverty status of 'not poor' or 'temporary poor' depending on their income in the income non-response sweep. Here we use their household work status to assign GUS children to the appropriate longitudinal poverty category. If the family work status category had remained the same in all four sweeps (or at least 3 consecutive sweeps, one of which was the sweep for which we are missing income information), or if the parent(s) moved from being out of work to working 16 or more hours, the families are assigned the 'not poor' category. The longitudinal poverty status is set to 'temporary poor' for families who had been in work in the sweeps for which we have income information but the parent, or both parents in the case of couple families, were either not working or working less than 16 hours in the sweep with missing income information.

Lastly, the longitudinal poverty status is imputed for families missing income information for one sweep, poor in two sweeps and not poor in one sweep. These families could therefore be either temporary poor or persistently poor. The longitudinal poverty status is set to 'persistently poor' for families with the same family work type status in three consecutive sweeps in which they were income poor in two sweeps and had missing income information in the third. Likewise, the family is considered persistently poor if they had the same family work type status in any three sweeps, they were poor in two sweeps and had missing income on the third, and were not poor in the fourth sweep and had a different family work status in that sweep. Finally, the longitudinal poverty status is set to 'temporary poor' for families if they had one family work type in two sweeps in which they were poor and another family work type in the other two sweeps in one of which they were not poor and in the other they had missing income information.

Families for whom the longitudinal poverty status can not be imputed based on the available information are excluded from the analysis. Examples include families with missing information on the family work type variable for the sweep with no income information.

Defining the Average Work Intensity measure (AWI)

Given the link between work and poverty, we create a measure of Average Work Intensity (AWI). This is based on the average use of household workforce, i.e. the ratio of people in employment to the total number of adults available to work. For simplicity, the total number of adults in the households has been defined as 1 adult in the case of a single-parent family and as 2 adults in the case of a couple family.

For each household, we calculated a Work Ratio (WR) at each sweep of the survey, by calculating the proportion of adults in employment relative to the total number of adults in the household. We also distinguished between part-time (<16 hrs a week) and full-time (16+ hrs a week) employment, by giving the part-time work a weight equalling half of the full-time work. So, for example:

WR=100%:

• if both adults in a couple family worked full-time;

• if the adult in a single-parent family worked full-time;

WR=75%

• if one adult in a couple family worked full-time and the other worked part-time;

WR=50%:

• if one adult in a couple family worked full-time and the other did not work;

• if both adults in a couple family worked part-time;

• if the adult in a single-parent family worked part-time; etc.

These values were then aggregated and averaged over the four-year period to represent a typical use of the household workforce, i.e. the Average Work Intensity (AWI). For example,

AWI=100%:

• if both adults in a couple family worked full time at all four sweeps of the survey;

• if the adult in a single-parent family worked full time at all four sweeps of the survey

AWI=50%

- if one adult in a couple family worked full-time at all four sweeps of the survey and the other did not work at any of the four sweeps;

- if both adults in a couple family worked full time at two of the four sweeps of the survey and they did not work at the remaining two sweeps;

- if the adult in a single-parent family worked part-time at all four sweeps of the survey;

- if the adult in a single-parent family worked full-time at two of the four sweeps of the survey and did not work at the remaining two sweeps, etc.

Understanding odds ratios

To understand an odds ratio we first need to describe the meaning of odds. The definition of odds is similar but significantly different to that of probability. This is best explained in the form of an example. If 200 individuals out of a population of 1000 experienced persistent poverty, the probability (p) of experiencing persistent poverty is 200/1000, thus p=0.2. The probability of not experiencing persistent poverty is therefore 1-p = 0.8. The odds of experiencing persistent poverty are calculated as the quotient of these two mutually exclusive events. So, the odds in favour of experiencing persistent poverty to not experiencing persistent poverty, is therefore 0.2/0.8=0.25. Suppose that 150 out of 300 people living in social rented housing experience persistent poverty compared to 50 out of 150 who live in owner occupied housing. The odds of a person living in social rented housing of experiencing persistent poverty are 0.5/0.5=1.0. The odds of a person living in owner occupied housing of experiencing persistent poverty is 0.3333/0.6666=0.5. The odds ratio of experiencing persistent poverty is the ratio of these odds, 1.0/0.5=2.0. Thus the odds of experiencing persistent poverty are twice as high among people who live in social rented housing (compared to people who live in owner occupied housing – the 'reference category').

Appendix 2: Additional tables

Table A2.1 Odds ratios from the ordinal regression model of risk of longitudinal poverty

	Birth cohort	Child cohort
Socio-demographic background		
Ethnic group of the mother (ref: White)		
Ethnic minority communities	5.60***	1.52
Sex of the child (ref: male)		
Female	1.24	0.89
Age of the mother at birth of the child (ref: 30-34)		
< 25	1.77**	1.65*
25-29	1.14	1.24
35+	1.14	0.93
Family type (ref: couple at Sweep 1 & Sweep 4)		
Split up	2.43***	3.53***
Partnered	3.01***	3.38**
Single at Sweeps 1 & 4	3.33***	3.34***
Number of children at Sweep 1 (ref: 1)		
2	1.01	1.79*
3+	1.89	3.41***
Change in the number of children (Sweeps 1-4) (ref: no change)		
Increase	1.39*	1.02
Decrease	1.95**	2.13*
GUS child is the first child (ref: no)	0.81	1.84**
Yes	1.2	1.13
Mother's health status (ref: no health problems at Sweeps 1 or 4)		
Health problems at Sweep 1 but not at Sweep 4	1.20	1.13
Health problems at Sweep 4 but not at Sweep 1	1.50*	0.91
Health problems at both Sweeps 1 & 4	1.11	0.89
Socio-economic characteristics		
Mother's education (ref: higher education)		
Standard grade or lower	1.42*	1.59*
Father's education (ref: higher education)		
Standard grade or lower	1.28	1.44*

	Birth cohort	Child cohort
Socio-economic status of the main earner at Sweep 1		
Managerial/professional	2.10***	1.51
Intermediate occupations	3.97***	3.52***
Small employer/own account	2.39***	1.93*
Lower supervisory/technical occupations	3.94***	2.84***
Semi-routine and routine occupations	3.08***	3.33**
Average work intensity (ref: 76-100%)		
51-75%	1.91***	1.57
26-50%	5.06***	3.82***
0-25%	56.85***	30.94***
Family has a car (ref: at all four sweeps)		
At 1-3 sweeps	1.29	1.38
At none of the sweeps	1.44	0.99
Whether family uses childcare (ref: both at Sweeps 1 & 4)		
At Sw1 but not at Sw4	0.83	1.23
At Sw4 but not at Sw1	0.98	1.70*
Neither at Sw1 nor at Sw4	1.09	1.66
Tenure (ref: owner occupier)		
Social renter	2.51***	2.57***
Private renter	2.05**	1.64
Other	4.95***	6.16***
Area Indicators		
Urbanisation (ref: large city)		
Medium city (<125,000)	0.8	1.50*
Town	0.83	0.9
Rural	0.81	1.43
Scottish Index of Multiple Deprivation (quintiles) (ref: least deprived)		
2	1.4	1.92*
3	1.67**	2.43**
4	1.76**	2.41**
Most deprived	1.77**	2.64**

Base: Birth cohort 2914, Child cohort 1527

Notes: Asterisks represent statistical significance: *** = p<.001, ** = p<0.01, * = p<0.05

Table A2.2   Associations between poverty duration and negative outcomes, birth cohort, odds ratios

	BMI	Accidents	Language	Development	Difficulties	Multiple
Poverty duration (ref: temporary poverty)						
No poverty	1.15	1.01	0.83	0.83	0.84	0.95
Persistent poverty	0.98	0.82	1.13	1.16	1.17	1.19
Sex of child (ref: boy)						
Girl	1.51***	0.79*	0.46***	0.57***	0.51***	0.61***
Ethnicity of child (ref: White)						
Ethnic minority communities	0.92	0.92	0.74	2.44**	3.16***	1.69
Age of mother at child birth (ref: 30-34)						
< 25	1.26	1.29	0.95	1.31	1.04	1.43*
25-29	0.89	0.91	0.84	0.96	0.97	0.94
35+	0.93	0.87	0.81	1.17	0.79	0.85
Family type (ref: couple at Sweep 1 & 4)						
Split up	1.26	1.55*	1.14	0.87	1.81*	1.47
Partnered	0.71	0.97	0.99	1.16	0.85	0.92
Single at Sweeps 1 & 4	0.94	1.47*	0.96	0.95	1.18	0.93
Number of children at Sweep 1 (ref: 1)						
2	0.80	1.28	2.35**	1.11	1.58	1.28
3	0.81	1.35	2.51**	1.08	1.35	1.21
Change in the number of children Sweeps 1-4 (ref: no change)						
Increase	0.85	0.98	1.58***	1.21	1.92***	1.19
Decrease	1.38	0.61	1.17	0.96	1.35	1.08
GUS child is the first child (ref: no)						
Yes	0.88	1.15	1.35	1.25	1.76	1.20
Mother's health status (ref: Health problems at both Sweeps 1 & 4)						
No health problems at Sweeps 1 or 4	0.94	1.01	1.75**	1.34	1.29	1.27
Health problems at Sw 1 but not at Sw 4	1.02	1.40*	1.38*	1.44*	1.53*	1.78***
Health problems at Sw 4 but not at Sw 1	1.04	1.15	1.41*	2.30***	2.53***	2.42***

	BMI	Accidents	Language	Development	Difficulties	Multiple
Mother's education (ref: higher education)						
Standard grade or lower	1.03	1.14	0.68*	1.12	1.57**	1.11
Father's education (ref: higher education)						
Standard grade or lower	1.07	1.09	1.10	0.90	1.08	1.23
Family has a car (ref: At all four sweeps)						
At 1-3 sweeps	1.03	1.08	1.01	0.89	0.85	0.87
At none of the sweeps	1.29	1.48*	1.19	1.29	1.61*	1.32
Whether family uses childcare (ref: Using at Sweeps 1 & 4)						
Stopped using	0.72	0.96	1.12	0.91	0.66	0.83
Started using	0.93	0.84	1.13	1.11	1.03	1.12
Not using at Sweeps 1 & 4	0.86	0.94	0.99	0.95	0.94	0.93
Tenure (ref: Owner occupier)						
Social renter	1.51*	0.86	1.24	1.18	1.97***	1.38*
Private renter	0.77	0.85	1.59*	1.46	1.48	1.34
Other	1.54	0.37*	0.66	0.50	0.79	0.62
Urbanisation (ref: Large city >125 000)						
Medium city	0.94	0.87	1.14	1.25	1.14	1.10
Town	1.10	0.81	0.66*	0.85	0.95	0.75
Rural	1.24	0.95	1.22	0.92	1.26	1.08
SIMD quintiles (ref: least deprived)						
2	1.01	0.87	1.01	0.92	0.76	0.90
3	0.82	1.12	0.93	1.03	0.90	0.92
4	1.00	0.91	1.45*	0.92	0.90	0.95
Most deprived	1.05	0.96	1.35	0.98	1.31	1.20
Base	*3289*	*3553*	*3551*	*3553*	*3518*	*3553*
pseudo R-sq	*.024*	*.024*	*.065*	*.051*	*.140*	*.075*

Notes: Asterisks represent statistical significance: *** = p<.001, ** = p<0.01, * = p<0.05

Table A2.3 Associations between poverty duration and negative outcomes, child cohort, odds ratios

	BMI	Accidents	Language	Development	Difficulties	Multiple
Poverty duration (ref: temporary poverty)						
No poverty	0.83	0.83	1.05	0.66	0.79	0.72
Persistent poverty	1.02	0.95	0.67	0.73	1.14	0.71
Sex of child (ref: boy)						
Girl	1.56***	0.78	0.48***	0.56***	0.64**	0.71*
Ethnicity of child (ref: White)						
Ethnic minority communities	1.34	0.52	0.58	1.43	1.01	0.83
Age of mother at child birth (ref: 30-34)						
< 25	0.68	1.49	1.36	0.77	2.11**	1.79*
25-29	0.85	0.78	0.85	1.04	1.38	1.26
35+	0.75	1.11	1.35	1.59*	1.39	1.51*
Family type (ref: couple at Sweep 1 & 4)						
Split up	1.24	1.28	1.04	1.32	1.83	2.33**
Partnered	1.43	1.06	1.75	1.36	1.36	1.57
Single at Sweeps 1 & 4	1.48	1.25	0.90	1.10	1.09	1.38
Number of children at Sweep 1 (ref: 1)						
2	0.85	1.27	1.49	0.89	0.75	1.11
3	0.43**	0.92	2.23*	0.78	0.43*	1.06
Change in the number of children Sweeps 1-4 (ref: no change)						
Increase	0.99	1.06	1.07	1.08	1.21	1.12
Decrease	1.11	0.76	0.94	0.65	1.71	0.94
GUS child is the first child (ref: no)						
Yes	0.79	0.76	0.75	0.86	0.69	0.88
Mother's health status (ref: Health problems at both Sweeps 1 & 4)						
No health problems at Sweeps 1 or 4	0.88	1.09	2.25**	1.66	1.82*	2.05**
Health problems at Sw 1 but not at Sw 4	0.49**	1.34	1.68*	1.33	1.72*	1.45
Health problems at Sw 4 but not at Sw 1	1.17	0.82	1.63*	1.46	2.53***	1.89**

	BMI	Accidents	Language	Development	Difficulties	Multiple
Mother's education (ref: higher education)						
Standard grade or lower	0.86	0.92	1.45	1.20	1.21	1.19
Father's education (ref: higher education)						
Standard grade or lower	1.14	0.97	0.56**	0.71	1.11	0.73
Family has a car (ref: At all four sweeps)						
At 1-3 sweeps	1.08	1.00	1.22	1.04	1.13	1.31
At none of the sweeps	0.85	1.02	1.55	1.79	1.53	1.13
Whether family uses childcare (ref: Using at Sweeps 1 & 4)						
Stopped using	1.05	0.81	1.02	1.05	1.29	1.12
Started using	1.14	1.13	1.36	1.01	0.92	1.29
Not using at Sweeps 1 & 4	1.29	1.18	0.69	0.68	0.82	0.87
Tenure (ref: Owner occupier)						
Social renter	0.98	1.43	1.08	1.48	1.15	1.12
Private renter	1.04	1.03	1.45	2.15*	1.21	1.44
Other	1.25	0.99	1.55	2.68*	2.16	2.89**
Urbanization (ref: Large city >125 000)						
Medium city	1.58**	1.16	0.60**	0.94	0.78	0.83
Town	1.17	0.84	0.70	0.83	0.64	0.76
Rural	1.28	1.02	0.72	0.82	0.99	0.86
SIMD quintiles (ref: least deprived)						
2	1.23	0.90	1.32	0.76	1.27	1.19
3	1.35	0.88	1.24	0.52**	1.12	1.21
4	1.38	1.16	1.69	0.63	1.72	1.62
Most deprived	1.38	0.90	1.53	0.58	1.38	1.36
Base	*1781*	*1898*	*1898*	*1898*	*1886*	*1898*
pseudo R-sq	*.040*	*.039*	*.081*	*.056*	*.113*	*.074*

Notes: Asterisks represent statistical significance: *** = $p<.001$, ** = $p<0.01$, * = $p<0.05$

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