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Exploring the impacts of assets and vulnerabilities of families experiencing multidimensional poverty and income inequality on children's early cognitive, social, emotional and behavioural developmental outcomes in Scotland.

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DECLARATION

I declare that this thesis is my own work, apart from where otherwise indicated, with acknowledgement of other sources, and has not been submitted for any other degree or professional qualification.

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ABSTRACT

Living in poverty and persistent low income has detrimental impacts on many facets of the lives of parents and children. During the early years of the new millennium this was of primary concern to the Scottish and UK governments: in response, policies were implemented to improve children's developmental outcomes, and to increase both maternal employment and levels of income for low paid and unemployed families.

Previous qualitative research on families living in poverty revealed that families have varying degrees of additional vulnerability depending on their levels of social assets, e.g. social support, and financial vulnerabilities, e.g. debt and financial stress. High levels of social assets appeared to attenuate, and low levels of social assets appeared to exacerbate, the negative impacts of living in poverty. These social and financial assets/vulnerabilities comprise two of the five domains of the Sustainable Livelihoods Approach (SLA) quantified for use in this thesis.

This thesis explores what impacts, if any, social and financial assets/vulnerabilities have on children's cognitive (C) development, as measured by naming vocabulary and picture similarities, and on their social, emotional and behavioural (SEB) development as measured by the Strengths and Difficulties Questionnaire. To achieve this aim this research uses the first five sweeps of the annually-collected longitudinal Growing up in Scotland (GUS) birth cohort study. The analysis uses the technique of factor analysis to derive the latent constructs financial and social assets/vulnerabilities, and OLS multiple regression analysis with quasi-variance to test the associations. The research employs multiple dimensions of economic disadvantage - longitudinal income poverty, material deprivation, longitudinal income poverty and material deprivation combined, and longitudinal income inequality - to explore the effects, not only between the lengths of time people have lived in poverty, but also across the income inequality spectrum, i.e. persistent low income versus persistent high income.

The results of the research show that high maternal social assets and financial vulnerabilities separately are associated with higher and lower levels of child SEB development respectively, especially for children living in persistent low income. The relationship did not hold for children’s cognitive development. It also reveals that children whose mothers are experiencing additional financial stress and debt have lower CSEB scores (but not picture similarities), especially in relation to SEB development. There is also a relationship between social and financial assets/vulnerabilities: having high social assets is statistically associated with lower financial stress and debt for those living with lower incomes. This thesis argues that mothers, families and children living in poverty would benefit from policy and practice interventions that support geographical proximity of family and friends, that foster close and supportive wider family relationships, and that promote access to credit that does not lead to unmanageable debt and detrimental levels of additional financial stress. The research notes that while the SLA has been a useful theoretical framework, effectively quantified, the GUS data are limited in how effectively it can construct the SLA as it is not dedicated to its measurement.

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BAS II	-	British Ability Scales Second Edition
BCS	-	British Cohort Study
CAPI	-	Computer Assisted Personal Interviewing
CFA	-	Confirmatory Factor Analysis
CPAG	-	Child Poverty Action Group
CPI	-	Consumer Price Index
CRFR	-	Centre for Research on Families and Relationships
CSEB	-	Cognitive, Social, Emotional and Behavioural
DWP	-	Department for Work and Pensions
ESeC	-	European Socio-economic Classification
EFA	-	Exploratory Factor Analysis
EPPE	-	Effective Provision of Preschool Education
ESRC	-	Economic and Social Research Council
EU-SILC	-	European Union Statistics on Income and Living Conditions
FACS	-	Family and Children Study
FES	-	Family Expenditure Survey
FRS	-	Family Resources Survey
GB	-	Great Britain
GUS	-	Growing up in Scotland
HLE	-	Home Learning Environment
MCS	-	Millennium Cohort Study
OLS	-	Ordinary Least Squares
ONS	-	Office for National Statistics
NCDS	-	(British) National Child Development Study
NMW	-	National Minimum Wage
PSE	-	Poverty and Social Exclusion
PSU	-	Primary Sampling Unit
QV	-	Quasi variance
RPI	-	Retail Price Index
ScotCen	-	Scottish Centre for Social Research

SEB	-	Social, Emotional and Behavioural
SEED	-	Scottish Executive Education Department
SES	-	Socioeconomic Status
SLA	-	Sustainable Livelihoods Approach
SLR	-	Simple Linear Regression
SNP	-	Scottish National Party
SO	-	Scottish Office
SOLIF	-	Survey of Low Income Families
UK	-	United Kingdom

1 Introduction

'Child poverty is… a scar on the soul of Britain'

The Right Honourable Dr James Gordon Brown MP (Brown, 1999)

Children growing up in poverty experience many disadvantages, which accumulate across the life cycle. Poverty has multiple, negative impacts on children's outcomes, leading to inequalities in health, cognitive development, psychosocial development and educational attainment. These inequalities persist across the lifecourse: from preschool children to children during the school years; from entry into the labour market to resources for retirement (Hills et al., 2010). Child poverty has detrimental impacts on children's developmental outcomes across time and place. Child cognitive development is shown to be associated particularly with income, with increasing lengths and depths of poverty spells being associated with progressively poorer development (Smith et al., 1997, McLoyd, 1998). Child social, emotional and behavioural development is associated with income poverty too (Hanson et al., 1997), but also with other variables pertaining to family-centred characteristics, which are in turn associated with socioeconomic disadvantage, such as parenting and parental wellbeing (Kiernan and Huerta, 2008, Mensah and Kiernan, 2009, Schoon et al., 2010b).

The implication that trajectories may already be set for children living in poverty has been viewed as a pressing cause for concern and area of policy focus and intervention since the New Labour government era (1997-2010). Child poverty has been at the forefront of the UK policy agenda since the former Prime Minister and leader of the New Labour Party, Tony Blair, in 1999 pledged to eradicate it, and the then Chancellor of the Exchequer, Gordon Brown, in a speech to the Child Poverty Action Group in 2000, said:

> *'Action on child poverty is the obligation this generation owes to the next: to millions of children who should not be growing up in poverty: children who because of poverty, deprivation and the lack of opportunity have been*

> *destined to fail even before their life's journey has begun, children for whom we know - unless we act – life will never be fair. Children in deprived areas who need, deserve and must have a government on their side, a government committed to and fighting for social justice'.* (Brown, 2000)

During the New Labour years, child poverty was tackled using policies to increase family income and improve children's developmental outcomes. This two-pronged approach saw policies to: increase the employment of lone parent families; increase the incomes of lone and couple parent families in low-paid jobs; increase the level of benefits paid to unemployed families; intervene directly in improving children's developmental outcomes and readiness for school for young children through family centred support services; and reduce the incidence of factors associated with poverty in adolescents such as teenage pregnancy. What government policy, then or now, does not give attention to is the relationships, support and assets that families living in poverty possess and utilise to ameliorate their experiences of poverty and to enhance their and their children's wellbeing.

I came to this area of research through 12 years' research experience where my principal research focus has been on families and children who are living with economic deprivation and inequality. In 2001, as a researcher on a Scottish government project on mortgage arrears, the results of the research revealed that, due to low levels of personal resources, and heightened personal vulnerability, some families faced accumulated adversity. Such accumulation led to an increase in indebtedness, mental health difficulties, relationship conflict, geographic dislocation and isolation, amongst others. In addition, parents felt acutely stigmatised by and ashamed of their situations and felt that they were not fulfilling their obligations to provide for and protect their children. The children in these families were reported to have suffered distress arising from a change of area, school, friends, family and economic circumstances. This research informed my current research focus in three ways: those who experienced arrears and managed to recover had access to greater resources such as social capital/assets; the negative impacts of parental circumstances had detrimental effects on children; and financial vulnerability, such as debt and financial stress, had effects that were additional to the poverty experienced by the families.

More recently, I worked for Barnardos children's charity, where I was a key researcher and co-author of the report of a longitudinal qualitative study of families living in poverty (Harris et al., 2009). The key themes that emerged from this research were: the importance of, and beneficial impacts of, family and social relationships (social assets); and the extent of financial vulnerability, e.g. debt and financial stress, and its detrimental impacts over and above those incurred by the poverty itself. This developed my interest in the idea that social assets and financial vulnerabilities, in addition to living in poverty, could have a cumulatively detrimental or beneficial impact on parents and children.

In qualitative research with families living in poverty, Oxfam GB used the Sustainable Livelihoods Approach (SLA), an approach more usually applied in the Global South, to investigate the resources available to families and to explore their impact on the families' experiences of living in poverty. The SLA explores the lives of families living in poverty using five categories of *assets* and *vulnerabilities*: social, financial, physical, human and public. As my previous qualitative research showed that a family's assets/vulnerabilities had an impact on parents' and children's wellbeing, I was keen to use this conceptual framework to explore the impacts of family assets/vulnerabilities on children, in particular on their cognitive, social, emotional and behavioural (CSEB) outcomes. Additionally, I was keen to establish whether these qualitative findings could be quantified and generalised to a wider population of families with children.

This led to my doctoral research: a quantitative study of the impacts of families' assets and vulnerabilities on children's CSEB outcomes for those living in multiple dimensions of poverty in Scotland. To do so, I explored data sources that could potentially support this research and discovered that the Growing up in Scotland study (GUS) collects annual data on income, allows multiple dimensions of poverty to be explored and gathers information on children's CSEB outcomes at age 4/5 years old. Thus, the GUS dataset seemed well suited to the research. The GUS data have

not been collected with the SLA or assets/vulnerabilities in mind and, therefore, have many limitations.

1.1 Research aim and questions

The aim of this thesis is to employ the concept of assets and vulnerabilities derived from the theoretical framework of the Sustainable Livelihoods Approach (SLA), to quantify social assets and financial vulnerabilities and test their impacts on children's CSEB developmental outcomes for children living in multiple dimensions of income poverty and income inequality in Scotland. There are three sets of research questions:

1. *What impacts do multiple dimensions of economic disadvantage, as measured by longitudinal income poverty, material deprivation and longitudinal income inequality, have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes in Scotland?*

2. *What impacts do the social assets of families living in Scotland have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes? Do families' social assets reduce or augment the impacts of poverty on children's early CSEB outcomes? How does this differ by income inequality?*

3. *What impacts do the financial vulnerabilities of families living in Scotland have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes? Do families' financial vulnerabilities reduce or augment the impacts of poverty on children's early CSEB outcomes? How does this differ by income inequality?*

1.2 Chapter outline

The following chapter, chapter two, gives the theoretical framework for the research in relation to family assets/vulnerabilities of the Sustainable Livelihoods Approach and the multiple dimensions of poverty pioneered by Townsend's concept of relative deprivation. This chapter also addresses the development of the quadripartite

measure of child poverty used in UK policy and its derivation from Townsend's influential and enduring concept. Chapter three examines the rise in child poverty during the Thatcher and Conservative Party years (1979-1997) and goes on to examine the antipoverty policies of the subsequent New Labour administration (1997-2010). It also discusses the current policy context of the new Coalition administration into which this research will emerge. The policy context varies between Scotland and the UK: this chapter highlights where policies diverge or converge. Chapter four reviews the empirical evidence on the impacts of multiple dimensions of poverty and income inequality on children's developmental outcomes and explores the research available in relation to the impacts of family assets and vulnerabilities on children's outcomes. Building on this initial review, this chapter provides 13 hypotheses for the three research questions that will be tested in the analyses chapters.

Chapter five discusses the strengths and weaknesses of the Growing up in Scotland (GUS) data used in this research, describing its characteristics in relation to sampling, data collection and variables utilised to operationalise the concept of social assets and financial vulnerabilities, multiple dimensions of economic disadvantage, and children's CSEB developmental outcomes. Chapter six explores the statistical techniques used to achieve the research aim and answer the research questions presented in this introduction. It is argued that exploratory factor analysis (EFA) allows the latent constructs social assets and financial vulnerabilities to be derived, and that Ordinary Least Squares (OLS) multiple regression models allow the impacts of these latent constructs, and the multiple dimensions of economic disadvantage, to be explored while holding the impacts of other sociodemographic variables constant.

Chapter seven, the first findings chapter, seeks to understand different measures of poverty and focuses on four dimensions specifically: longitudinal income poverty; material deprivation; longitudinal income poverty and material deprivation combined; and longitudinal income inequality. The analysis tests whether income and material deprivation have an individual and combined association with children's CSEB developmental outcomes. Chapter eight, the second findings chapter, focuses

on testing the merits of applying the concept of *social assets* from the Sustainable Livelihoods Approach (SLA) to children's CSEB developmental outcomes. The qualitative concept of social assets is operationalised quantitatively and the resulting construct(s) used to answer research question two. Chapter nine, the third findings chapter, focuses on testing the merits of applying the concept of *financial vulnerabilities* from the Sustainable Livelihoods Approach (SLA) to children's CSEB developmental outcomes. Additionally, this chapter tests whether there is a relationship between social assets and financial vulnerabilities: that is, do high assets in one domain have an association with low vulnerabilities on another domain. Chapter ten concludes the thesis and discusses the implications of the research in relation to theory, policy and practice. This chapter goes on to discuss the limitations of the study and identifies areas for future research. The conclusions chapter concludes with a few final comments.

2 Theories, concepts, definitions and measures

2.1 Introduction

The concepts of social assets and financial vulnerabilities, introduced in the previous chapter and demonstrable in my previous qualitative research, exist as part of a wider conceptual approach to studying poverty known as the Sustainable Livelihoods Approach (SLA). This approach forms the conceptual framework for this research in relation to social assets and financial vulnerabilities and is discussed in section 2.2. The SLA may provide the framework for the analysis of assets and vulnerabilities for those living in poverty, but poverty itself is a contested concept: how it is conceptualised informs the definitions and measures used in legislation, policy and research.

This thesis uses Townsend's concept of relative deprivation, an approach that conceptualises poverty as relational and multidimensional, as its conceptual poverty framework, as discussed in section 2.3. Townsend's concept of relative deprivation has informed the development of the original tripartite, now quadripartite, official measure of child poverty used in the UK policy context, discussed in section 2.4. Thus the theoretical framework for this thesis combines the SLA for assets and vulnerabilities and Townsend's concept of relative deprivation for its approach to multidimensional poverty.

2.2 Sustainable Livelihoods Approach

The Sustainable Livelihoods Approach (SLA) to studying poverty was developed by organisations working within the Global South. It is an approach that highlights the complexity and multiple dimensions of poverty (IFAD, no date) and which analyses compound aspects of people's lives in addition to their income and consumption (Chambers and Conway, 1991). The SLA is a multifaceted framework that aims to explore the roles, impacts and interrelationships of various types of *assets* and *vulnerabilities* on the lives of people living in poverty. The SLA defines *assets* and *vulnerabilities* using five categories: human, financial, social, public and physical. Assets and vulnerabilities are not mutually exclusive in the SLA as having a

vulnerability in one context could be an asset in another. An example of this is given when discussing *financial vulnerabilities* in section 2.2.3. Furthermore, a lack of assets does not necessarily imply the presence of vulnerabilities and a lack of vulnerabilities does not necessarily imply the presence of assets. For a family to be said to possess assets or vulnerabilities, there has to be either a demonstrable presence of assets or a demonstrable presence of vulnerabilities. As they range across a spectrum there are arguably degrees of assets and vulnerabilities.

The SLA emphasises that everyone has strengths, or *assets*, as well as weaknesses, or *vulnerabilities*, in their life, both financial and non-financial, which combine to create a livelihood. For those living in poverty, however, the combined assets may not be sufficiently adequate to provide a *sustainable* livelihood. The principal proponent of this approach, Robert Chambers, offers this definition of a livelihood:

> *'A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living; a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long-term'* (Chambers and Conway, 1991: 7)

The sustainability of a livelihood includes maintaining and enhancing capabilities for future generations: this is achieved by investment in children's education and by parents and families ensuring that children gain skills that are not available within the household (Chambers and Conway, 1991: 12).

The SLA has recently been adapted and applied to poverty research in a UK context. Since 2005, Oxfam and Church Action on Poverty (CAP) have been using the approach with families living in poverty. They believe that they have gained sufficient experience to suggest that the approach is as relevant within a rich (yet unequal) Northern country as it is in poorer Southern countries (Hocking, 2003).

2.2.1 Oxfam's sustainable livelihoods approach in the UK

The SLA is unique in UK poverty studies in that it aims to measure the *assets* and *vulnerabilities* of those living in poverty by assessing their strengths and weaknesses in five key areas and exploring how these combine to ameliorate or exacerbate the experience of poverty. Its central tenet is that people's assets and vulnerabilities have a cumulative impact on poverty and on the ability to maintain a sustainable livelihood. The SLA aims to capture how these assets and vulnerabilities are used in the strategies people living in poverty employ '*to get by'* (May et al., 2009). The SLA is unique in the study of poverty as it recognises that people in poverty have strengths as well as weaknesses (Chambers and Conway, 1991).

Two of these asset/vulnerability categories were especially demonstrable in my previous longitudinal qualitative work with families living in poverty, as mentioned in the introduction (Harris et al., 2009), and in other research with children living in poverty (Ridge, 2002a, Ridge, 2009, Ridge and Millar, 2011). Family social assets and financial vulnerabilities have a notable effect on children's wellbeing, relationships, ability to participate in the social and leisure norms of their peers, ability to participate in education, including school trips and activities, and ability to participate in celebratory/cultural norms such as birthdays and Christmas (Ridge, 2002a, Holscher, 2008, Harris et al., 2009, Ridge, 2011).

Thus far the SLA has been applied on a small scale using qualitative methods (Orr et al., 2006). This research will quantify the concept of assets and vulnerabilities and explore their association on the cognitive, social, emotional and behavioural (CSEB) development of young children living in poverty and income inequality in Scotland. This will: (1) allow exploration of these assets/vulnerability categories in the wider population of families with young children; (2) establish whether their impacts, if any, are statistically significant; and (3) enable this research to be replicable and generalisable. The following two sections, 2.2.2 and 2.2.3, discuss social assets and financial vulnerabilities respectively.

2.2.2 Social assets/vulnerabilities

Social assets/vulnerabilities in the SLA correspond to broader concepts of social *capital*. Social capital is reported as being *'an elusive concept'* (Morrow, 1999: 745), a '*diversely theorized concept'* (Kritsotakis et al., 2011: 1654), with multiple definitions that apply to the individual, family, groups, communities and beyond to wider society (Blaxter and Hughes, 2000). It covers such diverse areas as trust, social cohesion, social networks, social support, reciprocity, exchange of information, social leverage and participation (Webber et al., 2011, Kritsotakis et al., 2011). In the SLA in the Global South, aspects of civic participation, access and community networks are prominent; however, in its adaptation for the Global North, there is less emphasis on this element of social capital. Instead, focus is placed on the links and ties between family and friends in the local community (May et al., 2009). Social assets, or social capital, within family and friendships groups, pertain to the work of two social capital theorists in particular: Bourdieu (1986, 1990, 1993) and Coleman (1988, 1990a, 2000).

The social capital of Bourdieu is a mechanism through which the socioeconomically advantaged generate, maintain and transmit their advantage to the next generation (Gauntlett, 2011). Bourdieu defines social capital thus:

> *'...the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition... which provides each of its members with the backing of the collectivity-owned capital, a 'credential' which entitles them to credit, in the various senses of the word'.* (Bourdieu, 1986: 248-249)

Bourdieu's social capital places emphasis on *durable* connections between people, which require resources to maintain and reinforce them (Morrow, 1999): resources that are easier for those of higher, rather than lower, socioeconomic status to attain and sustain. The *credential* which Bourdieu states entitles the recipient to *credit* in the various senses of the word, can be translated into human capital (education, jobs), economic capital (money, access to jobs), and further social capital, which is then recycled to generate and maintain advantage, for those with the resources to invest,

and disadvantage for those without (Bourdieu, 1986). Bourdieu attracts various criticisms; for the indistinctness of his concepts, for his lack of empirical indicators to test his work (Sullivan, 2002), and for his alleged focus on social elites (Gauntlett, 2011). Morrow (1999: 756), however, asserts that the interpretation of Bourdieu as elitist is a misunderstanding, adding that *'the concept can (and should) be expanded to include working class as well as middle class children'*. Bourdieu's application of social capital can be argued to be rather deterministic in that it prescribes that high socioeconomic status will result in high social capital, which will result in the reproduction of advantage, and low socioeconomic status will result in low social capital, which will confer disadvantage.

According to Morrow (1999: 760), the strength of Bourdieu's concept of social capital is that his is *'essentially a theory of privilege rather than a theory of inadequacy'*. She posits that there is a danger that the application of social capital to research social phenomena, especially for the socioeconomically disadvantaged, becomes *'a kind of deficit theory syndrome'* (Morrow, 2001: 57), which would assume that those with low socioeconomic status are deficient in their levels and use of social capital. In this thesis, this critique is countered, as, in addition to exploring the social assets of families across the income spectrum, from those living in persistently low to persistently high income, the concept of social assets used postulates that low socioeconomic families do have social capital, or social assets, available to them and that these social assets are hypothesised to have beneficial impacts on the CSEB developmental outcomes of their children.

A point of synergy between the concept of social assets in this thesis and the social capital of Bourdieu is that he sees the family as the main locus for the '*accumulation and transmission of social capital*' (Blaxter and Hughes, 2000: 83). Furthermore, Morrow (1999: 761) asserts that Bourdieu's concept of social capital is especially useful for research with children, because it is concerned with the social and personal networks *'for individual or group wellbeing'*. It is to these ideas that this thesis' concept of social assets align.

The second social capital theorist of relevance to the concept of social assets in this thesis is that of Coleman (1988: S100-S101). For him, social capital is an intangible concept that *'exists in the relations among persons'*. He explains that individuals employ social relationships to maximise the utility of their existing individual resources (Coleman, 1990b). Thus, social capital is defined by its function rather than its composition (1988, Coleman, 1990b). He states:

> *'social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors -- whether persons or corporate actors -- within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that in its absence would not be possible.' (Coleman, 1988: S98)*

In particular, Coleman's social capital focuses on the relations between family members and the effects of familial interactions on the wellbeing of children and young people (Ferguson, 2006), with the direction of influence of the relationship running from parent to child. He places special emphasis on how family social capital creates human capital in the next generation and much of his research has been in the sphere of education (Coleman, 1988). He emphasises the *'importance of social capital within the family for a child's intellectual development'* more than he does the education, or human capital, of the parents as, without social capital, parental human capital cannot be transmitted (Coleman, 1988: S110). Coleman strongly asserts that family social capital depends on the physical presence of parents, on the attention they give a child, and on the strength of the parent/child relationship (Coleman, 1988). This idea has been criticised for being biased towards lone parents and mothers who work (Morrow, 1999).

Morrow (1999: 752) acknowledges that the strength of Coleman's concept of social capital is that it provides a link with families and their immediate social contexts; however, she finds that it is a narrow concept *'premised on a model of the nuclear family norm and narrow definitions of family that ignore wider kin relationships'*. This criticism of Coleman's social capital will be countered in this thesis as social assets are derived from wider kin and kith. This thesis derives its concept on the

premise that friendships and extended family, in addition to immediate family, can and do produce social assets.

In conclusion, the concept of social assets employed in this thesis: pertains to the milieu of extended family and friends; is postulated to exist among those in low as well as high income; is hypothesised to be associated with higher levels of CSEB development in children, as addressed in chapter eight; and is hypothesised to reduce vulnerabilities in other domains, especially financial vulnerabilities, as tested in chapter nine. How the concept of social assets is operationalised for this thesis is discussed in section 5.5 of the data chapter.

2.2.3 Financial assets/vulnerabilities

Financial assets pertain to income and wealth. In the SLA questions relating to main and supplementary income sources, and the presence of wealth such as savings, are asked of respondents to identify financial assets. The SLA posits that the presence of financial assets increases the sustainability of a livelihood and the presence of financial vulnerabilities presents a risk to sustaining a livelihood. In the data used in this study, discussed in chapter 5, there are no comparable data collected on wealth and the data on income are used to derive the primary independent variables, longitudinal income poverty and longitudinal income inequality: that is, the income-based element of financial assets is used as a fundamental part of this research framework. What this thesis seeks to explore in relation to children's CSEB outcomes, is not financial assets, but financial *vulnerabilities*, as they relate to the adaptation of the SLA and as they emerged in my previous qualitative study of families living in poverty (Harris et al., 2009).

Vulnerability is a central tenet of the SLA and, outside of this conceptual framework, is a term that is often erroneously used synonymously with poverty. Chambers, a key proponent of the SLA, emphasises that vulnerability is not the same as poverty. He explains that where poverty indicates lack or want, vulnerability is defined by *'insecurity, and exposure to risk, shocks and stress'* (Chambers, 1989: 33). He argues that definitions of poverty conceived by professionals overlook vulnerability, despite it being a primary concern to poor people themselves (Chambers, 1989: 33). The

SLA, in contrast, explores the vulnerabilities of those living in poverty as a concept related to, but distinct from, poverty.

Important for the findings chapter on financial vulnerabilities is Chambers' assertion that poverty, as measured by low income, can be reduced by borrowing, but that the resulting debt makes households more vulnerable (Chambers, 1989: 33). This exemplifies the earlier assertion that an asset in one context can be a vulnerability in another. Chambers explains that poor people have a fear of debt and that they are more aware than poverty professionals of the trade-offs between poverty and vulnerability. Although Chambers' focus with the SLA is on the Global South, he posits that '*poor people all over the world are reluctant to take debts which increase their vulnerability*' (Chambers, 1989: 38).

The concept of the SLA has been mainly applied qualitatively; yet, the concept of financial vulnerability lends itself well to quantitative interpretation and application. Whelan and Maitre (2005, 2008) used the European Community household panel (ECHP) data to create a concept translated directly from Chambers' work that they call 'economic vulnerability'. More recently, they have applied their concept of 'economic vulnerability' to the European Union Statistics on Income and Living Conditions (EU-SILC) data (Whelan and Maitre, 2010). They conceptualise vulnerability as insecurity, and exposure to risk and shock, rather than directly measured economic deprivation (Whelan and Maitre, 2008). Their measure of economic vulnerability includes objective risk of deprivation and subjective sense of insecurity (Whelan and Maitre, 2008: 640). It is a construct that they use to identify economically vulnerable groups of people cross-nationally in Europe using latent class analysis (Whelan and Maitre, 2010).

Whelan and Maitre (2008) compared the groups identified as being economically vulnerable with the broader economic inequality measure 'social class' as measured by the six-category aggregated version of the European Socio-economic Classification (ESeC). They found that financial vulnerabilities operate along traditional social class lines; those from a higher social class '*had very high levels of protection from economic vulnerability*' whereas those from the traditionally lower social classes experienced persistent economic vulnerability (Whelan and Maitre,

2008: 655). This is a direct application of the concept of financial vulnerability as developed by Chambers in the SLA and one that this thesis aims to replicate.

In conclusion, the SLA provides this thesis with its two latent constructs, social assets and financial vulnerabilities, typically used qualitatively, but quantified for use in this study. In the findings chapters 8 and 9, the impacts of social assets and financial vulnerabilities respectively, are explored on children's cognitive, social, emotional and behavioural (CSEB) developmental outcomes for children living in multiple dimensions of income poverty and income inequality in Scotland. This theoretical framework now turns to the concept of poverty.

2.3 Theorising poverty

Poverty is often understood as an 'absolute' concept (Alcock, 2006). When one cannot afford adequate shelter, clothing and nutrition for oneself and one's family, resulting in a risk to survival, one can be said to be living in absolute poverty (Lister, 2004). This absolute concept of poverty reflects its very visible aspects, which can be commonly understood and recognised, often across societies, which may explain its endurance as a concept. However, focusing on subsistence levels required to sustain life raises questions not only on what is required to sustain life, but what is required to live life in a certain time and place (Alcock, 2006, Ridge and Wright, 2008b).

Early poverty research by Rowntree in the late 19th and early 20th centuries was conceived of in absolute terms, although he defined two levels of poverty: primary poverty and secondary poverty. Primary poverty was absolute and pertained to subsistence due to lack of resources, whereas secondary poverty referred to those who seemingly did have the resources but were still unable to utilise these to raise themselves above subsistence level (Gregg et al., 2009). Although Rowntree distinguished between these two types, he still referred to both as poverty (Alcock, 2006). Using this concept, from the turn of the 20th century, Rowntree monitored poverty in three surveys (1899, 1936 and 1950), and concluded in the third survey in the 1950s that poverty no longer existed in the UK (Lister and Bennett, 2010, Taylor-Gooby and Stoker, 2011). Abel-Smith and Townsend (1966) countered this assertion when they undertook research analysing the Ministry of Labour's Family

Expenditure Surveys of 1953-4 and 1960 and concluded that poverty was still very much present. This led them to theorise that if poverty still existed, as their research showed, then a different concept of what constituted poverty was necessary. They concluded that poverty '*has no absolute meaning which can be applied in all societies at all times. Poverty is a relative concept*' (Abel-Smith and Townsend, 1966: 63).

Townsend proposed that the extant theories of poverty did not consider conditions of life such as *'physical, environmental and social states or circumstances'* and omitted the fact that people are social animals with social and familial roles, responsibilities and obligations (Townsend and Walker, 2010: 132). Such social responsibilities require people to participate in family and cultural life course events such as births, marriages and deaths and celebrations such as birthdays, Christmas and other religious festivals (Townsend and Walker, 2010). To be prevented from participating in events and activities of the family and society that a person belongs to due to a lack of income, according to Townsend, was unacceptable and constituted *'a state of observable and demonstrable disadvantage*' (Townsend, 1987: 125). This led Townsend to conceptualise poverty in *relative* terms (Townsend, 1979).

2.3.1 Townsend's concept of relative deprivation

In his seminal work, Townsend conceptualises living in poverty as lacking the resources to obtain what is required to be able to function and participate fully in the norms of any given society (Townsend, 1979). This theory involves making comparisons against the standards of the average members of any given society at a certain point in time, which requires that the average standard of income in the society under scrutiny as a whole has to be gauged (Alcock, 2006). Making relational poverty comparisons means taking account of the social standards in which people live: an exercise which involves subjective and, arguably arbitrary, value judgements.

Townsend's concept differentiates between 'poverty' and 'material deprivation': the former pertains to income and resources available (1987b) and the latter refers to

'conditions or activities experienced' (1987b: 127). Using Townsend's concept, people can be said to be in poverty if they lack the resources to live a life free from deprivation. His theory of relative deprivation, therefore, is a multidimensional concept that encompasses *'all the major spheres of life'* (Townsend, 1993: 36, Lister, 2004). In its entirety, therefore, Townsend's 'relative' concept of poverty states:

> *'Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the types of diet, participate in the activities and have the living conditions and amenities which are customary, or at least widely encouraged or approved, in societies to which they belong. Their resources are so seriously below those commanded by the average individual or family that they are, in effect, excluded from ordinary living patterns and activities'*. (1979: 31)

This concept, centred on the tenet that human beings have social as well as physical needs (Lister, 2004), and focused on the conditions of life rather than the distribution of resources, is what distinguishes the concept of relative deprivation from the narrower concept of poverty (Alcock, 2006). Townsend posits that the effects of lack of income on living standards, as measured by material deprivation, is a condition aligned with but distinguishable from income poverty itself (Townsend, 1987b, Townsend, 1987a).

The concept of poverty accepted by any society provides the framework within which definitions and measurements are developed and translated into policy responses (Lister, 2004). The following section, 2.4, discusses how Townsend's concept of relative deprivation has informed the development of the current definition of poverty and measure of child poverty used in the official UK policy context.

2.4 Measuring poverty in the UK

2.4.1 Introduction

The conceptual understanding of poverty is fundamental to its definition, measurement and, in turn, to the policy solutions governments seek to reduce or eradicate it: concepts of poverty have *'practical effects; they carry implicit*

explanations which, in turn, underpin policy prescriptions' (Lister, 2004: 3). Defining poverty is '*closely linked to measuring it since it involves making judgements about what people need'* (Ridge and Wright, 2008b: 3). Furthermore, making judgements about what people need, or ought to have, can deteriorate into judgements on what people deserve to have, or not to have, which is why poverty is debated and contested, and why defining it is as much a political act as a scientific measure (Lister, 2004, Ridge and Wright, 2008b). This contention is visible in the rhetoric and policies emanating from the new Coalition government, in the joint response on poverty myths by a consortium of churches (2013), in media responses in defence of the poor (Gold, 2013, Sparrow and Malik, 2013, Sparrow, 2013, Boffey, 2013), and in the less sympathetic responses in the popular press (Hanlon, 2012, Allen and Robinson, 2012).

Using Townsend's concept of relative deprivation, as discussed in the previous section, poverty is defined and measured: directly, in terms of consumption i.e. material deprivation; and indirectly, in terms of income. Townsend's study used income as the identifier of poverty and explored its associations with material deprivation to develop his theoretical framework. Ringen (1988) argues that Townsend's concept of relative deprivation is a direct concept because poverty is understood as a low standard of consumption; yet, the measure of poverty he used was the income poverty line, which is an indirect measure. He argued that it was counterintuitive for a direct definition of poverty to be measured indirectly in this way (Ringen, 1988). Advancing Townsend's concept of relative deprivation, research explored the associations and overlaps between direct and indirect measures of poverty in order to arrive at a measure that, as far as is possible, encapsulates the concept of poverty.

2.4.2 Material deprivation – a direct measure

In order to measure material deprivation, Townsend devised a list of 60 indicators of standard of living and from these he devised a 'deprivation index' of 12 indicators that were highly correlated with income (Townsend, 1979). The indicators were chosen, albeit with academic rigour, by the researchers themselves, who were later

accused of setting themselves up as the experts on an acceptable standard of living (Piachaud, 1981).

Taking these criticisms into consideration and in advancing Townsend's methodology, the researchers on the 1983 *Living in Britain* survey conceived the 'consensual' or 'perceived deprivation' approach to measuring poverty. A *consensual* definition of needs to construct a deprivation index was created by asking survey respondents about *their* views on what constitutes 'necessities' (Mack and Lansley, 1985: 45). The consensual method has been further developed in the Poverty and Social Exclusion (PSE) surveys and, in keeping with advances in technology and changes in society, these indicators are updated, most recently for the survey of 2012 (PSE, 2012).

Material deprivation has become an influential measure of poverty but it is not without flaws. Using the omnibus survey of the Office for National Statistics (ONS) and the Poverty and Social Exclusion (PSE) data, both from 1999, McKay argues that the evidence that there is consensus on which items are essential is relatively weak (McKay, 2004: 203). Furthermore, his analysis reveals that those who lack 2 or more socially perceived necessities own other items that were not deemed essential, leading him to argue that ownership of items was a result of personal preference: *'It is therefore their particular choice of consumption profile that makes them appear poor, not their resources'* (McKay, 2004: 204). However, the fact that people owned items that were not earlier categorised as necessary owes more to his first argument that consensus may not be sufficiently strong, more than his argument that spending behaviour is making people appear poor.

In addition to the personal preferences of those who cannot afford items considered essential while affording those that are considered inessential, there is a further criticism of material deprivation based on choice. Living in material deprivation is not necessarily caused by poverty as people may choose not to have the goods or participate in the events that indicate material deprivation even though they can afford to should they wish (Pantazis et al., 2006, Gordon, 2006). This element of

choice means that the study of poverty cannot rely on material deprivation as its sole measure; it is only when it is imposed by insufficient command of resources that it can be conceived as a dimension of poverty (Gordon and Pantazis, 1997, Pantazis et al., 2006).

2.4.3 Income – an indirect measure

The advantages of using income as a measure of poverty are manifold. Income confers an objective, well-defined, measurable gauge that can provide a lot of information about the comparative extent of poverty and inequality within a society and allow for comparison with other advanced industrial societies (Alcock, 2006). Furthermore, all definitions of poverty, absolute and relative, comprise a concept of lack of resources to obtain essential goods, which primarily means ability to purchase what is required not to live in disadvantage. The use of material deprivation as a measure of poverty is incomplete in itself, as it is only when material deprivation is imposed by a lack of resources that it constitutes a measure of poverty; therefore, income is required to complement non-income based measures of poverty.

Despite its advantages, income alone is not the best way to capture economic disadvantage, as it reveals little about the impacts lack of income have on people's lives and nothing about their living standards. The official poverty lines, set by academics and policy makers or 'elite experts' (Pantazis et al., 2006: 7), are arbitrary and little differential analysis is undertaken on the poverty gap, i.e. the distance between one's income and the poverty line, or on the difference between the experience of those living just above and just below the poverty line. Measuring economic disadvantage using income alone, an *indirect* method which Pantazis et al (2006) argue *infers* deprivation rather than measures it, does not fully reflect living standards as those whose income drops suddenly do not experience a subsequent drop in living standards until all other resources are used, e.g. savings and access to credit, which leads to a temporal gap between the experience of low income and material deprivation (Gordon, 2006). Additionally, there are people who may not have a high income but may be asset-rich and therefore not deprived, or those who

experience deprivation despite a high income through their consumption choices or through the intra-familial transfer of resources.

This latter point is especially true as regards women and children, who may have little or no control over the distribution and use of family resources, leading to higher levels of deprivation for these groups (1989, Pahl, 1999, Goode et al., 1998). Moreover, when family resources are limited, mothers often experience the highest level of material deprivation in the family as they subjugate their own needs to ensure their children are as fully provided for as possible (Middleton et al., 1997, Magadi and Middleton, 2007, Harris et al., 2009, Ridge and Millar, 2011).

Using income, even as a proxy measure, does not solve the problem of how to measure poverty; however, this does not mean that we cannot, or ought not to, measure poverty in this way (Alcock, 2006). Despite the problems associated with a purely income-based measure of poverty, data on income and expenditure provide a wealth of comparable data. Lister (2004) warns of the danger of downplaying income when defining poverty for fear that it be used to justify a policy stance opposed to raising the incomes of those in poverty. This is a prescient admonition as the current reform of social security by the new Coalition government, discussed in the following chapter, is presently reducing the incomes of those living in poverty. Income, therefore, is the defining aspect of poverty and, at present, is the basis of any multidimensional measure of poverty. Using income to measure poverty is not entirely straightforward as there are two factors that have to be considered in order to establish how much income is enough to live on. The first is - does the measure take the individual, the family or the household as the unit of measure; and the second is – what measure of the average and what proportion of that average will result in identifying those living in poverty.

Equivalence scales

Most individuals live within families or as part of a household with other individuals, where they will pool their resources to varying degrees, share their wealth, or their poverty, with other family or household members, and make economies of scale

(Alcock, 2006). The way in which this is taken account of in the measurement of poverty is through equivalence scales. An equivalence scale expresses in mathematical terms the presumed cost of living reductions due to households sharing resources by assigning a 'weight' to each individual. The equivalence scale currently in use by the Scottish government, the UK government and European bodies is the modified Organisation for Economic Co-operation and Development (OECD) equivalence scale. The OECD equivalence scale gives the weight of 1.0 for the first adult in a household, 0.5 for an additional person aged 15 years or over, and 0.3 for any children aged 0- 14 years (Chanfreau and Burchardt, 2008).

Although there is broad consensus on the applicability of equivalence scales, they have attracted criticism. One argument is that equivalence scales do not adjust for the higher costs faced by households with disabled people (Chanfreau and Burchardt, 2008). This is likely to result in an underestimate of the number families with a disabled member living in poverty. A second argument is that equivalence scales assume that resources are shared equally amongst all members in a household, which research on the intrafamilial transfer of resources, and how it affects women and children, as discussed on the previous page, indicates is not the case (Chanfreau and Burchardt, 2008). This makes household income and equivalent household income a somewhat blunt instrument to capture the experience of poverty of individuals. Further, there is argument that the value of the weights for children are too low as a proportion of those for adults (Piachaud and Sutherland, 2001, Bradshaw and Richardson, 2008).

The poverty threshold

A major issue in measuring income poverty is how to ascertain the point at which to separate those who are living in poverty from those who are not. This threshold level of income, the 'poverty line', has previously been 50% of the mean and is now 60% of the median (DWP, 2003). The level of income in rich societies is negatively skewed, meaning that there is a long tail of low and moderate incomes and a large spike at the point of the highest incomes (DWP, 2003). Such is the level of income inequality in the UK that using the mean as the average measure of income has fallen

out of use because it provides too high a measure of the average due to the exceptionally high incomes at the upper end of the scale (DWP, 2003). The average income as measured by the median, the midway point on the income scale, in contrast, is impervious to the exceptionally high incomes at the upper end of the scale and is thus the preferred measure of the average (DWP, 2003). The income definition of poverty in Scotland, the UK, and across the European Union, is 60% of the median income, which, *'for all its limitations this is a clear and easily accessible poverty line, which does involve a relative definition which can be compared over time and across different populations*' (Alcock, 2006: 84).

2.4.4 Income and material deprivation

Trying to identify the poor using either income or material deprivation separately results in different groups of people being identified as living in poverty; there is no great overlap between the groups identified as being poor using the two measures (Bradshaw and Finch, 2003). There are several reasons why this may be so: false consciousness, intra-familial transfer, low aspirations or expectations, measurement error and the lagged effect of income poverty on living standards (Bradshaw and Finch, 2003). A decline in living standards anticipated from a loss of income can be held in abeyance due to existing wealth (e.g. savings), access to financial support from family and friends, and access to credit, while a recent escape from poverty will take time to result in increased consumption and the acquisition of goods (Treanor, 2013b).

There is now consensus that it is preferable to measure both income and deprivation when measuring poverty (Pantazis et al., 2006). Research into the direct (deprivation) and indirect (income) measures of poverty shows that *'employing both income and deprivation criteria rather than income alone can make a substantial difference to both the extent and composition of measured poverty'* (Callan et al., 1993: 142). Ringen (1988: 36) concluded that poverty can be considered a *'state of general deprivation which is characterised by both a low standard of consumption and a low level of income*'.

2.4.5 How poverty has been studied in the UK

Most poverty studies are cross-sectional and so those living in poverty will be identified only if they happen to be living in poverty at that point. Using longitudinal data, those living in poverty are identifiable as those whose *'income/resources fall below the 'poverty threshold' and remain below it for a sufficient length of time for them to suffer the effects of deprivation as an enforced consequence of this low income*' (Pantazis et al., 2006: 33). This implies that longer spells of living in poverty is associated with deeper levels of material deprivation, which as their data are cross-sectional, Pantazis et al cannot test empirically.

Cross-sectional data do not capture those who are temporarily above the poverty line or those who exist on the margins slightly above the poverty line, only those who are currently living below it (Smith, 2008). Research shows that the population of those living in poverty is not fixed but fluid, with a larger proportion of and a wider range of people experiencing poverty in their lifetime than cross-sectional studies would suggest (Smith and Middleton, 2007). Furthermore, there is a degree of 'churning', with people being vulnerable to repeated spells of poverty (Jenkins et al., 2001). It has been suggested that this dynamic aspect of poverty is not a completely negative situation as it means that those who experience poverty will not always do so (Ridge and Wright, 2008b); however, for some it means that '*the experience of poverty over time can lead to an accumulation of deprivation, which is more extensive than that experienced by those who only briefly going without'* (Alcock, 2008: 49-50). Lives are lived over time and throughout the lifecourse people's risks and experiences of poverty change, with certain points being associated with greater vulnerability to poverty (Rigg and Sefton, 2006). Relevant to this research is that having young children is one such time (Smith and Middleton, 2007).

2.4.6 The official child poverty measure

Townsend's concept of relative deprivation and the achievements of the Poverty and Social Exclusion (PSE) team in advancing the consensual method of material deprivation, led in 2003 to the New Labour government adopting a tripartite measure of child poverty, using a combination of income and material deprivation (DWP,

2003). This is the measure used to gauge success or otherwise of the child poverty targets and is the one enacted in the Child Poverty Act (2010). The measure comprises:

- **absolute low income** - measured at 60% of equivalised median income for 1998/99, to measure against a fixed point, any increase in the incomes of the poorest families in real terms. It should be noted that the use of the word 'absolute' is different here to the one used earlier in the chapter in relation to the concept of poverty;
- **Relative low income** - measured at 60% of contemporary equivalised median income, to measure any increase in the incomes of the poorest families against general rises in incomes in the population as a whole; and
- **Material deprivation and low income combined** - including a measure of lack of material necessities, to compare living standards and material deprivation more broadly. When combined with material deprivation, the low income threshold is below 70% of median equivalised income rather than below 60% for the poverty threshold.

In the tripartite child poverty measure, the absolute low income measure has been recalibrated to measure future years 60% median equivalised income against a new baseline set in 2010, the year of the Child Poverty Act (2010), rather than against income in 1998/9 as set in the original measure. Since the implementation of the Child Poverty Act (2010) a fourth measure has been added (UK, 2010):

- **Persistent poverty** – living in poverty measured at 60% of equivalised median income for three or more consecutive years.

2.5 Conclusion

The theoretical framework for this thesis blends two conceptual approaches to poverty, the Sustainable Livelihoods Approach (SLA) and Townsend's concept of relative deprivation. The assets and vulnerabilities of the SLA were visible in my previous qualitative research that informed the development of this study. Two in

particular, social assets and financial vulnerabilities, were most prominent, and these are the two categories that the data used in this study, the Growing Up in Scotland (GUS) data, can support, as discussed in chapter 5.

Townsend's concept of relative deprivation endures and prevails after several decades of hotly contested debates on the concept, definitions and measurements of poverty. It is the concept used to create the measure of poverty and child poverty in local, national and international policies. Employing this concept, and by extension its definition and measurements, this thesis is located in the current poverty paradigm, extant empirical evidence and emerging policy context.

Townsend's concept of relative deprivation emphasises that poverty is a relative concept, defined as having insufficient resources to prevent deprivation. The relative aspects focus on people's social states, emphasising that people have social and familial roles, responsibilities and obligations. As noted in the social assets section (2.2.2), social roles require resources to be maintained. Having insufficient resources to fulfil social and familial obligations is a facet of deprivation central to Townsend's concept which corresponds to the SLA. While the SLA would highlight that having social assets can attenuate poverty and its effects, Townsend's concept of relative deprivation would highlight the inability to obtain and maintain social assets as an indicator of poverty.

The official child poverty measure derives from Townsend's concept of relative deprivation and uses an indirect measure (income) and a direct measure (material deprivation) to capture the multidimensional reality of poverty. These direct and indirect measures of poverty are derived using GUS data in chapter 5 and used in the findings chapters of this thesis. Moreover, this research, due to its longitudinal nature, can incorporate a measure of persistent poverty, as incorporated as a fourth measure of child poverty in the Child Poverty Act (2010), and persistent income inequality - constructed in the following chapter on data. This official measure of child poverty is the one used post-2003: prior to 2003 there was no official government measure of poverty specific to children, the measure of poverty used generally was 50% of mean income.

The following chapter on policy begins by giving an overview of the rise in child poverty and the lack of recognition of poverty more generally during the years of the Conservative administrations (1979-1997). It also examines policy in relation to child poverty and early years' development during the New Labour years (1997-2010) that saw the application of Townsend's theory of relative deprivation to the creation of the official measure of child poverty. It explores how the policy context pertaining to child poverty and children's early development in Scotland has diverged and converged with that of the UK under New Labour. Finally, it considers the current policy context since the 2010 general election that saw the arrival of a Conservative-led Coalition government, into whose policy context this research will emerge.

3 Policy

3.1 Introduction

This research pertains to children living in income poverty and income inequality in Scotland. As such, the child poverty context in respect of three policy eras will be examined. The principal era is that of the New Labour government (1997-2010) that led to the child poverty measure set out in the previous section (2.4.6) and whose policies culminated in the Child Poverty Act (2010). The New Labour era delivered devolution for Scotland and oversaw the re-constitution of the Scottish Parliament in 1999, leading to a triple-tiered policy and political system for the people of Scotland. This chapter addresses the policies apropos of child poverty and children's early development in relation to the policies reserved to Westminster and those devolved to Scotland during the New Labour era. The New Labour period is key to this research as it corresponds to the period covered by the data this study uses.

The second era of importance to this research concerns the child poverty context that New Labour inherited from the preceding administration. This chapter begins by briefly examining the rise in child poverty during the 1979-1997 Conservative Party administration to give an historical context to the succeeding New Labour era. The third policy era of relevance is that of the new Conservative-led Coalition government (2010-present) as this is the policy context into which this research will emerge. This chapter gives an overview of the current policy and political framework of the new government vis-à-vis child poverty. The concluding chapter of this thesis, chapter ten, will revisit this current policy context in light of the findings of this research.

3.2 Child Poverty 1970s to 1997

Townsend's seminal work, as discussed in section 2.3, was published in 1979 but did not have immediate policy influence as it was the year that Margaret Thatcher's Conservative Party came to power, heralding 18 years of New Right-inspired political administration. The Conservative Party position during the 1970s, prior to its 1979 electoral success, neither denied outright nor conceded the existence of

poverty (Welshman, 2007) and, when in power, the word 'poverty' disappeared from their political and policy discourse altogether (Ridge, 2002a, Ridge and Wright, 2008a). The Conservative Party laid responsibility for poverty squarely at the door of the poor (Welshman, 2007). Keith Joseph, Secretary of State for Social Services for the Conservative Party, for example, perplexed at the persistence of deprivation throughout the late 1960s and early 1970s, concluded that '*problems reproduce themselves from generation to generation*' (quoted in Welshman, 2007: 1). In this, argue Dean and Taylor-Gooby (1992: 35), Joseph proposed a variant of the 'culture of poverty' theory, which posits that the behaviour and values of poor people leads to a self-perpetuating poverty subculture.

Despite the denial of poverty by the Conservative Party, in 1979 there were 1.4 million children living in poverty, a rate of 10%, as measured by 50% mean income (Howard et al., 2001: 40). Contemporary income inequality and poverty were almost as low as they had ever been; however, economic growth was also at a post-war low (Hills, 2004). The new Thatcher government posited that economic growth was low due to an overlarge public sector and the disincentive effect on employment of overgenerous social security benefits (Hills, 2004). This position was influenced by New Right critiques of the welfare state, which was seen as *'leading to excessive public expenditure and an unfair tax burden on citizens and entrepreneurs, negating choice, weakening the family and creating dependency'* (Bochel, 2011: 8). The subsequent policies of the Conservative Party, therefore, were *'aimed at restraining and reducing public spending – of which social security was a major part – and at changing the system to improve incentives to work'* (Hills, 2004: 95). The consequence of such polices meant that the problem of poverty was reduced *'merely to the experience of social inequality – which was seen as necessary for creating competition in the free market'* (Ridge and Wright, 2008a: 288).

One of the first policies pertaining to social security implemented by the Thatcher government in 1981 was to uprate social security benefits in line with the lower price inflation index rather than with the extant earnings growth index. This left families living on benefits '*further behind general living standards and deeper in poverty'*

(Hills, 2004: 93). At the same time, policies such as reduced higher rates of income tax and tax breaks benefited the wealthy (Ridge and Wright, 2008a: 288), while wages at the bottom of the income distribution rose more slowly than those at the median and top of the income distribution, leading to an increase in income inequality (Hills et al., 2004, Hills et al., 2009). Demographic change was also having an impact on the incidence of child poverty: lone parenthood went from 13% in 1979 to 23% in 1997 (Ridge, 2002a). Hills (2004: 95) explains that lone parent families were much more likely to live in poverty than others as lone parent families were more likely to be economically inactive. This meant that there was a growing disparity between those households with two workers and those with none (Stewart et al., 2009). The proportion of children living in families without a full-time worker rose from 20% in 1979 to 36% in 1993/4 (Ridge, 2002a: 19). By the mid-1990s the share of children in households without work was higher than anywhere else in the industrialised world (Stewart et al., 2009: 3).

Despite the increased incidence of poverty and inequality in Britain through the 1980s and 1990s, the Conservative government still refused to admit that child poverty existed (Ridge, 2002a). In 1989 the Conservative Minister John Moore declared 'the end of the line' for poverty (Hills, 2004: 94). Lister (2011: 113) asserts that Moore '*dismissed the idea of relative poverty as simply inequality, espoused as a concept by the left in order to condemn capitalism'*. Thus, throughout the Conservative government (1979 to 1997) '*there is no official concession that poverty existed and no definition of it was accepted'* (Piachaud and Sutherland, 2001: 97). By 1998/9, at the start of the New Labour administration, as a result of Conservative policies and demographic change, the number of children living in poverty, as measured by 50% mean income, had tripled to 4.5 million, or 35% of all British children (Piachaud and Sutherland, 2001) and income inequality had *'widened sharply'* (Stewart et al., 2009: 2).

3.3 The policy landscape under New Labour (1997-2010)

Since the UK devolution acts of 1998, all policies pertaining to employment and social security are reserved to the Westminster government, as are the majority of

policies relating to tax. The exception is the tax raising power afforded to the Scottish parliament in 1999 which allowed the parliament to increase or decrease income tax by up to three pence in the pound and which was never used. As a result of these reserved policies areas, the devolved administration in Scotland has had little influence over the policies governing the majority of fiscal matters and therefore limited autonomy over the means to reduce child poverty. What Scotland has historic responsibility for, and extended autonomy over under devolution, is *social policy,* which will be addressed later in this section. In the remainder of this section on policy, where Scottish policy diverges from that of the UK government, this will be noted and discussed; otherwise, UK government policy pertains equally to Scotland.

During New Labour's election campaign of 1997, its manifesto contained few references to poverty and where it did it was in relation to reducing dependency on social security payments and increasing employment (Hills, 2004, Hills et al., 2009). However, New Labour did pledge to introduce a minimum wage, reduce long-term unemployment, reduce youth unemployment and tackle educational disadvantage (Hills, 2004, Hills et al., 2009).

After its electoral success in 1997, New Labour inherited the obligation to reduce poverty under the United Nations World Summit for Social Development's declaration made in Copenhagen in 1995 (UN, 1995). Additionally, as Lloyd (2006) explains, New Labour did wish to realise the rights of British children under the 1989 United Nations Convention on the Rights of the Child, Article 27, which, in summary, states: that children have a right to a standard of living that will enable adequate physical, mental, spiritual, moral and social development; that parents have the responsibility so far as they are able to provide the necessary standard of living; that states will assist parents and provide material assistance where necessary; and that nation states will take steps to secure the recovery of maintenance from absent parents (UNICEF, 1989). Thus, in contrast to its pre-election manifesto and lacklustre approach to child poverty in the earliest years of its administration, child poverty became a major policy focus of New Labour post-1999.

Tony Blair, in his William Beveridge commemorative lecture in 1999, announced *'and I will set out our historic aim that ours is the first generation to end child poverty forever, and it will take a generation*' (Blair, 1999: 17). This new policy focus on child poverty was followed by an announcement to cut relative child poverty by a quarter between 1998/99 and 2004/05. In 2004 that target was extended to achieve a 50% reduction by 2010/11 (Hills et al., 2004: 98, Ridge and Wright, 2008a). Ridge (2002a: 1) notes that '*the issue of child poverty moved, at last, from the periphery to the centre of the policy agenda'*.

New Labour's 'attack' on child poverty can be summarised as reducing income poverty by getting people into work and improving public services to lessen the wider disadvantages associated with poverty (Stewart, 2009a: 48). In order to achieve its ambitious poverty-reduction targets, it embarked on a programme of radical welfare reform (Ridge, 2002a). A wide-ranging policy strategy was implemented that focused on: child care and early years; increasing parental employment; a National Minimum Wage; income transfers through the tax credit system for low earners; higher out-of-work benefits for families with younger children; and investment in compulsory education (Stewart, 2009a: 267). One of their first acts in office was the introduction of the *New Deal* and *New Deal for Lone Parents*, a series of programmes designed to help people find paid work and move off benefits (Hills, 2004). A new Social Exclusion Unit was established to focus on the *'problems of compounded disadvantage'* (Hills, 2004: 97). Stewart et al (2009: 9) explain that social exclusion, despite being a central concept to New Labour, was never formally defined; however, they argue that from the government's attempt to explain the concept, it was clear that they were referring to multiple deprivation, including inequalities such as disability. To monitor its progress in achieving its aim to reduce child poverty and social exclusion, in 1999 the New Labour government established what would become an annual series of progress reports on poverty and social exclusion called *Opportunity for All* (DSS, 1999). The first report outlined what the government saw as the many multidimensional problems facing the government:

> *'lack of opportunities to work or acquire education and skills; childhood deprivation; disrupted families; barriers to older people living active, fulfilling and healthy lives; inequalities in health; poor housing; poor neighbourhoods; fear of crime; and discrimination'* (DSS, 1999: 4).

While this multidimensional approach to poverty and social exclusion was comprehensive and evidence-based, and acknowledged the existence of the structural constraints facing those living in poverty, still it placed emphasis on the behaviours of poor people, as expressed in a speech to the Joseph Rowntree Foundation by Tony Blair in York in 2006, when he said '*some aspects of social exclusion are deeply intractable. The most socially excluded are very hard to reach. Their problems are multiple, entrenched and often passed down the generations*' (Blair, 2006: no pg no.). Welshman (2007: 2) notes that for Blair, in contrast to the position of the previous Conservative government, the rights of people are coupled with responsibilities and that both individual agency and structural causes of poverty and social exclusion are relevant to the debate; however, he concludes that the content of Blair's 2006 speech and the Conservative Minister Joseph's speech in 1972 on 'Transmitted Deprivation' was remarkably similar (Welshman, 2007: 2). He states '*In all of the recent debate, the rhetoric of a cycle of this deprivation, and of intergenerational continuities, has been ever present*' (Welshman, 2007: 2).

This conflict between structure and agency in New Labour's approach to poverty *'combine the ground-breaking commitment to eradicate child poverty with a continued adherence to moralistic views of adults who experience poverty'* (Ridge and Wright, 2008a: 288). Ridge and Wright (2008a: 289) note that New Labour redefined *'citizenship rights and responsibilities'* in a way that stigmatised involuntary experiences, circumstances and activities. That New Labour's discourse reflected previous, discredited Conservative hypotheses, highlights the weakness of New Labour's structural analysis. Indeed, Lister (2011: 118) argues that New Labour presented poverty and social exclusion as '*a series of discrete social problems rather than as systemic*' and, consequently, their antipoverty policy design focussed on the individual rather than the structural. The following two sections address two areas of policy employed by New Labour to reduce child poverty: support to families and increasing financial support to low-income families.

3.3.1 Support for families

The *Cross-Departmental Review of Provision for Young Children* (Great Britain, 1998), part of HM Treasury's *1998 Comprehensive Spending Review*, initiated the early years and early intervention policy drive with its aim to improve support for children in the early stages of their lives. Consequent policies to support families were outlined in a wide-ranging consultation document called *Supporting Families* (HO, 1998). A range of objectives outlined in *Supporting Families* were to be delivered through the *National Childcare Strategy* (DfEE, 1998); these were: (1) support for parents through the Sure Start initiative aimed at disadvantaged areas, (2) increased financial support for families through the tax and benefit system and (3) increasing family-related employee rights (Lloyd, 2008: 479). It should be noted that *Supporting Families* related primarily to developments in England as by this time responsibility for these and other social welfare policy areas had been devolved to Scotland, Wales and Northern Ireland (Lloyd, 2008). Scotland had its own childcare strategy *Meeting the childcare challenge: A childcare strategy for Scotland* (SO, 1998) which focussed on improving the quality, affordability and accessibility of childcare in Scotland.

Sure Start and Sure Start Scotland

The Sure Start initiative was designed to improve children's quality of life and school readiness (Lloyd, 2008: 480). The initial aim of Sure Start was for 250 local programmes by 2002, reaching almost 20% of disadvantaged children under four (Ridge, 2002a: 28). The programme pertained to England and Wales, with Sure Start Scotland initiatives, also known as 'Family Centres', extending already existing provision in Scotland (Ridge, 2002a). Where the family centres in Scotland diverged from provision in England and Wales was that the Scottish initiative funded projects through local authorities, funds which did not have to be used in partnership arrangements with other agencies (Cohen, 2004). Scotland's autonomy in this matter did not only come from devolution in 1999; Scotland had long had a degree of autonomy over matters relating to child welfare, education and support services (Cohen, 2004).

For example, as regards education, the Education (Scotland) Act 1918 empowered local authorities to establish nursery schools for children over two and under five years old for those *'whose attendance at such a school is necessarily desirable for the healthy physical and mental development*' (1918 Education (Scotland) Act, cited in Cohen, 2004: 94). The subsequent 1945 Education (Scotland) Act actually placed a duty on local authorities to provide 'adequate' and 'efficient' nursery education for children aged from 2 to 5 years old '*where sufficient children whose parents desire such education for them can be enrolled to form a school or class of a reasonable size*' (UK, 1945: section I(6)).

The provision of childcare more broadly defined in Scotland developed separately from that of education. The Social Work (Scotland) Act 1968 included in its remit childcare services '*for preschool children, such as day nurseries, childminders, playgroups and family support services*' (Cohen, 2004: 95). Additionally, the 1968 Act obligated local authorities to promote social welfare and to help children requiring assistance to a degree that was '*unequalled in other UK legislation'* (Tisdall, 1997: 12). Thus, Scotland had a history of providing social welfare oriented services in early childhood education and childcare from the 1960s onward.

During the New Labour administration, the provision of early years' childcare expanded with a universal entitlement of twelve and a half hours' free childcare for three- and four-year old children across the UK (Wincott, 2006, Lloyd, 2008). Wincott (2006) argues that there was lack of innovation in expansion of childcare provision in Scotland compared to other devolved nations such as Wales. He argues that the expansion that did occur continued along '*an already-established trajectory*' and that it '*would probably have occurred even without devolution*' (Wincott, 2006: 295). Cohen (2004: 133), by contrast, concludes that the impact of policies in respect of early childhood services in Scotland was likely to be more limited than it could have been due to '*the market-led, HM Treasury-determined childcare policies'* reserved to Westminster.

3.3.2 Increasing financial support to low-income families

Tax Credits and Benefit changes

Child Tax Credits (CTC) and Working Tax Credits (WTC) were introduced in 2003 and administered through Her Majesty's Revenues and Customs (HMRC), making them part of the tax mechanism, in order to destigmatise what might have been considered benefit payments (Hills et al., 2004). Tax credits were payable mainly to lower-income families to achieve three objectives: to '*supplement incomes in work, encourage benefit recipients into work and reduce child poverty'* (Godwin and Lawson, 2009: 3).

In addition to supplementing low incomes, the tax credit system included a specific childcare element, which took account of up to 80% of the costs of childcare for low earning households. This is known as demand-side subsidy and was a major facet of the New Labour policy (Wincott, 2006). This demand-side subsidy created a paradox: one of the aims of the tax credit system was to encourage benefit recipients, and in particular lone parents, into work, yet in order to receive the childcare element of tax credits one had to be in work and paying for childcare. This approach made it difficult for those looking for employment and for those with precarious labour market positions as they '*could lose financial support for childcare just at the moment they could least afford to do so'* (Wincott, 2006: 293).

A further critique of the way in which market-led childcare policies and demand-side subsidies created anomalies and caused problems for parents and childcare providers is offered by Lloyd (2008). She explains that the universal free entitlement for three- and four-year old children covered only twelve and a half hours of childcare weekly during term-time, which required 'wrap-around' provision if parents were to undertake any paid work; however, to qualify for the childcare component of the tax credits payments, parents needed to work a minimum of 16 hours (Lloyd, 2008: 483). This lack of joined-up thinking made entering employment difficult for those whom the policies were supposed to help.

A further critique of the system of tax credits is the rapidity with which it was withdrawn as either wages or the number of hours worked increased. Piachaud and Sutherland (2001) argue that this would extend the 'poverty trap', a situation where for those earning, the rate of withdrawal of tax and benefits makes it senseless to work more hours or earn more money. They conclude that while the New Labour approach emphasised responsibility and self-reliance, its tax credit strategy could undermine what it was seeking to encourage (Piachaud and Sutherland, 2001: 113).

Despite its criticisms, the tax credits initiative achieved its objectives to a great extent – employment increased generally and the proportion of children living in lone parent households with no employment decreased by ten percentage points between 1997 and 2005 (Dickens, 2011). However, as the early years of tax credits coincided with a sustained high demand for labour, it has been argued that the extent of tax credits' contribution to increasing levels of lone parent employment is difficult to gauge (Godwin and Lawson, 2009: 3). Nevertheless, tax credits did successfully increase families' income; a couple with two children on wages of 50% of average earnings were a third better off in real terms in 2003 than they had been in 1997 (Hills et al., 2004: 112). Tax credits are reported to have increased the incomes of couples with children by between 24 and 66 per cent, depending on their initial wages (Dickens, 2011).

In addition to the tax credits paid through HM Treasury and operated by HMRC, social security benefits, operated by the Department for Work and Pensions (DWP) were also expanded, with allowances for those who were out of work with children increased well above inflation (Hills et al., 2004). Other associated benefits were introduced, such as the Child Trust Fund (one-off £250 for every child, with another £250 if the parents are on a low-income), the Health in Pregnancy Grant (one-off, tax-free payment of £190), and new maternity/paternity allowances. Additionally, new and improved payments for families with a disability were introduced.

The Child Poverty Act

Towards the end of its time in government, New Labour pushed through the Child Poverty Act (2010), which placed a legal duty on the current and future UK governments, on the devolved administrations and on local government and their partners to tackle child poverty (DCSF, 2009). The 2010 Act stipulates that child poverty is to be reduced using the extant tripartite measure, with the addition of the fourth indicator, persistent poverty, set out in section 2.4.6.

Based on the quadripartite measure of child poverty, the Act establishes four child poverty reduction targets to be achieved by 2020: relative low income to be reduced to less than 10% incidence in the population; absolute low income to be less than 5% incidence in the population; material deprivation and low income combined less than 5% incidence in the population; and persistent poverty (target to be set by 2015). The Act also requires the Westminster and the devolved administrations to publish a child poverty strategy every three years, the first of which was published in 2011. Since the 2010 Act, a new Conservative-Liberal Democrat Coalition administration, hereon in known as the *Coalition*, has come into power in the Westminster government. The child poverty strategies of the UK and Scotland will be discussed under the relevant sections pertaining to the Coalition and the Scottish governments.

3.3.3 Impacts of New Labour policies

It has been asserted that the greatest impact of the New Labour government is that the UK has a set of child poverty targets and that it is easy to forget this simple fact among all the conflicting rhetoric on New Labour's success or otherwise (Stewart, 2011: 166). The policy initiatives of New Labour were successful in increasing employment among households with children (Dickens, 2011); although, as previously noted, employment was also rising in the population more generally. The success in raising levels of employment had a modest role in reducing child poverty as those entering work had to rely on government benefits to lift them over the poverty line (Dickens, 2011: R7). The introduction of tax credits and other fiscal transfers did significantly reduce the level of child poverty, although the ambitious targets of reducing it by a quarter by 2004 and a half by 2010 were not met. It has

been argued that those raised out of poverty were those closest to the poverty line in the first place (Piachaud and Sutherland, 2001) and that New Labour's progress was the result of it '*plucking the low hanging fruit'* (Giddens and Diamond, 2005: 109).

Over the course of the New Labour years (1997-2010) relative child poverty reduced by 800,000 children, a percentage reduction from 26.7% to 19.7%. The reason the reduction in relative child poverty was not more pronounced has been attributed to the '*strong growth in average real incomes over this period*' (Dickens, 2011). When looking at relative child poverty, the incomes of the poor have to rise faster than those in the middle or at the top in order for child poverty to decrease. Income inequality is so deep in the UK that the proportion of children living in relative poverty remained high due to the high and increasing incomes of those at the higher end of the income spectrum. The picture for absolute child poverty, however, was more pronounced. Absolute child poverty fell from 28.9% to 10.8% over the same period, which reflected '*a substantial increase in the real incomes of the poor over this period*' (Dickens, 2011: R11).

There is an additional, non-income based measure of child poverty integrated into the definition of child poverty - material deprivation (DWP, 2003). Material deprivation fell from 21 per cent in 1998/9 to 17 per cent by 2004/5 and has since remained unchanged (Dickens, 2011). According to Dickens (2011: R12) this decrease suggests that the income improvements due to New Labour's policies '*translated into real improvements in children's lives'*. This is noted as the first time a labour government has achieved a redistribution of resources in favour of the poorest (Giddens and Diamond, 2005).

A critique of New Labour's time in government is that they did not address the structural aspects of poverty and explicitly avoided any focus on overall income inequality (Lister, 2011, Stewart et al., 2009). Inequality not only perpetuates advantage and leaves the poor further behind: there is evidence that it negatively affects progress in other areas, across all wealthy nations (Wilkinson and Pickett, 2010). In order to achieve other goals of social justice such as reducing poverty it has

been argued that inequality of income and wealth should be tempered (Giddens and Diamond, 2005).

3.4 Child poverty policy in Scotland

As previously noted, policies associated with income, such as minimum wage, tax credits and social security benefits, are reserved to the UK government at Westminster. This means that the Scottish government does not govern the fiscal element of child poverty although this does not preclude it from having a policy on poverty. The Scottish government is responsible for social policy, however, including the areas of children's outcomes and the early years.

Scottish political culture is more welfare-oriented than its English counterpart and devolution was seen as a platform from which Scotland could more effectively pursue policies to promote social justice (Mooney and Scott, 2012a). The inaugural holder of the post of First Minister of Scotland, Donald Dewar, wrote:

> '*We are committed to promoting social justice and equality of opportunity for everyone in Scotland... A future where everyone matters, where together we can build on the commitment to social justice which lies at the heart of political and civic life in Scotland'* (1999: Introduction).

Burchardt and Holder (2009) explain that there are numerous reasons why devolution could produce more effective strategies for reducing the gap between rich and poor within the devolved UK nations; however, despite a number of post-devolution policies showing signs of innovation and creativity, the early policies on social policy and poverty prevention were parallel to those in operation in England (Burchardt and Holder, 2009, Sinclair and McKendrick, 2011). As regards specific early antipoverty initiatives, Scotland implemented the New Futures Fund for ex-offenders and substance users, which aimed to help *'particularly disadvantaged youngsters overcome real barriers to finding work, and improve their employability through a wide range of initiatives'* (Dewar, 1998); and the Working for Families Fund which provided assistance for lone parents with complex needs who were far from employment-ready (Burchardt and Holder, 2009). These initiatives were complementary to, rather than divergent from, UK policies, and were a successful

adjunct to the antipoverty policy agenda (Burchardt and Holder, 2009: 256). There have been a number of such initiatives post-devolution; however, there is insufficient space here to detail every one.

Presently in Scotland, there is one overarching policy on poverty, *Achieving Our Potential* (2008a), which is most relevant to this thesis, and three other policies that partially or fully pertain to children more broadly: *The Early Years Framework* (2008b), *Equally Well* (2008c) and *Getting It Right for Every Child* (GIRFEC) (2008d). These policies predate the Child Poverty Act (2010), which requires the Scottish government to produce a child poverty strategy every three years. The Scottish government's inaugural child poverty strategy of 2011 incorporates these pre-existing policies. The Scottish government's child poverty strategy developed differently to that of the Coalition in that it held focus groups for parents and children experiencing poverty and conducted an online survey in order that children and young people could participate (Scottish Government, 2011). This reflects the Scottish government's wider commitment to participation and consultation (Sinclair and McKendrick, 2011).

Under the Child Poverty Act (2010), local authorities in England are required to assess need and produce local child poverty strategies, whereas in Scotland such a duty does not apply (Dickie, 2011). Instead, the framework for local authority action in Scotland is the joint Scottish government/local authority principal poverty policy document *Achieving Our Potential*. This lack of obligation on the part of Scotland's local authorities, coupled with the fact that ring-fencing of resources has been removed, means that strategic approaches to tackle child poverty are unclear and inconsistent (Dickie, 2011). *Achieving Our Potential* (2008a) has as its general approach removing barriers to employment and maximising the income of those that cannot work and aims *'to increase overall income and the proportion of income earned by the three lowest income deciles as a group by 2017*' (2008a: 3). This 'solidarity target' is also one of the seven key purpose targets within the Scottish government's economic strategy (2013).

Achieving Our Potential focuses on getting workless adults into work, but does not address what can be done about those families living in in-work poverty (Parekh et al., 2010). In *Achieving Our Potential,* the responsibility for workless adults finding employment lies with the individual. There is little on what the government could do to stimulate the labour market, nor acknowledgement that there is an increasing lack of available jobs, nor any suggestion that employers could be encouraged to offer support and guidance to potential employees to access employment (Welford, 2010). Parekh et al (2010: 19) conclude that the areas where there are obvious gaps in the Scottish government's antipoverty strategy concern matters over which it has no direct control; however, they argue that the Scottish government should still have explicit policy positions on these crucial reserved matters, especially benefits and taxes.

Achieving Our Potential takes an asset-based approach in relation to community development and capacity building. However, there is no mention of developing the assets of families, e.g. social assets, although there is mention of a funding campaign targeted at those with financial vulnerabilities, i.e. debt. While awareness of the wider issues affecting families living in poverty is welcome, there is a missed opportunity to consider the difference between vulnerability and poverty, and to develop and support the assets of families as presented in the SLA, discussed in chapter two.

The antipoverty approach of the Scottish government has been to promote welfare rights advice and information and provide targeted initiatives for families and children. Successful initiatives include the SNP government: abolishing prescription charges; retaining the Educational Maintenance Allowance (EMA), a £30 weekly payment to 16-18 years olds remaining in full-time education, when the rest of the UK abolished it; abolishing student tuition fees for tertiary education; implementing free personal care for older people; and extending free school meals to families on low incomes and not just on benefits (Mooney and Scott, 2012b). Other interventions that would assist families living in poverty, such as a renewed emphasis on the construction of social housing and the promise of smaller class sizes, were made

unfeasible by the budget cuts announced by both the Scottish and UK governments (Mooney and Scott, 2012a). Similarly, other initiatives such as the Scottish National Party (SNP) government commitment to rolling out free school meals for the first three years of primary school, following a successful pilot, was not implemented due to funding problems (Dickie, 2011, Sinclair and McKendrick, 2011). The Scottish government also scaled back their commitment to extend universal nursery provision in Scotland, which, as Dickie (2011: 169) notes, *'was important in providing quality early years education and in giving parents greater flexibility to increase their hours at work'*. There is consensus that devolved nations have limited room for manoeuvre as regards policy divergence, in particular in relation to child poverty, but there is the critique that the Scottish government has had greater room for manoeuvre than it has utilised (Cohen, 2004, Wincott, 2006, Burchardt and Holder, 2009, Sinclair and McKendrick, 2011). Looking to the future, measures to reduce child poverty in Scotland are now less likely to be adopted as cuts in funding under the new Coalition will have the same detrimental impact on child poverty in Scotland as in the rest of the UK.

3.5 The policy landscape under the Coalition government

Following the historic refusal by the Conservative Party to admit child poverty existed, David Cameron leader of the Conservative Party (2005-present), and current Prime Minister of the United Kingdom, has since conceded this position and, in opposition, he showed commitment to the child poverty targets established under New Labour.

In its child poverty strategy leading from the Child Poverty Act (2010), the Coalition places emphasis on non-financial elements of child poverty, and states that the available evidence indicates that increasing household income would reduce income poverty but would not make a big difference to children's life chances (DWP, 2011). This is contrary to available evidence that clearly states that income poverty does have an impact on children's outcomes, although its impact can be mediated by wider family characteristics, themselves associated with the state of poverty. This is an area explored in the review of the empirical evidence in the next chapter.

Further, the strategy argues that, by advocating income transfers to families living in poverty, the New Labour government was fighting the symptoms of poverty rather than the causes. The Coalition, in contrast, pledges to tackle not just the symptoms of poverty but also the root causes by '*recognising the importance of the context in which a child is raised'* (DWP, 2011: 8). There is indication in this statement of its intention to extend the existing measures of child poverty by developing a new set of 'life chance indicators' (DWP, 2011: 8).

In November 2012, a consultation on a new, 'better' measure of child poverty was announced (DfE, 2012a). Commonplace characteristics were suggested in the consultation document as components of a new child poverty measure, for example: family breakdown, ill-health, lack of skills, inadequate housing, 'poor' schools and 'worklessness'. Arguably, these do not distinguish between poor and non-poor people. If child poverty is measured in terms of characteristics such as these then the resulting child poverty measure would be insufficiently discriminatory. For example, if only a few of these dimensions needed to be present, the majority of children would be considered to be living in poverty and, if all the dimensions needed to be present, hardly any children would be. This is because these dimensions do not measure poverty. Many of the dimensions suggested in the government's consultation document are consequences or causes, but not measures, of poverty. To confound the two goes against all the evidence that has been generated by years of research (Treanor, 2013a).

Research evidence shows that *income* is the dimension of poverty that has the most significant, adverse impact on children's outcomes; in the early years low income is associated with a detrimental impact on cognitive ability (Duncan et al., 1998, McCulloch and Joshi, 2001, Hirsch, 2007a, Hansen and Joshi, 2007, Najman et al., 2009). Furthermore, the reforms under the New Labour government that increased the employment and incomes of lone parents resulted in improvements in a variety of children's outcomes, such as self-esteem, happiness, reduced truanting, reduced smoking and intentions to stay in school after the age of 16 (Gregg et al., 2009).

Gregg et al (2009: F63) conclude that '*this strongly suggests that the increases in incomes and employment associated with the reforms have profoundly changed the quality of life of children in lone parent families'*. Research suggests that as incomes increase for low-income families with children, the additional funds are spent on child-related items, such as clothing, footwear and books (Gregg et al., 2006: 739).

The Coalition strategy on poverty, like its New Labour predecessor, has a focus on employment growth and social security reform. This commitment is reflected in the introduction to the strategy document, where Ian Duncan Smith states that, '*work, not welfare, is the best route out of poverty for those who are able to work*' (DWP, 2011). However, as has been noted by a number of authors, more than 50% of children living in poverty live within a family where one or both parents are working, and in-work poverty is increasing both in Scotland and in the UK (Aldridge et al., 2013). Dickens (2011) urges caution in placing too much emphasis on work as the route out of poverty as the reforms of the New Labour government '*did increase work among households with children, but that these didn't translate into large reductions in poverty as earnings alone were not enough to push significant numbers over the poverty threshold'* (Dickens, 2011: R17).

As part of its focus on social security reform, the Coalition plans to replace the existing array of income-based benefits and tax credits with a new, unitary *Universal Credit* benefit for new working age claimants. This simplification of the benefit system is anticipated to lead to a greater take-up of benefits and to reduce child poverty by 350,000 children (DWP, 2011). The Coalition says that Universal Credit will '*support those who do the right thing', i.e.* 'take' a full-time job, or for lone parents, work at least 24 hours a week, which they assure will lift families out of poverty (DWP, 2011 3). What the government does not address in its child poverty strategy is what it aims to do to increase employment opportunities of families or to improve the extent and quality of childcare.

In addition to the introduction of Universal Credit, the Coalition is simultaneously implementing a raft of changes to the benefit system that are predicted to adversely

affect families, reduce their incomes and increase child poverty: these are widely discussed elsewhere and are too numerous and detailed to reproduce here in their entirety (Lister and Bennett, 2010, Dickens, 2011, Taylor-Gooby and Stoker, 2011, CPAG, 2013a, Evans, 2011, Churchill, 2012, Bennett, 2012, Guardian, 2013b, Guardian, 2013a). However, there are three reforms in particular that are pertinent to this thesis:

- there is now an overall cap on benefits that will negatively affect those who require larger properties, such as those with larger families or those who require space to accommodate disabilities, and those who live in areas with higher housing costs. Seventy per cent of private tenancies are predicted to become unaffordable for people on low incomes (CPAG, 2013b);
- there are changes to housing benefit: (1) currently, single people aged under 25 are eligible for the housing benefit rate for one room in shared private rented accommodation. This is now extended to all single people aged under 35 years, including separated parents with minority care of children; (2) the amount deducted from housing benefit for other adults living in the property increased by 54%, meaning, for example, a son or daughter aged 18 or over and in work living in the family home must contribute between £13.60 and £87.75 a week, depending on income (CPAG, 2013b); (3) bedroom tax: housing benefit has been cut for working age tenants of social landlords if the number of bedrooms exceeds their assessed needs (CPAG, 2013b).
- the social fund, which administered monies to individuals in dire need, has been abolished. This includes the *Community Care Grants* and *Crisis Loans,* which, despite valid criticisms over their discretionary mode of delivery and high levels of repayment (Ridge and Wright, 2008a), were the only reliable and interest-free, and therefore valued, source of emergency support available to families in my previous qualitative study of families living in poverty (Harris et al., 2009). Local authorities in England, the Welsh Assembly and the Scottish government have stepped in to offer new locally-based provision with a degree of local discretion (DWP, 2013). The responsibility for administering this locally-based provision in England, however, has been

> further devolved to organisations in the voluntary and private sectors on a contractual basis. As this ad hoc replacement provision will now be administered by local discretion and differing bodies, access to emergency crisis funds will unavoidably differ by postcode, less so in Scotland and Wales but more so in England.

Although Universal Credit may succeed in reducing relative child poverty by the government's stated amount, this reduction is predicted to be more than offset by the impact of the Coalition's wider social security reforms. The most important change is that benefits will be indexed in line with the Consumer Price Index (CPI) measure of inflation, rather than the current method of using the Retail Price Index (RPI), which is predicted to have a significant adverse impact on the value of benefit payments (Brewer et al., 2011). Analysis by Browne et al (2012: 5) show that, in particular, poverty rates will increase for those with larger families, those with younger children and those living in privately rented accommodation - groups with already high levels of child poverty.

Brewer et al (2011: 32) caution that there is almost no chance of eradicating child poverty on current government policy - although they wisely add the caveat '*as defined in the Child Poverty Act 2010'* - perhaps presaging a change to the child poverty measure. Moreover, they advise that the only way to achieve the targets set out in the Act would be to implement unprecedented change to the labour market and social security policy such as would radically redistribute resources (Brewer et al., 2011). Dickens iterates (2011: R16) that '*future efforts to tackle child poverty cannot ignore underlying changes in inequality*'.

3.6 Policy conclusion

This policy chapter could have taken its historical perspective back 100 years or more, as studies of poverty in the UK have a long history, stretching back to the time of Adam Smith. However, it started with the Conservative administration under Margaret Thatcher, which coincided with the publication of Townsend's influential study of poverty in the UK, in 1979. Townsend's concept of relative deprivation

went on to influence national and international concepts, definitions and measures of poverty, including the multidimensional measures of poverty used in this research as discussed in section 2.4. Although Townsend's work is regarded as seminal and highly influential, and despite its influence on academic studies of poverty, the coeval influence of Townsend was less than it could have been due to the success of the Conservative Party in the 1979 election, whose stance on poverty and child poverty was one of wilful denial and where inequality was seen as a precondition of economic growth.

The policies of the Thatcher government saw a threefold increase in child poverty by the time New Labour came to power in 1997. This time the influence of Townsend and his theory of relative deprivation can be perceived in New Labour's measure of child poverty. Despite the rhetoric of Tony Blair being close to that of the Conservative minister Joseph in the 1970s, the governments of Tony Blair and Gordon Brown enthusiastically set out to reduce, and then eradicate, child poverty. Their means of doing so were to target: the principal causes of poverty - low income and unemployment; the factors associated with preventing participation in employment - childcare and its associated costs; and other factors associated with poverty such as parenting support and education. New Labour did succeed in many aspects of what they set out to achieve: the proportion of children living in workless lone parent households reduced by ten percentage points; a national minimum wage was implemented; tax credits raised the incomes of low and medium earners; and child poverty was reduced by 800,000 children. However, perhaps their failing was not in their failure to meet their child poverty targets, a stick that is still used to beat them with, but by setting targets that may have been too ambitious.

The achievements of New Labour are refuted by the new Coalition administration, which uses New Labour's 'failings' as evidence to justify a new measure of child poverty and social security reforms predicted to be detrimental to families living in poverty. The Coalition is making deeper, faster cuts to public expenditure than any previous government. One of the laudable aims of the Coalition is to attempt to simplify the benefits system, a move that attracts widespread support as the existing

benefits system is difficult to navigate (Veitch and Bennett, 2010). They are doing this by implementing a new, single benefit, Universal Credit, which despite its name, is means-tested. Although there was initial cautious welcome of Universal Credit, which was estimated to reduce child poverty by 350,000 (DWP, 2011), there is now concern that the subsequent changes to other benefits, not least of which the decision to uprate benefits with the CPI rather than the RPI, is estimated to increase both absolute and relative child poverty substantially.

The UK and Scottish governments' policy focus on reducing poverty has been to increase parental employment, to make work pay through the tax credits system, to increase childcare provision to support the employment aim and to improve directly the development and readiness for school of the most vulnerable and disadvantaged children. What policy has not focused on are the assets and vulnerabilities of families living in poverty as set out in the SLA in section 2.2. The Scottish government's policy document for poverty, *Achieving Our Potential*, notes that an asset-based approach is needed to develop community-based assets, but no consideration is given to the family-based assets, as they pertain to the SLA, of families living in poverty. The lack of focus on assets, and vulnerabilities, at the level of the family is a gap in the current policy context: family assets may have a beneficial impact on family wellbeing, and by extension, on children's wellbeing and other outcomes. This application of family-based assets and vulnerabilities to the study of families living in poverty is an area that has been overlooked in policy, it is a gap that requires attention and is one that this thesis proposes to address.

The following chapter presents empirical evidence on the impacts of multidimensional poverty on children's CSEB outcomes and explores what is known about the impacts of social assets and financial vulnerabilities on adults and children. This will both contextualise this research, help to develop its research questions and provide a framework within which to place its analysis, to ensure that it addresses the gaps in the evidence in policy and research in relation to the impacts of assets and vulnerabilities on families and children living in poverty.

4 Empirical evidence

4.1 Introduction

This chapter presents a review of the empirical evidence on the impacts of poverty, social assets and financial vulnerabilities on children's cognitive, social, emotional and behavioural (CSEB) developmental outcomes and identifies the gaps in the research evidence that this research aims to fill. The chapter concludes by setting out the overarching aim, research questions and the hypotheses for the research.

4.2 The impacts of poverty

The primary adverse long-term outcome of living in poverty in childhood is the increased risk of living in poverty in adulthood, a theme which is well documented in the literature (Haveman and Wolfe, 1995, Hirsch, 2007b, Blanden et al., 2008, Gregg and MacMillan, 2010). The key driver in the literature on why poverty in childhood leads to poverty in adulthood is through its impact on educational attainment which consequently impacts on employment prospects and earning power (Feinstein, 2000, Carneiro et al., 2007, Blanden et al., 2008). Much research has been concerned with attempting to measure the impacts of early childhood experiences on later educational outcomes in order to identify early factors that may impede or advance future attainment.

A criticism of child poverty research is that it focuses on the impacts of poverty when children are adults rather than understanding the consequences of poverty in children's lives as experienced during childhood (Millar and Ridge, 2001, Ridge, 2002a). Children's experiences of poverty are complex as children growing up in poverty will not necessarily have poor outcomes in adulthood (Holscher, 2008). Protective factors that can mediate the negative impacts of childhood poverty are: children's relationships within their families – maternal care is described as being of central importance; and their inclusion in their peer group – friends are described as being as important as family to older children (Attree, 2004, Ridge and Wright, 2008b). This study does not conduct primary research with children per se; however, young children are the unit of analysis in this study and the impacts of family social

assets and financial vulnerabilities on children living in poverty, in the present, are the foci of this thesis. This thesis is concerned with CSEB outcomes not just as a predictor of future advantage or disadvantage, but with children's CSEB outcomes as they are currently experienced. That poverty may be adversely affecting children's CSEB development in the pre-school years is of concern now, as well as when they become adolescents and adults.

4.2.1 Cognitive ability

The principal measure that can be observed in early childhood and which is directly associated with later educational attainment is *cognitive ability* (Duncan et al., 1998, Blanden and Gregg, 2005, Duncan et al., 2006). Using data for Northern Ireland, Sullivan et al (2010) carried out analysis using ordinary least squares (OLS) multiple regression, which shows that depressed cognitive development in the early years is associated with living in income poverty. This is consistent with the wider literature on the detrimental effects of income poverty on children's cognitive development (Duncan et al., 1998, McCulloch and Joshi, 2001, Mayer, 2002, Hirsch, 2007a, Hansen and Joshi, 2007, Najman et al., 2009).

Feinstein (2003), using data from the British Cohort Study (BCS), a longitudinal survey of more than 17,000 people in England, Scotland and Wales born in a single week of 1970, reveals that educational attainment at the age of 26 is significantly associated with cognitive ability at age 22 months and 42 months. He also shows that children from high socioeconomic groups who scored in the bottom quartile in performance tests of ability at 22 months old showed considerable upward mobility and were more likely to be in the top quartile by the age of 10, compared to children of low socioeconomic groups who tended to stay in the bottom quartile.

Although Feinstein's work statistically associates early cognitive ability with later educational attainment, these early effects are not fixed. This study shows that there is mobility across three of the age groups at which cognitive ability was measured - 22 months, 42 months and 120 months - with a 10% chance that children in the bottom quartile at 42 months will have entered the top quartile at 10 years old. This

is irrespective of their socioeconomic background. However, low socioeconomic status children do not on average overcome the hurdle of early low attainment; they do not show the same upward trajectory of mobility as children from a high socioeconomic background. In Feinstein's study, 60% of children from low socioeconomic background who were in the bottom quartile for cognitive development at age 22 months were still there at age 10 years old (2003).

Using data from the Millennium Cohort Study (MCS), a longitudinal survey that follows the lives of approximately 19,000 children born in the UK in 2000-01, Blanden & Machin (2010) replicated Feinstein's analysis, and found that between the ages of three and five, children from low socioeconomic backgrounds lost ground in the cognitive ability tests to children from high socioeconomic backgrounds who performed less well in the earlier test. Their trajectories did not cross, as in Feinstein's study, but this may be due to the early ages of the children. Furthermore, they also analysed children in the middle socioeconomic group and found that early high achievers in this group lost ground at a similar rate as those from the low socioeconomic group. This research is important in that it reinforces the existing knowledge on the inequality of early child cognitive outcomes and income and suggests that the cognitive development of children from a higher socioeconomic status is, over time, outpacing that of children from middle and lower socioeconomic statuses. This is a tentative indication that the association between cognitive development and socioeconomic status in children may be a function of high, rather than low, socioeconomic status.

One mediator of the impact of socioeconomic disadvantage on children's cognitive outcomes is the Home Learning Environment (HLE). The HLE was developed in the Effective Provision of Pre-school Education (EPPE) project and is an index based on concrete educational activities (Melhuish et al., 2008). The premise is that the HLE can improve young children's cognitive ability through the experiences provided in the home. Melhuish (2010) constructed a similar HLE index using the GUS data and variables such as, how often a parent has looked at books, read stories, painted, recited nursery rhymes etc. with their child in the previous week, which showed that

the HLE had a larger effect on children's cognitive outcomes than other factors including the household socio-economic status or the mother's education, to the extent that mother's education became non-significant when the HLE variable was added to the model. This finding in GUS is contrary to all other research on the HLE, which reveals the pre-eminence of maternal education to children's cognitive development, and may partly be explained by the HLE mediating the effect of mother's education or it may be possible that in GUS there is covariation of mother's education and other variables such as household socio-economic status and income (Melhuish, 2010). The HLE is a factor shown to influence children's cognitive development; however, its explanatory power is shown to fall by up to 40% from preschool to primary school-age children (2008). Furthermore, the HLE is usually added to statistical models with income and maternal education to isolate their effects; however, it is also a function of income and maternal education, which leads to an inherently biased measure.

Another mediator of the effect of socioeconomic disadvantage on children's cognitive outcomes is parenting. Using the MCS data, analysis was undertaken to create an index of family resources (using variables to capture socioeconomic resources and demographic information of the family) and an index of parenting to establish what their mediating roles are on the impacts of poverty and children's early educational attainment (as measured by the Foundation Stage Profile in the first year of primary school in England). Results showed that approximately 50% of the effects of child poverty and 40% of resource disadvantage were mediated by the quality of early childhood parenting a child received. By the authors' own admission, while these are substantial proportions, there are still substantial gaps that need to be explained (Kiernan and Mensah, 2010b:12). This shows that although parenting is relevant and important, there are other processes shaping young children's early development.

Another factor that has a substantial impact on children's cognitive outcomes is parental stress: which is shown to be associated with poverty and financial vulnerability (Ridge and Millar, 2011). Using the MCS data and the Foundation

Stage Profile in the first year of primary school in England again, research shows that maternal mental health had an independent effect on children's outcomes but that the effect of paternal mental health was mediated by the families' socioeconomic resources (Mensah and Kiernan, 2009). Furthermore they established that the effect of maternal mental health was stronger for boys than girls (Mensah and Kiernan, 2009).

Family instability and parental separation are factors commonly associated with lower levels of child cognitive development (Sigle-Rushton et al., 2005, Kiernan and Mensah, 2010a). Family instability is also associated with living in poverty and being from a lower socioeconomic status, so much so that the Coalition government wishes to use this characteristic to help define child poverty in a new composite measure as detailed in the policy chapter. However, research by Schoon et al (2012), using OLS multiple regression, finds that when income poverty is controlled for in their analysis, any negative effects previously associated with family composition disappear. This thesis, using annually collected data, as set out in the following chapter, will derive a dynamic family composition variable that will look at the impacts on children's CSEB development of living in a stable couple family, a stable lone parent family, a separated couple family, a reconstituted family and a family with multiple compositions over the five years of the study data.

What these studies show is that low socioeconomic status and low income are important for cognitive development, but, other observed and unobserved variables also seem to be having an impact. This suggests that cognitive development may be malleable: one recent review emphasises that cognitive development has an '*experience-induced plasticity'* and that experience has a remarkable role '*in shaping the mind, brain, and body*' (Diamond and Amso, 2008:136).

4.2.2 Social, Emotional and Behavioural (SEB) outcomes

There is substantial evidence that income poverty is linked to poorer social, emotional and behavioural (SEB) developmental outcomes for children (Duncan and BrooksGunn, 1997), with the relationship appearing to be less strong in early

childhood and gathering strength in middle childhood (Bradley and Corwyn, 2002). However, the association is not as strong as the one between income poverty and cognitive ability (Duncan et al., 1998, Schoon et al., 2010b).

Positive SEB development in early childhood has been ultimately linked to higher educational attainment via the strong base it is thought to provide for positive adaptation to the classroom environment (Rimm-Kaufman et al., 2000, Entwisle et al., 2005). Using data from the British National Child Development Study (NCDS), a longitudinal survey of 17,000 people born in England, Scotland and Wales in a single week of 1958, Carneiro et al. (2007) analyse the effects of non-cognitive, which they define as 'social', developement at age 11 on schooling attainment and labour market outcomes. Their research found that social skills are very important for staying on at school post-16 and having a higher education degree. These findings are replicated in other studies, where social skills are found to have a direct impact on labour market outcomes (Feinstein, 2000, Heckman et al., 2006) and an indirect impact on labour market outcomes via their effect on education (Blanden et al., 2008).

Using data from the MCS, poverty is linked to higher SEB difficulties scores in children, although its effects are mediated by maternal characteristics such as mother's depression, mother's self-esteem and the quality of the parent-child relationship (Hansen and Joshi, 2007, Mensah and Kiernan, 2009, Sullivan et al., 2010, Schoon et al., 2010a). Kiernan and Huerta (2008) conducted analysis to identify the mechanisms by which economic deprivation and maternal depression influence child outcomes and found that the impacts of economic deprivation on cognitive development was substantially mediated by parenting factors, and that economic disadvantage had a negative impact on the warmth of the relationship between the mother and child, an important factor in a child's cognitive development. In keeping with other studies, they found that maternal depression was strongly associated with children's SEB outcomes.

These analyses are important and useful in identifying explanatory variables that have an impact on children's SEB outcomes, especially ones that are associated with,

and have a mediating effect on, poverty. The focus of their analysis is on the impacts of maternal characteristics, such as depression and parenting, on children's outcomes: their analysis did not try to link other family assets and vulnerabilities - such as social assets and financial vulnerabilities - to children's SEB outcomes. Indeed, Kiernan and Huerta (2008) note that the impacts of wider family characteristics on children's SEB development is an area worthy of future study.

Schoon et al (2010b), also using data from the MCS, examined the association between a broader poverty measure they called 'material hardship', using five income and deprivation measures, and young children's cognitive and behavioural development, while investigating the mediating effects of maternal emotional distress, mother-child interactions, and cognitive stimulation. They found that mothers exposed to persistent hardship were more likely to experience continued emotional distress, which in turn was associated with reduced cognitive stimulation for their children and less involved parent-child interactions, which in turn had negative impacts on their children's developmental outcomes (Schoon et al., 2010b: 218). In keeping with earlier studies, they found that economic hardship was more strongly associated with cognitive than with behavioural development (Bradley and Corwyn, 2002) and that maternal depression has a greater negative effect on behavioural than cognitive outcomes (McLoyd, 1998, Kiernan and Huerta, 2008, Mensah and Kiernan, 2009). Schoon et al. also recognise that the study of wider family characteristics on children's SEB development is necessary when they write:

> '*The possibility of correlated unobserved characteristics and alternative mediating processes, opens the field for further investigation into the mechanisms and processes involved in the early inter-generational transmission of disadvantage. These efforts should focus their attention to both cognitive and behavioural adjustment during the early years'* (Schoon et al., 2010b: 219).

4.2.3 The timing and duration of poverty

As regards the *timing* of poverty, there is evidence that there may be a time lag in the impacts of poverty on children's outcomes (Bradshaw, 2002: 137). Income poverty

in the early years of a child's life has been found to have a greater adverse impact on cognitive development and educational attainment in later childhood and adolescence (Duncan and BrooksGunn, 1997). Using completed schooling as a measure of educational attainment, Duncan et al (1998) showed that income increments in the first five years of life for children in low-income families were associated with large increments of months of completed schooling. These income effects were much larger in these early years than the corresponding effects of income as measured between the ages of 6 to 10 years and 11 to 15.8 years (Duncan et al., 1998). Thus, early childhood appears to be the stage in which family economic conditions matter most for cognitive ability and education-related outcomes for children.

In addition to the timing of poverty, the *duration* of poverty has been found to be of primary importance to the development of children's CSEB outcomes, with longer spells of living in poverty having a greater adverse effect on children's outcomes than shorter spells of poverty (Duncan and BrooksGunn, 1997, McLoyd, 1998, Mayer, 2002, NICHD, 2005). For example, Smith et al. (1997) found that the duration of poverty had an important impact on cognitive outcomes, with those in persistent poverty (poor in each of the four years of the study data) scoring lower on the cognitive ability scales than those in transient poverty, who in turn, scored lower than those who were never poor. This is replicated across other studies which have shown that, although poverty is an important factor in children's early CSEB development, it is persistent poverty that is the most detrimental (Kiernan and Mensah, 2009).

4.2.4 The impacts of income inequality

The National Equalities Panel in the UK found that many of the inequalities they examined, in particular those related to socioeconomic background, accumulated across the life cycle. Inequalities were evident from preschool children through children during the school years, through entry into the labour market, through resources for retirement, through to mortality rates in later life. In effect, they concluded that '*economic advantage and disadvantage reinforce themselves across the life cycle, and often on to the next generation'* (Hills et al., 2010: 1).

In researching economic inequalities, it is usually the deprived end of the inequality spectrum that research has focused on. As noted in the policy section, there is an argument that the goals of social justice, such as eradicating poverty, cannot be achieved while income inequality is so high (Giddens and Diamond, 2005). Research on children's outcomes too has focused on the impacts of poverty and socioeconomic disadvantage rather than on the impacts of wealth and socioeconomic *advantage*. This research will address the impacts of poverty and income inequality to see if persistent high income is associated with positive impacts and, whether persistent low income is associated with negative impacts, on children's CSEB developmental outcomes. This research will also explore the impacts of social assets enjoyed by families and investigate whether high social assets and low social assets have a beneficial or deleterious impact respectively on children's CSEB outcomes for children across the income spectrum.

4.2.5 The impacts of social assets

The impacts of social assets on adults

As discussed in chapter two, the concept of social assets is synonymous with social capital. This study is drawing on the *family-based* social capital in its construction of social assets for use in this thesis. A major facet of social assets is *social support*, that is, support provided by friends and family. As social assets is not a concept that has been studied outwith the SLA, the literature pertains mainly to social support or social capital.

A synthesis of the qualitative evidence suggests that the social support provided by friends and family can act as a buffer against the adverse effects of living in poverty (Attree, 2005). In this synthesis, the types of social support provided by friends and family is described as: material help, such as buying children's clothing; help with childcare; company and conversation; and help in getting through moments of emotional distress (Attree, 2005). Social support is also associated with improved physical and mental health outcomes in adults through enabling individuals to cope with minor and major stressors (Thoits, 1995, Irwin et al., 2008). High levels of social support are associated with mainly positive effects.

However, not all social support is positive or has a positive effect on mothers (Ghate and Hazel, 2002). Negative effects of social support arise when the mothers receiving support feel that they have lost autonomy and have to tolerate interference and loss of privacy in their lives (Ghate and Hazel, 2002). Research in Scotland also highlighted this negative aspect of social support and emphasised that being the recipient of support without the means to reciprocate often left low-income parents feeling 'bad', 'obligated' or 'owned' (McKendrick et al., 2003: 31).

How supported mothers feel is related to the *'physical proximity and emotional connectedness'* of friends and family who support them, with geographical co-location being an important factor of social support (Ghate and Hazel, 2002: 119). Thus, when friends and family were not geographically co-located, levels of support were lower for those living in disadvantage as they could not afford the necessary transport costs for visiting (Ghate and Hazel, 2002).

The impacts of social assets on children

One study that explores the effects of social capital within the family, at school and in the local neighbourhood on children's health outcomes, concludes that social capital generated from each of these three milieux lower children's health complaints and are associated with higher levels of children's subjective wellbeing, with the positive effect from each milieu being additive (Eriksson et al., 2012). Of the three social capital milieux the one generated within the family was found to be the most substantial. Family social capital in this study was measured using just two questions asking how easy it was for the young person to talk to their mother and father respectively. While this shows a positive effect on children's wellbeing it is not a comprehensive construct of the concept of family social capital. This thesis will construct a measure of social assets from a large group of questions using robust statistical methods to create a composite latent construct. This will be more rigorous than the measure used in these studies.

A systematic review of social capital on children's wellbeing by Ferguson (2006) identifies 22 peer reviewed studies within its inclusion criteria. One of the selection criteria is whether each study has an element of 'family social capital', as defined by Coleman (2000). Coleman's definition of family social capital comprises: family structure, quality of parent-child relations, adult interest in child, parents' monitoring of the child's activities and extended family exchange and support (Fergusson et al., 2008). The review finds that this type of social capital is associated with improved outcomes for children and that parents with greater educational and financial resources are able to mobilise greater social capital for children (Ferguson, 2006: 4). This study concludes that social capital is the second best predictor of children's wellbeing next to poverty (Ferguson, 2006). Ferguson (2006) shows that social capital is positively associated with a plethora of children's outcomes from pre-school behaviour through to future labour market participation, including for vulnerable and at-risk children and families.

4.2.6 The impacts of financial vulnerabilities

Financial vulnerability is a term used interchangeably with financial stress in the literature; both terms pertain to the same areas of debt, money worries and managing on current income. This thesis uses the term 'financial vulnerability' as an overarching term, encompassing both financial stress as defined above and debt.

The impacts of financial vulnerabilities on adults

There is much qualitative evidence on the negative impacts financial vulnerabilities has on adults, in particular on adult psychosocial wellbeing, stress, anxiety and depression (Adelman, 2003, Magadi, 2005, Orr et al., 2006, Magadi and Middleton, 2007, Green, 2007, Harris et al., 2009, Ridge and Millar, 2011, Whitham, 2012). Quantitative evidence is less abundant.

One recent quantitative study (Starrin et al., 2009) explores financial stress and shaming experiences on adult psychosocial ill-health. Looking at data of almost 6000 adults aged 16 to 64 years in Sweden, their results show that women are twice as likely, and men three times as likely, to experience anxiety, depression and reduced

psychological wellbeing if they are experiencing financial stress. This provides unequivocal evidence on the impacts of financial vulnerabilities on adult psychological wellbeing and related outcomes; however, there is a dearth of quantitative evidence on the effects of family financial vulnerabilities on children's outcomes.

The impacts of financial vulnerabilities on children

Research on the impacts of poverty and financial vulnerability in children's lives in childhood has mainly been qualitative and often focuses on older children and young people. There is evidence that older children are most affected by poverty as it makes them unable to participate in the social, leisure and celebratory activities of their peer group. (2002a, 2002b, 2005, 2007, 2009, Ridge, 2011). They are often unable to keep up with the latest fashion trends in clothing and grooming, which can adversely affect their friendships, self-esteem and may result in them feeling ashamed, excluded and even stigmatised (Adelman, 2003, Holscher, 2008, Harris et al., 2009, Kintrea et al., 2011, Ridge, 2011, CPAG, 2013a). As regards financial vulnerability, children and young people are aware of, and worry about, the financial pressure their family is under (Whitham, 2012).

Barnardos carried out longitudinal, qualitative research on families living in poverty, with repeated visits to the families undertaken over the course of a year in 2008. Its overarching finding does not relate to poverty per se but to the depth, extent and impacts on families of financial vulnerability: in particular of debt and the ability to cope with unexpected bills and expenses (Harris et al., 2009). Such is the strength of financial vulnerability in these families that it is this issue that became the defining aspect of the research and the focus of the organisation’s campaigning and influencing agenda (Stewart, 2009b). Families report financial stress as being the main cause of anxiety, stress, conflict and depression in their lives. Additionally, parents suffer feelings of guilt that they are unable to offer their children a better life (Harris et al., 2009).

Save the Children recently carried out research on poverty with families which finds that debt '*compounds stress and negatively affects mental wellbeing'* (Whitham, 2012: 5). Their key finding on the effects of financial vulnerabilities on families is that it is not only the adults experiencing financial vulnerability who are negatively affected by it, children are reported as being both aware of, and negatively impacted by, financial stress too (Whitham, 2012). In Ridge's (2011) review of qualitative research on the lives and experiences of low income children in the UK, evidence showed that older children living with low income employed both overt and covert strategies to support their family financially and to help alleviate financial vulnerability. Overt support included obtaining their own employment to contribute to the family budget; and covert support included *'moderating their needs and expectations'* (Ridge and Millar, 2011: 81). This awareness of parental financial stress is also found in the Barnardos report:

> *"At 14, Jelani is the eldest of four siblings and he shows an understanding and sensitivity to his mother's situation. When asked how he would describe his mum's life he says: 'Quite difficult... she can't cope. We're always asking for too much… she's asking for loans and debts… she's putting her own life at risk'"* (Harris et al., 2009: 8).

The negative effects of financial vulnerability on children's wellbeing is posited to be caused by two reasons: that children cannot enjoy the same things as their better-off peers; and that they are aware of, and worry about, the financial pressure their family is under (Whitham, 2012). To date, all of the evidence on the impacts on financial vulnerability on children's outcomes is qualitative. There is a need for quantitative research to analyse the impacts, if any, of financial vulnerabilities on children's CSEB outcomes to ascertain if there is statistically robust evidence that families' financial vulnerabilities have a negative association with children's outcomes. There is a dearth of quantitative evidence on the impacts of financial vulnerabilities, as opposed to income poverty, on children's cognitive, social, emotional and behavioural (CSEB) outcomes.

4.3 Research aim, questions and hypotheses

The aim of this thesis is to use the concept of assets and vulnerabilities derived from the theoretical framework of the Sustainable Livelihoods Approach (SLA), to quantify social assets and financial vulnerabilities and test their impacts on children's CSEB developmental outcomes for children living in multiple dimensions of income poverty and income inequality in Scotland. The remainder of this thesis answers the following research questions:

4.3.1 Research question one

> *What impacts do multiple dimensions of economic disadvantage, as measured by longitudinal income poverty, material deprivation and longitudinal income inequality, have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes in Scotland?*

This chapter has discussed how income poverty in the early years of a child's life has been found to have a significant, adverse impact on children's CSEB development and on educational attainment in later childhood and adolescence. The empirical evidence is strong that growing up in poverty has detrimental impacts on CSEB development and that the length of time spent living in poverty exacerbates these detrimental impacts, with children living in persistent poverty displaying the worst development.

There are various causal pathways proposed for the impacts of income on CSEB development relating both to the proximal milieu of family and the distal milieux of school and community. The two main theses that pertain to the home and family are the *family investment* model and the *family stress* model. The *family investment* model explains the impact of income through a family's ability to invest monetary resources in experiences, resources, and services that improve child CSEB development (Yeung et al., 2002, Bradley and Corwyn, 2002, Conger et al., 2010); an example of this is the HLE that parents are able to offer a child (Melhuish, 2010, Hartas, 2012). The *family stress* model states that the stress induced by low income has adverse impacts on parents' emotional wellbeing and parenting capacity, which affect the child both directly and indirectly (Bradley and Corwyn, 2002, Yeung et al.,

2002, Conger et al., 2010). Each of these models is shown to be influential, with the family investment model being stronger for cognitive development, and the family stress model stronger for SEB development (Schoon et al., 2010b). An example of the family stress model is provided by Schoon (2010b) who finds that mothers exposed to persistent economic hardship are more likely to experience continued stress, which in turn is associated with reduced cognitive stimulation for their children.

Although it is not explicitly explored in the literature, many of the negative impacts on children's lives set out in this chapter pertain less to the experience of a lack of income per se, and more to the associated experience of material deprivation. Feelings of shame and stigma in older children living in poverty are very strong and have been a core component of the experience of living in poverty across time: from Adam Smith's workers shame at the lack of a linen shirt, to children who are living in 21st-century poverty's shame at being seen as different to the norms of their peer group (Ridge, 2011). This research question asks whether income poverty, income inequality and material deprivation have different individual, or cumulative, impacts on young children's CSEB development.

Much of the research that pertains to the associations between income and children's cognitive and social development focuses on the impact of *low* income, with studies in the UK often using the UK government's income poverty threshold of 60% of median equivalised income to measure the existence, persistence and impacts of poverty (Kiernan and Mensah, 2009, Bradshaw and Holmes, 2010). Other studies have used income based poverty-proxies such as tax credits (Dahl et al., 2005) and non-income based proxies such as fathers' job displacement (Gregg et al., 2012) and material hardship (Schoon et al., 2012). There are several advantages and disadvantages of using the extant, arguably arbitrary, poverty threshold. The advantages are: (1) it is a widely accepted measure of poverty; (2) it is comparable across time and place; and (3) in the absence of any better reason for creating a threshold, it serves a purpose. The disadvantages include: (1) only those currently living below the threshold are identified as living in poverty even though research

shows that poverty is dynamic (Berthoud et al., 2004, Rigg and Sefton, 2006, Smith and Middleton, 2007, Smith, 2008); (2) families cycle between low pay and no pay and may not be picked up by the current threshold (Goulden, 2010); and (3) the experience of those just above the poverty threshold is likely to be the same as those just below it, although their experience is not captured in the analysis (Schoon et al., 2010b).

Furthermore, from a methodological perspective, reducing a continuous measure of income to a binary variable may vitiate its usefulness, may result in the loss of graded information, and certainly precludes comparison between the highest and lowest incomes. Thus, to capture the positive aspects of the current below 60% median equivalised income poverty measure and, to overcome the constraints this measure inherently contains, two income-based measures will be used in this study: (1) longitudinal income poverty, which will be used for comparability and to explore the impacts of different lengths of time spent living in poverty; and (2) longitudinal income inequality, which comprises five years of equivalised income averaged to give a continuous measure, which will allow those with the highest incomes to be analysed in their own right. As most studies explore only the experience of low income and not high income; this attention to income inequality in addition to longitudinal income poverty is a unique contribution of this thesis. The hypotheses for this research question, addressed in the first findings chapter, therefore are:

H1: *income poverty and material deprivation together are associated with lower social, emotional and behavioural scores than income poverty alone;*

H2: *income poverty and material deprivation together are associated with lower cognitive development than income poverty alone;*

H3: *using longitudinal income inequality rather than longitudinal income poverty will produce stronger associations with children's CSEB outcomes.*

4.3.2 Research question two

> *What impacts do the social assets of families living in Scotland have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes? Do families' social assets reduce or augment the impacts of poverty on children's early CSEB outcomes? How does this differ by income inequality?*

As discussed in chapter two, social assets are aligned to, but not synonymous with, social capital. The social capital as it relates to the family, as advocated by Bourdieu and Coleman, has resonance with the concept of social assets: it is to this element of family social capital that the concept of social assets in this thesis adheres. However, there are 4 key areas where the concept of social assets that is being tested in this thesis differs to the theories of social capital espoused by Bourdieu and Coleman:

1. Coleman's social capital is vertical, running from parents to children. The concept of social assets in this thesis has a horizontal structure – it relates to wider kith and kin;
2. Bourdieu's definition of social capital includes extended social and community networks, particularly those that can confer social and economic advantage. The concept of social assets focuses on close relationships with friends and family, which may or may not have the capacity to confer social and economic advantage - a facet not tested in this thesis;
3. Bourdieu focuses on the reproduction of advantage of parents with high social capital and high socioeconomic status, and the reproduction of disadvantage of parents with low social capital and low socioeconomic status. This thesis focuses on parents with low socioeconomic status and examines whether they can have *high* social assets and, if so, whether these high social assets have a beneficial impact on their children's development; and
4. As critiqued by Sullivan (2002), Bourdieu's argument for social reproduction in education focuses primarily on the tertiary education system, which Sullivan argues has already eliminated most of those from lower socioeconomic backgrounds at the point of entry. The focus of this chapter is pre-school aged children's CSEB development across the socioeconomic spectrum, before any access to, or success in, education. Sullivan's research,

although it focuses on the application of Bourdieu's cultural capital to young people's education attainment, has resonance with this research as it employs the same methods of OLS multiple regression to test a form of capital on children's development (Sullivan, 2002).

In the SLA social assets are described as '*the social resources upon which people draw in pursuit of their livelihood objectives'* (May et al., 2009: 10). The researchers of the Oxfam study conclude that what they learned about social assets was that those '*who were supported by external family members or friends really appreciated this, and the support was a valuable element of their livelihood strategy'* (Orr et al., 2006: 36). This thesis constructs a measure of social assets as per the adaptation of the SLA to the Global North and examines its impacts on children's CSEB outcomes. This research does not aim to test its impacts on those who possess the social assets (mothers) but on those whose development may benefit from it (children).

In this chapter, the following hypotheses will be addressed:

H1: higher social assets of mothers are associated with children's higher (better) social, emotional and behavioural scores;

H2: higher social assets of mothers are associated with children's higher (better) cognitive development as measured by naming vocabulary;

H3: higher social assets of mothers are associated with children's higher (better) cognitive development as measured by picture similarities;

H4: social assets of mothers are lower the lower the level of income;

H5: social assets of mothers are higher the higher the level of income; and

H6: those children living in persistent lowincome with high social assets of mothers have higher (better) levels of CSEB development.

4.3.3 Research question three

> *What impacts do the financial vulnerabilities of families living in Scotland have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes? Do families' financial vulnerabilities reduce or augment the impacts of poverty on children's early CSEB outcomes? How does this differ by income inequality?*

The qualitative research evidence presented in this chapter suggests that children, in particular older children, are affected by low income as it makes them unable to keep up with their peer group, which can adversely affect their friendships and self-esteem leading to feelings of shame, exclusion and stigma (Ridge, 2002a). They are also reported to be aware of, and worry about, their family's financial vulnerability (Ridge, 2011, Whitham, 2012).

The empirical evidence also shows that the experience of living in poverty can be attenuated by the support provided by families and friends (Ridge, 2002a, Holscher, 2008, Harris et al., 2009). Social assets are shown to reduce *financial vulnerabilities*, e.g. support received from family and friends can prevent those living with mortgage arrears having their homes repossessed (McCallum and McCaig, 2002). For children too, social assets can act as a protective factor that can abate the negative impacts of childhood poverty (Conger et al., 1997, Adelman, 2003, Ridge and Wright, 2008b). This may suggest that social assets can have an influence on the impacts associated, if any, with financial vulnerabilities. This research question will ask whether social assets are significantly associated with financial vulnerabilities and if having assets on the former can reduce vulnerability on the latter. The hypotheses for this chapter therefore are:

H1: higher levels of financial vulnerability are associated with lower social, emotional and behavioural scores;

H2: *higher levels of financial vulnerability are associated with lower cognitive development;*

H3: *higher levels of social assets are associated with lower levels of financial vulnerabilities; and*

H4: *social assets have a different impact on financial vulnerabilities for different income quintiles.*

The following chapter discusses the dataset chosen for use in this study to answer these research questions and describes the dependent, independent and control variables used in the subsequent analysis.

5 Data chapter

5.1 Introduction

In order to address the research aim set out at the end of the previous chapter, section 4.3, I am using the Growing Up in Scotland (GUS) dataset. This chapter describes the origin and development of the GUS study and its data: the three dependent variables, the poverty and income inequality variables, the variables representing the two assets/vulnerabilities measures, and the control variables, derived from the empirical literature. In so doing it also considers their strengths and weaknesses.

5.1 The Growing up in Scotland (GUS) study

In 2003, there was a dearth of data on the early years' developmental phase in children's lives in Scotland. The then Scottish Executive Education Department (SEED) sought to remedy this situation by commissioning a longitudinal study, 'Growing Up in Scotland' (GUS), to record the characteristics, circumstances and behaviours of children from the point of birth to facilitate long-term monitoring and evaluation of policies for children in Scotland (Anderson et al., 2007b).

GUS is a rich source of data, covering aspects of family life such as childcare, family and intimate relationships, parental physical and mental health, child health, activities, social networks, education, employment, income, child nutrition, grandparental involvement and child development, to name but a selection. It has an advantage over other birth cohort datasets, such as the Millennium Cohort Study (MCS), in that its data are collected annually rather than every few years. While this may be resource intensive, the Scottish government has shown its commitment to understanding aspects of children's early years by dedicating the necessary funding. This is of benefit to this research as it allows for the monitoring of socioeconomic and demographic detail, such as the creation of a longitudinal poverty measure that relies on annual income data, and a family composition variable that tracks separations and re-partnerings of the mothers in GUS. This data paints a rich and detailed picture of children's lives in Scotland and is a very valuable resource.

5.1.1 Sample design

The sampling frame for GUS is area-based and uses the 6,505 small geographical output areas called data zones used in Scotland's census for reporting small areas statistics. To create the sampling frame, these data zones were aggregated to give an average of 57 births per area per year (Corbett et al., 2005). The aggregated areas were first clustered by Scotland's 32 local authority areas and then stratified by the Scottish Index of Multiple Deprivation. One hundred and thirty of these clustered, stratified areas were then selected at random to give the final sample. From these 130 areas, a named sample of approximately 12,930 children was selected on the basis of the children's dates of birth using Child Benefit records, chosen because 97% of all eligible families are registered for Child Benefit (Corbett et al., 2005, 2005 , 2006a, 2006b, 2007a, 2007b, Anderson et al., 2007a).

After selecting the 12,930 eligible children, a number of exclusions to the sample was made by the DWP before a final list was transferred to the contractor. There were 1621 exclusions, which included cases they considered 'sensitive', and children that had been sampled for research in the preceding 3 years. Those deemed 'sensitive' by the DWP include cases where there had been a child death in the family in the previous five years, children whose families were in correspondence with the DWP, children who had been taken into care and children whose child benefit was paid to an adult other than their parent (Plewis, 2007a). It is very likely that these are families that would have provided important insights for this research; therefore, by removing these sensitive cases, the outcomes for children living in these particular circumstances are unable to be examined. Of the remaining 11,309 children eligible for the GUS study, a further 1166 were unachievable or 'out-of-scope' due to incorrect addresses or other ineligibility. The final sample of 10,143 went to the field with a final achieved sample of 8,075 babies and children, a response rate of 80% of all in-scope children and 62% of all children originally eligible (Anderson et al., 2007b: 196). The 8,075 respondents constitute 5,217 babies and 2,858 toddlers, which comprise the birth and child cohorts respectively. This research uses the birth cohort data only to capture the first five years of a child's life. Table 5.1 gives the achieved samples for the birth cohort for each sweep of the study.

Table 5.1 Sweep information for the birth cohort

Sweep	Year	Achieved sample
1	2005 - 2006	5,217
2	2006 – 2007	4,512
3	2007 – 2008	4,193
4	2008 – 2009	3,994
5	2009 - 2010	3,833

Source: GUS sweeps 1-5

5.1.2 GUS fieldwork

The GUS questionnaire is administered by trained interviewers in the respondents' homes using Computer Assisted Personal Interviewing (CAPI). The main carer is the respondent in GUS: this is usually the mother (approximately 98%). Fieldwork is undertaken over a fourteen month period commencing in the April of the relevant sweep year. The sample is issued in twelve monthly waves at the beginning of each month and is in field for a maximum period of two and a half months. This method is used in order to ensure that respondents in all samples are interviewed when their children are approximately the same age at each sweep (Corbett et al., 2005 , Corbett et al., 2006b, Corbett et al., 2007b).

5.1.3 Non-response and attrition in GUS

A weakness of GUS, and indeed of all longitudinal surveys, is that they suffer from attrition. Ruspini (2002) notes that attrition in longitudinal surveys can cause biased estimates due to the disproportional loss of certain segments of the population. One of the groups noted as being most likely to attrite in a longitudinal survey is those living in poverty. This is due to their being hard to contact in the first place and subsequently being hard to retain in the study (Ruspini, 2002).

In GUS by sweep 4, attrition is associated with: living in a rented property; being from a non-white ethnic background; no parent/carer working; one parent/carer part-time employment; mother aged under 20; four or more children in household; and mother has no qualifications (Bradshaw et al., 2009). These are also the characteristics in the literature associated with living in poverty (Smith and

Middleton, 2007). It is paradoxical that those most likely to drop out of longitudinal surveys are families living in socioeconomic disadvantage when one of the main aims of longitudinal studies is to understand the causes and effects of disadvantage (Plewis, 2004, 2007b, 2008, Hawkes and Plewis, 2006). In order to overcome the effects of attrition, and to keep the sample representative, the GUS team have calculated cross-sectional and longitudinal weights for each sweep of the data. Although there is uncertainty as to the efficacy of longitudinal survey weights to mitigate the effects of attrition (Ruspini, 2002), this is a standard method commonly used in large-scale longitudinal surveys and will be applied in this research.

5.1.4 Weighting

To account for the distribution of people in the sample compared to the population as a whole, cross-sectional weights are calculated. To account for attrition, longitudinal weights are also calculated. It is necessary to use two further types of weights to account for the stratified, clustered nature of the sampling frame used for the GUS dataset: (1) weights to account for the stratification of the sample (Strata); and (2) weights to account for the clusters in the sample (PSU). As the sample is a complex survey sample, with weights for the strata, clustering (PSUs), cross-sectional and longitudinal nature of the data, these weights have to be used in combination. The software used for this study, Stata version 12, can take account of all the necessary weights using its *surveyset* command, thus allowing the correct estimation of the degrees of freedom and standard errors in the analysis. Histograms of all the different weights used in GUS can be found in appendix A at the back of the thesis.

5.2 Strengths and weaknesses of using GUS data

The GUS dataset is good for this research as it meets all of the requirements needed to achieve the research aim. The data are collected annually for the first five years of the birth cohort child's life, allowing change in socioeconomic and demographic variables to be tracked. If primary data could have been collected specifically for this research there are areas where it would diverge from GUS; however, collecting primary data would require resources beyond those available in doctoral research, as it would be time-consuming and expensive to achieve the sample size, range and quality of data that GUS does. In conducting secondary analysis of GUS's

longitudinal data, time and financial resources are saved, comparability with other birth cohort data are facilitated, the sample size and representativeness is sufficient for generalisability to the wider population, and standardised child developmental outcomes data are collected by trained interviewers, maximising the validity and reliability of the constructs. The strengths of the GUS dataset include:

i. It has measures of child development using valid and reliable constructs. It is important that any measures of child development are valid and reliable so that there can be confidence in the constructs and to ensure comparability with other studies;
ii. It collects data on income and other socioeconomic inequalities that are comparable to those found in other birth cohort studies. The strength of GUS compared to these other studies is that its data collection is annual, which allows a measure of persistent poverty, as described in section 5.4, to be derived;
iii. It collects data on wider demographic variables known to affect children's developmental outcomes for use as control variables in the study; and
iv. It allows for the concept of social assets and financial vulnerabilities to be derived.

5.2.1 Limitations of the Growing up in Scotland data

Despite the scale, range and depth of data collected in GUS, there are issues with the data that have a subsequent effect on the types of analyses that can be used. As Dale notes, large-scale survey data are usually collected by the government for use by the government (Dale et al., 1988). GUS was commissioned by the then Scottish Executive to answer policy questions and provide evidence for its own use. As such, there is no overtly theoretical underpinning and modules of questions are added or removed for policy-based reasons and pragmatic considerations, i.e. keeping the questionnaire an acceptable length for respondents to complete. These additions and subtractions to topics and variables made at each sweep of data collection can cause interruptions to the longitudinal nature of some of the data. This can preclude comparability and longitudinal observations across time. For this study the three

outcome variables were each collected twice, but not at the same waves, which causes issues of insufficiently repeated measures to undertake longitudinal analysis. Other variables and the frequency with which they have been collected means that longitudinal data analysis, such as panel models, is not applicable to this research.

Although GUS is a valuable and rich source of data it has its limitations. The most important limitation of GUS for this thesis is that its data was not collected with the concepts of social assets and financial vulnerabilities in mind; therefore, these measures are not ideal. Furthermore, the variables for deriving the latent construct financial vulnerabilities were only collected at sweep five. However, the positive note is that there are a range of variables in GUS that are able to be used to construct these concepts, which are successfully applied in the subsequent analysis.

Another limitation of using GUS data is its measure of income and the fact that material deprivation is measured only once (at sweep 4), as discussed in section 5.4.1. GUS's use of maternal report of total income, banded, leads to a less robust measure of poverty than this study would ideally wish to use. Fortunately, this will be partially compensated for by the application of a multidimensional theoretical framework of poverty. This thesis will employ measures of poverty, income inequality and material deprivation to see what impacts they have on outcomes individually, and in various combinations, to ascertain how much variation in children's outcomes is attributable to specific poverty factors.

The empirical evidence suggests that the negative impact of poverty on children's outcomes gathers strength throughout childhood, this poses a question for this study: are the impacts of income poverty and material deprivation discernible at almost 5 years old or are they yet too young? This is a limitation of using GUS and is an unavoidable restraint; however, one can surmise that any impacts this thesis reveals for this age group may accumulate and strengthen over time.

5.2.2 Secondary analysis of GUS data

The most oft-stated benefit of using secondary analysis of a large-scale dataset is the savings made in respect of both money and time (inter alia Hyman, 1972, Kiecolt and Nathan, 1985, Dale et al., 1988). The collection of a large-scale survey is extremely resource intensive which is a major factor in the type and quality of data that researchers are able to collect. In addition to this most practical aspect large-scale survey data collection is usually of extremely high quality due to the years of experience and expertise that have gone into their methodological development (Dale et al., 1988:45). As such data are widely used in research, secondary analysis allows researchers to build on the evidence and learn from the methods of those who have gone before. Such building blocks of research evidence provide a robust platform on which to base additional research.

For this research, GUS not only collects data annually from thousands of families, it revisits the same families each year and takes a battery of measurements on health and development from both children and their parents. As it would not be possible to collect data of such scale, depth and quality within the resources available in doctoral research, secondary analysis of GUS provides excellent conditions for answering the research questions of this research. The focus of this study is on the micro level change in family circumstances, made possible by the longitudinal nature of the GUS data, which allows changes within *'the social environments that surround the individual and shape the course of his/her life'* (Ruspini, 2002: 4). This allows for the dynamic elements of 'social phenomena' to be studied (Ruspini, 2002: 4), which is vital to studies involving longitudinal measures of income poverty - a dynamic phenomenon. Secondary analysis of longitudinal data allow for the study of '*how individual outcomes are related to the earlier circumstances of the same individuals'* (Ruspini, 2002: 10). This is important to this research which examines the impact of family characteristics on their children's cognitive, social, emotional and behavioural (CSEB) development.

Social researchers are often interested in specific subgroups of the population, which require a large, representative sample of the population under study (Dale et al.,

1988). As this study is interested in children living in poverty over time and, across the income inequality spectrum, analysis at the level of these subgroups requires a large sample to provide robust statistical estimates within Scotland. GUS is the only dataset in Scotland that has the size of sample, the type of data collected and the frequency of data collection to allow for this analysis of dynamic social phenomena. The only alternative large-scale dataset that collects developmental data from children in Scotland is the MCS which collects data sufficient for a disaggregated analysis from each of the four UK nations. At the start of this research, MCS had only collected three waves of data since the birth of the children in 2000-2001. The MCS data had been collected in 2001-02, 2003-05 and 2006-07, which would not have allowed the analysis of poverty dynamics, in particular persistent poverty, which requires that one has lived in poverty for three out of four consecutive time periods, usually annual time periods. Additionally, MCS has a Scottish sample size of 2370 in 2001-02, reducing to 1814 by wave three. The birth cohort in GUS has several favourable factors that make it the better dataset for this research. Firstly, it has 5217 children at the first wave of data in 2004-05, more than twice that of the MCS. Secondly, it has a high rate of retention across the five annual waves of data collection. Thirdly, its data collection begins when the birth cohort children are 10 months old and collects data annually thereafter. All of these factors allow for analysis at the required sub levels and across the necessary number of time points for the study of poverty dynamics.

Longitudinal data allow the change in a variable to be measured across time which can be used to establish the size and magnitude of causal relationships (Menard, 2002: 3). This research does not seek to establish causal relationships but uses the annual data, where available, to create independent variables such as the dynamic poverty typologies, longitudinal income inequality and (changing) family composition, to test their impacts on children's outcomes at the latest point in time at which the three outcome variables are collected, which is at sweep five. In order to be able to do analysis of social change, a sufficient period of time needs to have passed and a sufficient number of waves need to have occurred in order to conduct in-depth long-term analyses (Menard, 2002, Ruspini, 2002). At the time of this

research, due to lack of repeated measures on the dependent and key independent variables, the GUS data do not support longitudinal analysis in this research area.

5.3 Children's CSEB development

The three dependent variables measure children's cognitive, social, emotional and behavioural (CSEB) development. They are:

i. Naming vocabulary;
ii. Problem solving; and
iii. Social, emotional and behavioural (SEB) development.

'Naming vocabulary' and 'problem solving' are both measures of cognitive development measured by the British Ability Scales Second Edition (BAS II). 'Social, emotional and behavioural' development is measured by the Strength and Difficulties Questionnaire (SDQ).

5.3.1 Cognitive Development - British Ability Scales

BAS II was launched in 1996. They are a development of earlier versions of the scales devised as a means of testing age-specific cognitive ability in children. They were developed as a move away from the summative psychometric tests that had been popular through the first half of the 20th century and which sought to measure IQ, or intelligence, a contested concept believed at that time to be biological and inherited (Hill, 2005).

In contrast to these earlier measures, BAS II was developed to take into account children and young people's context and be sensitive to '*diverse social, racial, linguistic and cultural backgrounds*' (Hill, 2005: 90). To do so, the scales were tested and standardised using a contemporaneously representative sample of the UK's child and young persons population. Despite these efforts, '*fairness testing by the developers showed that children of Pakistani/Bangladeshi origin scored consistently lower than children of Black or White origin'* (Hill, 2005: 96). Noting this weakness in the scales, Elliott et al urged caution in using them to make inferences about Pakistani/Bangladeshi, or children of other ethnic and cultural minorities' cognitive

ability or learning potential (Elliott et al., 1997: 266). Although maternal ethnicity is used as a control variable in this research, due to its importance in the wider literature, I will exercise caution in the interpretation of maternal ethnicity as a variable to ensure no biased assumptions are made about the cognitive development of children from a non-white background. As the sample of children from a non-white ethnic background in GUS is small (<4%), this is not expected to affect the overall sample or analysis.

BAS II comprises a battery of assessments for use with children and young people from 2 years 6 months to 17 years 11 months. There are 6 core scales which can be combined to provide an overall measure of General Cognitive Ability. Two of the six scales were collected in GUS in sweep 5 when the children were aged 4/5 years: naming vocabulary and picture similarities. The BAS II scales yield *'robust and individually interpretable'* scores within each of the scales and can be used on a stand-alone basis (Hill, 2005: 90). The scales have been adapted for use so that they can be administered by a CAPI programme by a trained survey interviewer, such is the case in GUS (Bradshaw, 2011: 6).

There are certain contextual factors that the assessments cannot take into consideration which can have an impact on a child's performance, e.g. the rapport with the person administering the assessment, anxiety, motivation and situational factors such as time, duration and place of the assessment. As such, the BAS II technical manual highlights the importance of skilled professional judgement in reporting and interpreting the assessments (Hill, 2005: 94). The GUS team are sensitive to the fact that children's performance in these assessments can be affected by external circumstances and note in their user guide a list of conditions that can lead to either a higher or lower score than would normally be obtained. They emphasise that their interviewers are rigorously trained to minimise such risks and the GUS dataset contains six variables detailing if, and which, difficulties children experience when undertaking assessments (Bradshaw, 2011: 23).

5.3.2 Naming vocabulary

Naming vocabulary is a verbal ability measure that aims to assess the storage, search and retrieval process of cognitive functioning (Hill, 2005: 93) rather than to test the children's understanding recognition of words and sentences (Bradshaw, 2011: 7). The naming vocabulary score aims to reflect: expressive language skills; vocabulary knowledge of nouns; ability to attach verbal labels to pictures; general knowledge; general language development; retrieval of names from long-term memory; and level of language stimulation (Bradshaw, 2011: 7).

Research evidence using the cognitive ability scales show that socioeconomic and demographic variables have a greater effect on naming vocabulary than on picture similarities (Schoon et al., 2012). Naming vocabulary is a lower order cognitive development variable that seems to be more malleable and more responsive to a variety of characteristics. Alternatively, there is the critique that this variable is a middle-class construct affected by the education, social and cultural capital available to those from high socioeconomic status backgrounds and so not effective for lower socioeconomic status children. The counterpoint to this is that the developers of the BAS II scales rigorously tested these variables with children and young people from a variety of backgrounds and found them to be valid and reliable across the socioeconomic spectrum (Hill, 2005).

5.3.3 Picture similarities

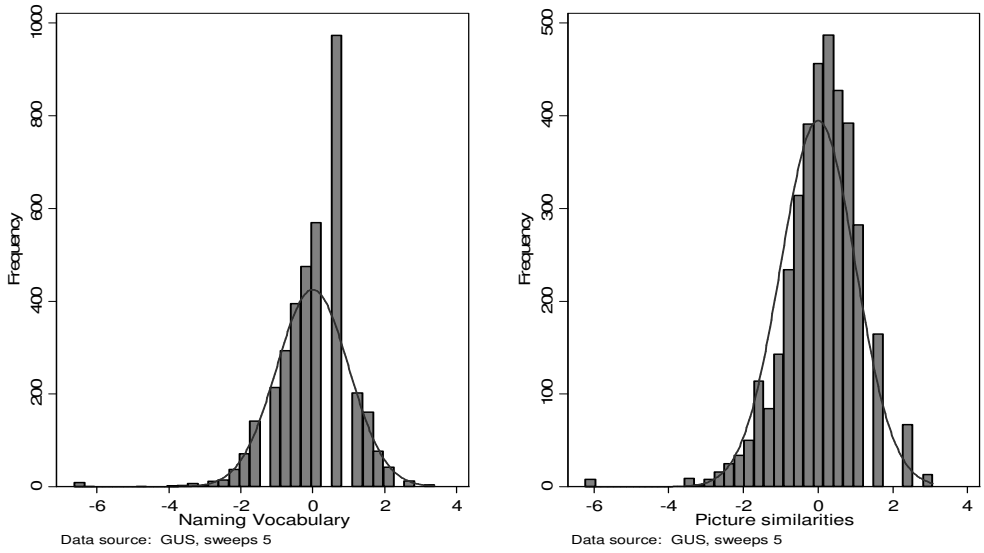
Picture similarities is a 'pictorial reasoning' measure that has a high level of cognitive complexity, aiming to measure the transformation of concepts and reasoning (Hill, 2005: 93). While the test does not rely on speech per se*, 'good "verbal encoding" may well help the child solve the problems*' (Bradshaw, 2011: 7).

Picture similarities is a more complex cognitive process than naming vocabulary; it is considered one of the 'higher order' scales in the BAS II battery of scales (Hill, 2005: 93). The complexity of the interactive reasoning processes measured by picture similarities may explain why it is less highly associated with socioeconomic and demographic variables in the literature. Picture similarities scores are said to

reflect the child's: non-verbal problem solving (inductive reasoning); visual perception and analysis; ability to attach meaning to pictures; ability to develop and test hypotheses; use of verbal mediation; and general knowledge (Bradshaw, 2011: 7).

As the BAS II scales are designed to be used as stand-alone assessments, naming vocabulary and picture similarities are explored as two separate outcomes. A raw score on each scale for each child is calculated according to the number of correct responses to the items administered, summed and standardised to ensure comparability with each other and with the SEB outcome. Both cognitive development variables are continuous and, while a bit negatively skewed, approximate a normal distribution as can be seen from figure 5.1.

Figure 5.1 Histograms of cognitive development dependent variables



5.3.4 Social, emotional and behavioural (SEB) development

The Strength and Difficulties Questionnaire (SDQ) is a behavioural screening questionnaire, applicable to children and young people from 4 to 17 years old. It was designed for use by researchers, clinicians, and educationalists, to measure children and young people's behaviours, emotions and relationships. The SDQ is a brief questionnaire, which comprises 25 questions that divide equally onto five

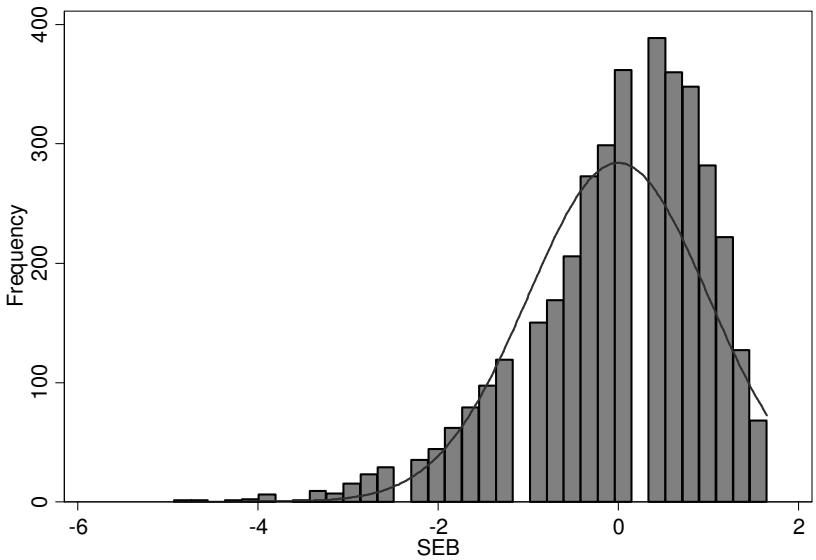
dimensions: conduct problems, emotional symptoms, hyperactivity, peer relationships, and pro-social behaviour (Goodman, 1997: 581). All five dimensions can be analysed individually and the first four can be summed to provide a total difficulties score. The fifth dimension, pro-social behaviour, cannot be incorporated into the total difficulties score *'since the absence of pro-social behaviours is conceptually different from the presence of psychological difficulties'* (Goodman, 1997: 582).

The SDQ questionnaire has been found to detect effectively emotional and behavioural problems in clinical validations that compare the responses to questions given by teachers, parents and the children themselves (where the children are old enough) (Mathai et al., 2002). For the children aged 4 to 5 years old in GUS, the strengths and difficulties questionnaire can be filled in only by parents or teachers - in GUS they have been completed by parents. This raises several questions that have not been addressed in the current literature. The first is that assessments of children's SEB states can be subjective; it may be the case that different parents have different subjective interpretations of a child's behaviour. Also, the mental or emotional wellbeing of the parent may have an impact on how s/he answers the questions on the child's behaviour. It would be interesting if research was conducted into levels of parental stress/depression and their assessment of children's SEB state, but no research of this type was found. Thirdly, there is a possibility that parental assessment of child behaviour is affected by culture, age, socioeconomic status, and lone or couple parent status, amongst other characteristics. Where one parent may evaluate a child's behaviour as gregarious, another may perceive disobedience. These are very subjective assessments. There are no instructions guiding parental assessments of children's SEB development that would provide definitions of the indicators that would ensure the equal and unbiased understanding of all parents. A fourth critique of the SDQ is that parents may evaluate children's behaviour differently depending on the events and circumstances on any given day or time; thus, whether the SDQ would give consistent results is unclear. A further point of interest is that boys always score lower on the SDQ than do girls. This really does beg the question, do boys have poorer SEB outcomes than girls, or does the SDQ

measure attributes in such a way as to problematise boys' more than girls' behaviour. These are issues of consideration for the SDQ but are issues that have unfortunately not been addressed in the extant literature. What evaluation of the SDQ does exist is primarily by clinicians in clinical settings where it is found to be robust, valid, reliable and consistent (Mathai et al., 2002, 2003, 2004). As such, despite the caveats, the SDQ in GUS will be used as the dependent variable measuring social, emotional and behavioural development, in keeping with other studies of this type.

For comparability with the two cognitive development outcomes the total difficulties score of the SDQ taken at sweep 5 is standardised and reversed for use in this thesis. The pro-social score is not used due to its conceptual incompatibility with the other SDQ measures. Figure 5.2 gives the distribution of the SEB dependent variable in a histogram with the normal curve overlaid. There is a slight negative skew which suggests that a few children score particularly poorly on this measure. The outlying scores have been checked and they are proper results, neither miscalculated nor incomplete.

Figure 5.2 Histogram of SEB dependent variables



Data source: GUS, sweeps 5

Table 5.2 gives the sample distributions for the three standardised dependent variables.

Table 5.2 Distribution of dependent variables

Variable	Count	Mean	Std. Dev.	Min	Max
Naming vocabulary	3723	0	1	-6.622	3.395
Picture similarities	3721	0	1	-6.235	3.070
SEB	3786	0	1	-4.932	1.652

Source: GUS sweep 5

5.4 Measuring poverty and income inequality

This research uses multiple measures of economic disadvantage to compare the breadth of information afforded by the measures and to provide as full a picture as possible of living in economic disadvantage. These measures will capture the impact of longitudinal income inequality in addition to longitudinal income poverty, and will ascertain whether they are capturing the same, or whether they are measuring different, aspects of living in economic disadvantage. It is also important to this research to take advantage of the longitudinal nature of the data where possible.

Using multiple dimensions of poverty indicates that there is not a great overlap between the people identified as being poor on each of the measures, and that, when used cumulatively, the resulting group who are poor in all three dimensions are different from the non-poor and from those who are poor on only one dimension (Bradshaw and Finch, 2003). Those who are poor on multiple dimensions are more likely to be female, lone parents, not in the workforce and have large families (Bradshaw and Finch, 2003). Bradshaw et al (2003) emphasise the importance of using multiple dimensions of poverty to give the fullest picture of poverty, to make the measure more robust and to reduce the flaws in any single measure.

Having an official income poverty threshold, known as the relative poverty line, allows the extent of poverty in the population to be measured. As discussed in chapter two, the UK and Scottish governments currently use 60% of the median equivalised household income before housing costs as its poverty threshold. To

obtain a robust measure of poverty requires the collection of detailed data on income from all sources. For example, the UK government's Family Resources Survey (FRS), used as the basis for its Households below Average Income (HBAI) data series, 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. GUS does not collect income information in the same way as these dedicated income surveys; instead it collects income data in the same way as other large-scale, birth cohort studies such as the MCS.

In GUS, immediately prior to the income question are a series of variables that explore the sources of income that the family has, e.g. salary, overtime, child tax credits, working tax credits and child benefit, amongst others. As well as providing information on sources of income and receipt of wages and benefits, these questions usefully act as an *aide memoire* for the ensuing income question. The total income figure is derived from a single question asked of the main respondent, usually the mother of the GUS child. This question asks the mother to indicate the total income of their household from all sources before tax, from a list of 17 income bands, ranging from 'Less than £3,999' to '£56,000 or more' (Corbett et al., 2005 , 2006b, 2007b, Bradshaw et al., 2009, 2010).

The differences between the GUS income question and income questions from more specialised surveys are that the income question in GUS is asked to one member, rather than to each adult member, of the household, and that the responses for income are banded. Research shows that differences in quality of income estimation 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 (Barnes et al., 2010). The deficiencies in the income question may have a potential impact on the

reliability of the findings of this research; however, the methods used are comparable with other studies of this type.

In order to calculate poverty thresholds from the banded income data, the median of each band is taken to represent actual family income and, equivalised using the OECD modified equivalence scales, as described in chapter two (see section 2.4.3), to take account of economies of scale made by individuals sharing a household. Using equivalised income in GUS, two income-based measures of economic deprivation have been calculated for this study: longitudinal income poverty and longitudinal income inequality. For longitudinal income poverty, a binary measure of poverty using 60% median equivalised income is derived for each of the five sweeps of data. These five binary measures are then combined following the four poverty typologies devised by Fouarge and Layte (2005) and widely applied in empirical studies and official policy documents:

- 'no poverty' at any sweep of the data;
- 'transient poverty' – being in poverty once in the five year period of the data;
- 'recurrent poverty' - being in poverty more than once in the five year period of the data; and
- 'persistent poverty' – being in poverty three out of four consecutive years within the five year period of the data collection.

At sweep 5 of the GUS data collection, the official before housing costs (BHC) child poverty rate in Scotland was 20% and the after housing costs (AHC) child poverty rate was 25% (Government, 2010). The sweep 5 cross-sectional rate in the GUS data are almost 27%; this higher incidence can possibly be attributed to the fact that being a family with young children is in itself a risk factor for poverty (Smith and Middleton, 2007) and/or that women, who constitute the majority of respondents in GUS, are more likely to underestimate income (Barnes et al., 2008). What the longitudinal measure shows, however, is that across the 5 year period of the study, over 45% of families have at least one experience of poverty; this reflects the dynamic nature of poverty and demonstrates the necessity to measure it

longitudinally. Table 5.3 below shows the breakdown of the longitudinal poverty variable: almost 55% of respondents have not been in poverty in any of the five sweeps of data, 45% have been in poverty at least once, and approximately 34% have been in poverty more than once in a five-year period.

Table 5.3 Percentage of children living in poverty

Longitudinal poverty	count	percentages
1, Non-poor	1969	54.64
2, Transient poverty	412	11.43
3, Recurrent poverty	467	12.96
4, Persistent poverty	756	20.97
Total	3604	100.00

Source: GUS sweeps 1-5
Sweep 5 longitudinal weight and survey weights used

Using GUS data over 5 sweeps of data for the longitudinal poverty typologies raises a problem with the category of recurrent poverty and missing data. If we have a family living in poverty in sweeps 1 and 2, with missing data in sweep 3, and in poverty in sweeps 4 and 5, they will be categorised under recurrent poverty, even though in all likelihood they have actually been living in persistent poverty. This is a problem for 10% of families living in recurrent poverty. The impact of this may be consequential in the analysis between the longitudinal poverty categories: there may be little or no significant difference in coefficients between living in recurrent and persistent poverty.

The downside of calculating cross-sectional binary measures of poverty and then combining them into a longitudinal measure of poverty is that a lot of variation in the continuous income variable is lost in the aggregation. Additionally, only those living in income poverty compared to those not living in income poverty are compared, which excludes all the other income gradations and precludes analysis of income inequality rather than poverty per se. To overcome these restrictions a second income measure is calculated: longitudinal income inequality. Five years of equivalised income is averaged to give a continuous measure of income, which is then divided into quintiles to give five equal categories representing the lowest 20% of income

(persistent low income) through to the highest 20% of income (persistent high income). This allows those with the highest permanent incomes to be analysed in their own right.

Table 5.4 Crosstabulation of longitudinal income poverty and inequality

	Income averaged across 5 sweeps in quintiles					
Longitudinal poverty	Quintile 1 (lowest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (highest)	Total
Non-poor	0	96	528	680	665	1969
	0.00	4.88	26.8	34.54	33.78	100
Transient poverty	2	209	150	39	12	412
	0.58	50.62	36.51	9.41	2.88	100
Recurrent poverty	115	310	39	4	0	467
	24.62	66.35	8.25	0.79	0.00	100
Persistent poverty	596	157	2	0	0	756
	78.88	20.81	0.31	0.00	0.00	100
Total	713	772	719	723	677	3604
	19.79	21.42	19.95	20.05	18.78	100

Sweep 5 longitudinal weight and survey weights used
Source: GUS sweeps 1 to 5

Table 5.4 gives a crosstabulation of the two income-based measures, to examine longitudinal income poverty against longitudinal income inequality. What this shows is that 68% of the non-poor live in income quintiles 4 and 5, 95% live in the top 3 income quintiles. For transient poverty, 87% live in income quintiles 2 and 3. 91% of those living in recurrent poverty live in the lowest two income quintiles, with the majority (66.35%) being in income quintile 2. This indicates that they may in fact be cycling in and out of low income, confirming one of the critiques of the binary poverty measure and reflecting the insecure nature of low-paid work and unemployment (Goulden, 2010). This repeated movement into and out of poverty is known as 'churning'. While almost 100% of those living in persistent poverty live in income quintiles 1 and 2, the overwhelming majority (78.88%) live in the lowest income quintile across the five years. From this first glance at the two measures it would appear that the income quintiles, which use the full spectrum of data as a continuous variable, rather than income divided into a crude binary measure, gives a more detailed picture of the family's economic situation across the five years of data.

Each of these measures will be used in the analysis to measure the impacts of income poverty and income inequality separately.

5.4.1 Material deprivation

Material deprivation is collected in GUS in sweep 4 (2008 - 2009) only, using 20 individual deprivation variables, taken directly from the PSE and Family Resources (FRS) surveys, which ask whether a family has an item and, if it does not, whether that is because it chooses not to have it or because it cannot afford to have it. There are 11 items used to assess adult deprivation and 9 items used to assess child deprivation (Bradshaw et al., 2009). For adult material deprivation, the items are:

1. keep your home adequately warm
2. two pairs of all-weather shoes for each adult
3. enough money to keep your home in a decent state of repair
4. a holiday away from home for one week a year, not staying with relatives
5. replace any worn out furniture
6. a small amount of money to spend each week on yourself, not on your family
7. regular savings (of £10 a month) for rainy days or retirement
8. insurance of contents of dwelling
9. have friends or family for a drink or a meal at least once a month
10. a hobby or a leisure activity
11. replace or repair broken to let cool goods such as refrigerator or washing machine

For child's deprivation, the items are:

1. a holiday away from home at least one week a year with his or her family
2. swimming at least once a month
3. a hobby or a leisure activity
4. friends round for tea or a snack once a fortnight
5. enough bedrooms for every child over 10 of different sex to have his or her own bedroom

6. leisure equipment (for example, sports equipment or a bicycle)
7. celebrations on special occasions such as birthdays, Christmas or other religious festivals
8. playgroup/ nursery/toddler group at least once a week for children of preschool age
9. going on a school trip at least once a term for school-aged children.

(Pantazis et al., 2006: 13, Scotcen, 2008: 35)

There are two methods to combine these items into an index of multiple deprivation: the UK government method of prevalence weighting with a threshold of 25 to indicate material deprivation as used in the Family Resources Survey (FRS); and the Poverty and Social Exclusion (PSE) study at Bristol University's method of a direct count with statistical analyses to determine the optimum threshold.

The DWP's method of prevalence weighting is to weight items according to the proportion of the population owning that item, whereby more common items are more highly weighted than less common items (Calandrino, 2003). A summary of the weighted items is divided by the sum of the weights to create a continuous index of material deprivation. The standard cut off point to identify those who are materially deprived is 25, an arbitrary measure with no discernible calculations to defend it.

The PSE method comprises a straightforward count of the 20 deprivation items respondents are unable to afford, followed by statistical analyses to obtain robust confirmation of the optimum cut-off point that will identify the poor on number of items deprived using analyses of variance (ANOVA) and binary logistic regression models (Pantazis et al., 2006: 66).

Using the DWP threshold, 12.40% are materially deprived in the GUS data. Using the PSE threshold, 20.12% of families experience material deprivation. In Scotland at that time, the official before housing costs (BHC) child poverty rate was 21%, the after housing costs (AHC) child poverty rate was 26% and a combined low income

and material deprivation rate BHC for children was 16% (2010). As the PSE method provides transparency in its method of calculation, which is reliable and valid, and which gives proportions of the families in GUS living in material deprivation that is comparable to the contemporary statistic for Scotland, the PSE method of calculating material deprivation is used in this thesis. A paper on comparing these two methods in greater detail has been produced from this research and can be found at the end of this thesis in appendix C (Treanor, 2013b).

In summary, therefore, the measures of poverty and economic inequalities used in this thesis are:

i. longitudinal poverty: persistent poverty, recurrent poverty, transient poverty and no poverty;
ii. income averaged across 5 years and divided into quintiles; and
iii. material deprivation (binary variable).

5.5 Social assets and vulnerabilities

> '*Social assets: the social resources which people can draw on including informal relationships of trust, reciprocity and exchange with families, friends and neighbours as well as more formalised groupings (e.g. community and faith groups).*' (May et al., 2009: 10)

The social assets indicators used in Oxfam's qualitative research in the UK measure social support and activities and not wider relationships of trust or reciprocity (May et al., 2009). This section explores how social assets are measured in the qualitative SLA literature and then maps them onto GUS data in order to derive a quantitative measure of social assets for use in the analysis. The questions used by Oxfam to measure social assets are (May et al., 2009: 33):

- Who are the people who you depend on for support?
- What activities do you do for fun? Who do you do these activities with?
- Who are the people that you rely on in life?
- What groups/networks/formal organisations are you part of?

GUS collects data in sweeps 2-4 on social support, activities and networks, although not all the same data are collected in each sweep (Corbett et al., 2005, 2006a, 2007a, Scotcen, 2008). The questions used to map social assets are presented in table 5.5.

Table 5.5 Social assets variables

Variable name	Variable label
Sweeps 1 - 4	how easy would it be to leave child for short time
Sweeps 1- 4	how easy would it be to leave child whole day
Sweeps 1 - 4	how easy would it be to leave child overnight
Sweeps 2 - 4	frequency visited friends with kids
Sweeps 2 - 4	frequency visited by friends with kids
Sweeps 2 and 4	how many people respondent close to
Sweeps 2 and 4	respondent close to most of family
Sweeps 2 and 4	respondent friends take notice of opinion
Sweeps 2 and 4	respondent support from family/friends

Source: GUS sweeps 1- 5

The questions are designed in order to capture maternal social support, networks and social activities undertaken with the child, conceptualised in this study, as per the SLA, as social assets. What is not captured in these measures is the quality of these social assets; however, this is an unaddressed factor in many studies pertaining to social support, social networks, social assets and social capital. While there is level of overlap between what is explored in the SLA and what is available in GUS, it is not identical. The SLA questions are open-ended (who do you rely on in life?), which is expected of qualitative research; whereas, the GUS variables are closed (how many people respondent close to), in keeping with quantitative research. Appendix B at the back of the thesis has tables of all the social asset variables from sweep two to demonstrate the wording of the questions and give the possible responses. This suite of variables will be reduced to usable latent constructs following the method of exploratory factor analysis set out in the next chapter, section 6.2.1.

5.6 Financial assets/vulnerabilities

> '*Financial assets/vulnerabilities: including earned income, pensions, savings, credit facilities, state (welfare) benefits, child maintenance, etc.*' (May et al., 2009: 10)

Financial *assets* pertain to income and wealth. In the SLA questions relating to main and supplementary income sources are asked of respondents to identify financial assets. In this study, however, income is used to derive the economic disadvantage independent variables, longitudinal income poverty and longitudinal income inequality. This category of the SLA will focus instead on financial *vulnerabilities*. This section explores how financial vulnerabilities are measured in the qualitative SLA literature and then maps them onto GUS data in order to derive a quantitative measure for use in the subsequent analysis. When used in Oxfam's qualitative research in the UK, financial vulnerabilities explore the following areas (May et al., 2009):

- Levels of debt in the household;
- How is the household getting by on the current income? and
- Is there a difference between people's income/spending in the household?

As regards the first point, there are 12 variables collected on 'debt' in GUS. As regards the second point, GUS collects three variables on financial stress. The last of these points is not explored in GUS and will not form part of the measure of financial vulnerabilities used in this research. These first two sets of variables will be reduced to two usable latent constructs following the method of exploratory factor analysis set out in the next chapter, section 6.3. These two latent measures will represent financial vulnerabilities and are called *debt* and *financial stress*.

5.7 Control variables

The existing research identifies factors that confound the effects of socioeconomic disadvantage on children's CSEB developmental outcomes and which should be controlled for in analysis that uses these outcome measures as dependent variables (Schoon et al., 2012, Schoon et al., 2010b, Mensah and Kiernan, 2009, Kiernan and

Huerta, 2008). These factors are: child's gender, family size, low birth weight, family composition, ethnicity of child, ethnicity of mother, birth order, age of mother at first child's birth, maternal education and social class. These variables are tested in this section as control variables for use in this research.

Child's gender

The gender of a child is found to be associated with his/her CSEB outcomes: being a boy is associated with lower scores on cognitive development (Bromley, 2009). Cognitive development is a strong predictor of future educational attainment, which also varies greatly by gender (Younger and Warrington, 1996). Boys are known to score less well on school tests than girls until late adolescence (Burgess et al., 2004). Boys' behaviour is known to be more physical than girls, which is raised as a reason for the gender gap in educational attainment (King and Gurian, 2006). In educational settings girls are reported as being more content to sit still and listen than boys, while boys want to be more active (King and Gurian, 2006). Another finding for the gender gap in educational attainment is given as girls' having higher language skills which support their performance across a range of subjects (Burgess et al., 2004). This may be relevant to this research as one of the measures of cognitive development used in this thesis, naming vocabulary, is a language-based measure.

There is also a gender disparity in social, emotional and behavioural development: boys have lower scores than girls on this developmental outcome (Blair et al., 2004). Boys are also shown to mature more slowly than girls (Cohn, 1991, De Bellis et al., 2001), which may lead to genuinely lower SEB scores, or lower SEB scores as perceived by their mothers. It may be that this gender difference is a construct of the fact that boys have more physical behaviours, which may be being misinterpreted by mothers, who are the respondents of the SDQ questions. Whatever the reasons, being a boy is associated with lower CSEB scores and, as such is used as a control variable in this thesis. The gender variable is a straightforward binary girl/boy variable.

Number of siblings

Barnes et al (2010) looked at five developmental outcomes in GUS in the early years of the study. They concluded that family size, i.e. having a higher number of siblings, was significantly associated with developmental problems, in particular for language development i.e. naming vocabulary. Barnes et al (2008) also found family size to be significantly associated with children's outcomes using the Family and Children Study (FACS). FACS, formerly known as the Survey of Low Income Families (SOLIF), was conducted annually from 1999 until 2008. It was originally a survey of Britain's lone-parent families and low-income couples with dependent children. At wave 3 in 2001, the survey was extended to include higher-income families, making it a complete sample of all British families from that point forwards. Number of siblings will therefore be tested for use in this thesis.

Low birth weight

Low birth weight affects children's early development, effects which are increasingly severe the lower of the birth weight of the child, and effects which, for the lowest birth weight children, last through middle childhood and into adolescence (Taylor et al., 2000). The negative effects could be seen at middle school for the group of children with very low birth weight who scored lower on measures of cognitive function, achievement, behaviour and academic performance (Taylor et al., 2000: 1495) . However, it should be noted that this was for extremely low birth weight (less than 750 gms) children.

Hack et al (1995: 176) note that low birth weight children are not a homogenous group and that they have a wide range of growth, health and developmental outcomes. They note too that the majority of low birth weight children will have normal outcomes but that those who do not will have impaired cognitive, motor and attention functioning. Low birth weight is associated with lower socioeconomic status of families and Hack notes that, for low birth-weight children, social risk factors have a greater adverse impact on long-term cognitive outcomes than biological risk factors, and that the combined effects of low birth weight, especially very low birth-weight, and a deprived environment can be 'devastating' (Hack et al.,

1995: 18). It should be noted, however, that the work of Hack, Taylor et al focuses on children born at lower birth-weights than the low birth-weight children in GUS, i.e. the threshold for 'low birthweight' is lower in their studies. Low birth weight is associated in the literature with lower cognitive ability scores (Bromley, 2009, Melhuish, 2010). However, low birth weight is also associated with lower socioeconomic status (Barnes et al., 2010, Bradshaw, 2011).

Family composition

Family composition gathers a lot of attention in the media and in policy in the UK: the recent Coalition consultation on a new measure of child poverty aims to use a measure of 'family breakdown' as an indicator of poverty (2012b). The reason for this is that they believe that any family composition that is not a stable couple family type is bad for children.

Family composition is a demographic characteristic that is often referred to using language that some might find stigmatising; from family *instability (Waldfogel et al., 2010)*, family *status (Kiernan and Mensah, 2009)*, parental *absence* (McLanahan, 1997) to family *breakdown,* as preferred by the current UK government (2012b). The existing evidence on the impact of family composition on children's outcomes is often contradictory: for example, there is a strong body of evidence from the US, which finds that unmarried mothers (both lone and cohabiting) have children with poorer outcomes than their married counterparts (Sigle-Rushton et al., 2005, Osborne and McLanahan, 2007, McLanahan, 2007). However, their analysis uses a sample of families identified as 'fragile', who ought not to be directly compared to a non-fragile sample of families. Furthermore, the marital status of mothers in the US is more strongly socially and ethnically patterned than in the UK (Garfinkel and McLanahan, 2003). Recent research shows that there are differences in the characteristics of married, cohabiting and lone parents in the US compared to the UK, with cohabiting parents in the UK being more akin to their married counterparts and those in the US being more closely aligned with lone parents (Kiernan et al., 2011). As regards comparability of measures, the type of family composition studied by McLanahan and Kiernan focuses on the differences between married and

unmarried parents and not on family *transitions*, i.e. moving from a couple to a lone parent family or vice versa. Despite this lack of direct comparability, family composition as measured by both marital status and relationship transitions is associated with lower socioeconomic status and income inequality (Kiernan and Mensah, 2009, Kiernan and Mensah, 2010a, Schoon et al., 2012). In contrast with the research that associates family composition with a detrimental impact on children's outcomes, research by Schoon et al (2012) find that when income inequality is controlled for in their analysis, any negative effects on children's cognitive development disappears. One study using qualitative data shows that the potentially negative impact of family composition on children's wellbeing is reduced by the absence of conflict in parental separation and the quality of the resulting family relationships (Highet and Jamieson, 2007).

The evidence for the effect of family composition on children's CSEB development is varied. Qualitative evidence states that as long as parental separation is handled sensitively, amicably and with no lasting conflict between the parents, there will be no long-term detrimental effects on children (Highet and Jamieson, 2007). Using GUS, Barnes et al (2010) found that of the five developmental outcomes they looked at, a couple who were separating was statistically significantly associated with the categories 'general difficulties' and the 'number of accidents' the child had. Barnes et al's (2010) report also showed that family composition, notably parental separation, is a big risk factor for poverty and persistent poverty.

The family composition variable has been derived from the mothers' partnership status at each of the five sweeps of the data. The categories are:

- 'stable couple relationship', where a couple has been together since the start of the study;
- 'stable lone parent family', where the respondent (usually the mother) reports having been single and living alone each of the five years of the study;
- 'lone parents who have re-partnered' – there is no distinction in the measure on the point at which the respondent re-partners;

- ‘couple families who have separated’ – the same caveat applies as before; and
- ‘separation(s) and re-partnering(s)’ – this category does not differentiate between those who may be separating and re-partnering with the same or with different partners.

Ethnicity of child/Ethnicity of mother

The ethnicity of the child is significantly associated with ‘development’ and ‘difficulties’ for the birth cohort but not the child cohort in the early waves of the GUS study (Barnes et al., 2010). Using the MCS data, having a non-White ethnicity is negatively related to child cognitive development (Jones and Schoon, 2008). Of the five components of the SDQ, ethnicity of the mother is significantly associated with children experiencing peer problems (Bradshaw and Tipping, 2010); however, as peer problems as a category does not conceptually combine with the other four categories of the SDQ, it is not included in the measure of SEB outcomes used in this thesis. What is important to note as regards ethnicity, is that it is associated with living in poverty in general and, in particular, living in persistent poverty (Adelman, 2003, Berthoud et al., 2004, Barnes et al., 2010).

Although maternal ethnicity has been associated with lower cognitive development and peer problems, what these studies, using the BAS II scales, are not taking cognisance of, is the caution of the authors of the scales against making inferences about children of minority ethnic origin, in particular children of Bangladeshi/Pakistani origin (Elliott et al., 1997). They posit that the scales are inappropriate for use with children of ethnic and cultural minorities. This is a weakness of all the recent studies using the BAS II scales for cognitive development of minority ethnic children. Added to this caveat, is the fact that there is a small sample of families who have a non-white ethnicity in the GUS study. To be compliant with the existing literature, the ethnicity of the child and the ethnicity of the mother will be tested for use as control variables in this thesis, while keeping this caveat in mind.

Study child s birth order

Birth order is associated in the literature with child cognitive development, with first born children having higher levels of cognitive development (Bradshaw, 2011, Parkes and Wight, 2011), and so this variable will be tested for use as a control variable for this thesis.

Age of mother at first child's birth

Having a younger mother is associated in the literature with lower CSEB outcomes (Bromley, 2009, Bradshaw and Tipping, 2010). Younger mothers are also at increased risk of living in poverty and for living in poverty for longer periods of time (Barnes et al., 2010). Therefore, the age of the mother at the birth of her first child will be used as a control variable.

Maternal education

The variable that is universally most associated with children's early years' cognitive development in the literature is maternal education (Sammons et al., 2004, Evangelou et al., 2007, Melhuish et al., 2008, Siraj-Blatchford, 2010). This association has been found in studies across time and place. In the UK, the Effective Provision of Preschool Education (EPPE) study links maternal education and cognitive development via the Home Learning Environment (HLE). Studies by Melhuish show that maternal education and the HLE a mother subsequently creates is a strong factor in children's cognitive development scores education (Evangelou et al., 2007, Melhuish et al., 2008, Siraj-Blatchford, 2010).

In Melhuish's (2010) study of the HLE using GUS data at sweep three, an unexpected and unexplained result emerged, as detailed in chapter four. Maternal education was not significantly associated with either picture similarities or naming vocabulary cognitive development variables when the HLE was added to the model. All of the other sociodemographic factors tested in Melhuish's models using GUS were consistent with previous research with the exception of maternal education (Melhuish, 2010: 19). Possible reasons for this non-association are summarised in section 4.2.1 of chapter four. Given the importance of maternal education in all other

studies pertaining to cognitive development it is a variable that will be tested for use in this thesis as a control variable.

Testing the control variables for use in this thesis

Table 5.6 Significance of control variables

	Naming vocabulary	Problem solving	SEB
Study child s birth order	✓	.	✓
Sex of the child	✓	✓	✓
Family composition (longitudinal)	.	.	✓
Age of mother at 1st child's birth	✓	.	✓
Ethnicity of mother	✓	.	✓
Maternal education	✓	✓	✓
Number of siblings	.	.	.
Low birth weight	.	.	.
Ethnicity of child	.	.	.

. not significant

Table 5.6 shows the control variables that were tested for use in this study, using Ordinary Least Squares linear regression, because they were significant in the wider literature. Analysis shows that the control variables suggested by the literature that are not significant with any of the three outcome variables are: ethnicity of the child, low birth weight, and number of children in the household. These three variables will not be used as control variables in this thesis. The final control variables to be used in this study are:

- birth order of child
- ethnicity of the mother
- gender of the child
- age of the mother at first birth
- longitudinal measure of family composition
- maternal education at sweep 1

Social class is a variable that has been used as a measure of socioeconomic status in some of the literature on children's outcomes, e.g. Feinstein (2003). What other

literature shows is that maternal education is the biggest predictor of child cognitive development, e.g. Melhuish (2008) and that income is also a very important predictor (Dahl et al., 2005). Maternal education, social class and income are not independent of each other in GUS: when all three are entered into the models together social class becomes insignificant. As this is a study of income poverty and income inequality, and as maternal education is the most important predictor of child cognitive development in the literature, social class is not used a control variable in this thesis. Table 5.7 gives the proportion of families in each of the control groups used in this study.

Table 5.7 Counts and percentages of the control and explanatory variables

Variables	Count	Percentage (%)
Family composition:		
Stable couple family	2615	72.22
Stable lone parent family	399	11.01
Lone parent who re-partnered	241	6.66
Couple who separated	214	5.92
Separations and re-partnerings	152	4.19
Age of mother at first birth:		
Under 20	274	7.66
20-29	1466	41.02
30-39	1719	48.09
40 or more	115	3.23
Maternal Education:		
Degree or equivalent	1206	31.50
Vocational qualification below degree	1440	37.62
Higher Grade or equivalent	295	7.71
Standard Grade or equivalent	596	15.57
Other qualification	26	0.68
No Qualifications	265	6.92
Ethnicity of mother:		
White	3489	96.39
Non-white	130	3.61
Birth order:		
First born child	1824	50.37
Not first born child	1797	49.63
Sex of child:		
Female	1750	48.34
Male	1871	51.66

Counts and percentages based on weighted data
Sweep 5 longitudinal weight and survey weights used
Source: GUS sweeps 1 to 5

5.8 Ethical considerations

As the methodology for this study is exclusively comprised of secondary data analysis, the main ethical considerations have been addressed by the contractors of the survey. However, the subject of this doctoral research is very sensitive and uses data from groups that have been stigmatised in modern UK society. Therefore, considerable care and attention will be paid to the presentation of findings, to the reporting of the lives of these potentially vulnerable groups and to the dissemination of the research results. The respondents' data will be treated with dignity and respect irrespective of their income, family composition, ethnicity, religion or social class.

I will comply with Data Protection legislation and with the data security policies of the survey organisations which hold the data. I will ensure that respondent anonymity is protected and I have completed the School of Social and Political Science (SPS) Research Ethics Level 1 self-audit checklist.

5.9 Conclusion

This chapter concludes that, of the limited number of datasets measuring children's CSEB outcomes and a wide range of social, economic and demographic variables, GUS is the most appropriate for this study. It has a representative geographical coverage of Scotland, multiple measures of multidimensional socioeconomic inequality, three CSEB outcome measures and can support the construction of the two latent measures, social assets and financial vulnerabilities, observed in previous qualitative studies and quantified for this thesis. The GUS dataset is the best available but does have its limitations. Despite these, however, the GUS dataset is able to support the aim and meet the requirements of this study. The following chapter sets out the methods for conducting the subsequent analysis.

6 Methodology

6.1 Introduction

The three research questions outlined at the end of chapter three comprise two methodological objectives. The first is to operationalise the concepts of 'social' and 'financial' assets and vulnerabilities derived from the SLA as set out in section 2.2 of chapter two. The second is to test the impacts of these assets and vulnerabilities on children's cognitive, social, emotional and behavioural (CSEB) outcomes, comparing across the income inequality spectrum, as well as between those with and without material deprivation. This chapter discusses the statistical methods selected to achieve these objectives. The chapter concludes that the most appropriate method to reduce the multiple observed variables that make up the latent constructs social assets and financial vulnerabilities is Exploratory Factor Analysis (EFA) adjusted for use with categorical variables. Using this method, the resulting latent constructs, social assets and financial vulnerabilities, will comprise a series of continuous measures for use in further analysis. It concludes that the most appropriate technique to analyse the impact of these social assets and financial vulnerabilities on children's CSEB developmental outcomes, while holding constant the wider sociodemographic variables, is Ordinary Least Squares (OLS) multiple regression.

6.2 Constructions of measures of assets and vulnerabilities

The first objective of the analysis is to derive the latent constructs social assets and financial vulnerabilities used in research questions two and three respectively. To create these measures an index such as those used for material deprivation in the previous section could be constructed. An index can comprise a simple count of data, which assumes equal weighting and importance of all indicators, or a weighted technique such as a prevalence weighted count, which assigns weighting based on the number of respondents who respond positively to each indicator. These techniques do not directly measure an underlying latent construct and do not use a statistical technique such as shared variance to construct the index. The resulting index is a single rather than a multiple construct; a simple summary measure that may be difficult to interpret substantively. Thus, while straightforward and simple to

construct, an index is not the best technique to operationalise the concept of assets and vulnerabilities as it would not allow multiple latent constructs to emerge from the variables used to measure the concept.

6.2.1 Social assets/vulnerabilities

In relation to social assets, used to answer research question two, it is important that this measure corresponds to the one set out in the Sustainable Livelihoods Approach (SLA): that is, it is important that it incorporates as much information on types of relationships and support received from as wide a range of people as possible. The 26 variables in GUS that have been selected to represent social assets are ordinal as shown in chapter five and appendix B at the back of the thesis. These variables offer a variety of responses that allude to the strength and quality of the social assets held by the mothers in the study. A simple count method would simply aggregate the data and the resulting index may be difficult to interpret substantively. These 26 variables contain a lot of shared information - common variance - as well as a lot of background 'noise' that would be impossible to reduce or extract using this technique. Thus, a summed index would not be the optimum method of deriving the latent construct social assets. Operationalising the concept of social assets to create a smaller amount of usable constructs from a larger range of observed variables requires a method that is: statistically robust; can extract information from the variables that is shared - common variance; that can reduce the data to create one or more measure; that is substantively interpretable; and that can eliminate the background 'noise' in the variables.

6.2.2 Financial assets/vulnerabilities

The existing empirical evidence on the levels and impacts of financial stress have often been explored in relation to adult wellbeing (Starrin et al., 2009). Other applications of financial vulnerabilities include the use of latent class analysis to identify groups of similar individuals, with further analysis at the micro level on, for example, social class (Whelan and Maitre, 2008), or further analysis at the macro level on, for example, welfare state typologies in the EU (Whelan and Maitre, 2010). While the existing research has informed the formation of financial vulnerabilities in this thesis, the aim of identifying underlying latent constructs here is not to create

similar groups of people, but to create a smaller amount of usable constructs from a larger range of observed variables to represent the concept of financial vulnerabilities for use in future analysis.

In sweep five, GUS collects data on debt and financial stress. There are 12 binary variables collected on 'debt' and three ordinal variables measuring broader financial stress, such as how families are currently managing financially, whether they habitually struggle to service their debts and whether they are generally worried about money, as set out in section 5.6 of chapter five. Using these variables, two measures of financial vulnerability will be derived to answer research question three: debt and financial stress.

To reduce the variables that measure both social assets and financial vulnerabilities into usable constructs, rather than construct weighted or unweighted indices, factor analysis can be applied.

6.3 Factor analysis

The primary function of factor analysis is to reduce a group of related variables into a smaller group of usable constructs or *factors* (Tinsley and Tinsley, 1987, Thompson, 2004, Brown, 2006). The statistical basis of factor analysis is that a collection of variables asking questions on similar subjects can be highly correlated, which suggests that they may represent an underlying concept or 'latent construct' (Field, 2009). When conducting factor analysis, a correlation matrix is calculated from the group of related variables and those that are statistically significantly correlated are clustered into factors (Field, 2009). This is one statistical technique where some degree of multicollinearity is desirable (Hair, 2010). The resulting factors can be interpreted according to accompanying statistical, and subjective or substantive, criteria.

Factor analysis is appropriate to my data and research questions for several reasons. Firstly, the variables that measure the concepts social assets and financial vulnerabilities are expected to correlate within each concept. Secondly, it is

anticipated that the variables used to measure these concepts will have a common underlying latent construct. Thirdly, the concepts of social assets and financial vulnerabilities are 'complex' and 'multidimensional', which are exactly the type of data that factor analysis is particularly suited to analysing (Hair, 2010: 125). Finally, there are 26 social assets variables, 12 debt variables and three financial stress variables, which need to be reduced into as small a number of explanatory constructs as possible for future analysis. Factor analysis is a technique that achieves parsimony by explaining the maximum amount of common variance using the smallest number of explanatory constructs and so is appropriate for the construction of social assets and financial vulnerabilities (Tinsley and Tinsley, 1987: 414).

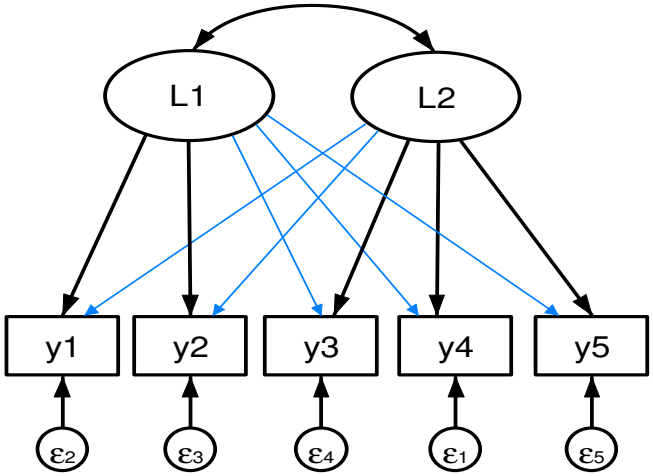
Within factor analysis, there are two methods of deriving factors from groups of variables: confirmatory factor analysis (CFA) and exploratory factor analysis (EFA). CFA is used primarily for hypothesis testing; with a priori theory about what the results will be (Tinsley and Tinsley, 1987: 418); i.e. to test whether factors found in previous research can be replicated (Brown, 2006). CFA requires that the researcher specify in advance (1) the number of factors to be extracted, (2) which variables will load onto which factor, and (3) whether the factors are correlated (Tinsley and Tinsley, 1987: 419, Thompson, 2004: 6).

Exploratory factor analysis (EFA), by contrast, has no predetermined criteria and uses the common variance in the correlation matrix to determine the most parsimonious factor structure (Tinsley and Tinsley, 1987). Given that this thesis does not wish to apply an a priori theory to GUS data, but instead wishes to explore social assets and financial vulnerabilities of families, and extrapolate these to the wider population of families with children, EFA is most appropriate technique. Furthermore, as there are no predetermined criteria regarding the number of factors or the distribution of common variance onto factors, CFA would not be an appropriate method here.

Factor analysis is traditionally applied to continuous variables, or ordinal variables with many categories. However, developments in statistical methodology and

statistical software now permit factor analysis to be applied to categorical variables (Mislevy, 1986). The main consideration when using EFA with categorical variables is the method of correlation to use in the correlation matrix. Pearson's R is the traditional correlation method used in EFA; however it is not suitable for use with categorical variables. As the variables from which the latent constructs social assets and financial vulnerabilities will be calculated comprise ordinal categorical data with few categories, or binary data, EFA will be based on polychoric correlations, as suggested by Mislevy (1986). The number of observations required to perform an EFA is debated (Hair, 2010: 136); however, the GUS data has more than sufficient observations to satisfy even the most stringent of requirements.

Figure 6.1 A two factor EFA with 5 observed variables



Drawn in Stata v12, based on notation used in (Field, 2009)

Figure 6.1 illustrates an EFA model with two factors based on five observed (or manifest) variables. The convention in these diagrams is for latent constructs (factors, L1 and L2) to be shaped by an ellipse and for the observed (manifest) variables to be shaped by a square/rectangle. The solid black lines, which are slightly thicker than the others and have single-headed arrows, show which variables the factors are extracting information from, and represent the loadings important to that

factor, while the smaller blue single headed arrows show less strong relationships. The double-headed curved arrow between the factors shows that there is a correlation between them, which would indicate that the respondents' scores on the two factors are not independent. Factors can be correlated or uncorrelated depending on what method is used to rotate them (Thompson, 2004).

Once factors have been extracted, loadings are calculated that show how much each individual variable loads onto the factor (Field, 2009: 642). Usually, variables load highly onto the first factor and lowly onto the other factors. It is in these loadings that the substantive interpretation of factors occurs. This characteristic of high loadings onto the first factor can make interpretation difficult. In order to better discriminate between factors, a technique called 'factor rotation' is used. Hair explains that '*factor rotation should simplify the factor structure'*(2010: 147). Factor rotation also improves the interpretation of factors by *'reducing some of the ambiguities that often accompany initial unrotated factor solutions'* (Hair, 2010: 147). Factor rotation aims to make each factor more unique/independent and the subsequent substantive interpretation is up to the researcher. This technique can initially sound as though the researcher is bending the data to his or her will; however, Thompson gives an assurance that factor rotation is not misleading so long as it is only the factor axes that are moved and not the original observed variables (2004: 40). When a single factor is extracted no rotation is possible because every variable will saturate the single factor, thereby negating the need for rotation (Thompson, 2004). As Thompson (2004: 39) notes *'rotation is not possible when only one factor is extracted. But in virtually all cases involving two or more factors, rotation is usually essential to interpretation'*.

There are two types of factor rotation, oblique and orthogonal, and a decision needs to be made as to which type is more appropriate to the data in this thesis. Oblique rotation allows factors to correlate with each other, as is the case with the two factors displayed in Figure 6.1. Orthogonal rotation ensures the extracted factors remain unrelated, with the factors remaining perpendicular to each other on a graphical representation. The variables used to construct the latent concepts being measured in

this study, social assets and financial vulnerabilities, are certain to correlate within their own latent measure; therefore, an oblique rotation allowing correlation is used. For the selection of variables in this study, and often for social science variables more broadly, allowing underlying dimensions to correlate with each other is more realistic (Hair, 2010). Thompson (2004: 43) notes that when '*oblique rotation is necessary, promax rotation is almost always a good choice*'. Thus, this thesis will use promax rotation as its oblique method.

When factors are extracted from a group of variables those variables are said to 'load' onto the factors. Factor loadings give a measure of how much variance from the observed variables' correlations loads onto a factor, that is, a gauge of its statistical importance. What can be noted from Figure 6.1 is that variables can load onto more than one factor, although they usually load most extensively on to just one. These loadings need to be examined to see if the factor represents a useful, underlying concept and the onus of interpretation lies with the researcher. While there are statistical criteria to assist the researcher to extract the optimum number of factors, the judgement of the researcher remains the key element in this decision-making. How to determine whether the size of a factor loading is statistically significant depends on the size of the sample and various texts make recommendations on the critical values of factor loadings based on sample sizes (Stevens, 2002, Hair, 2010). As well as the size of a factor loading, an estimate of the amount of the variance in the factor accounted for by each individual variable can be calculated by squaring the factor loading (Cramer, 2003, Field, 2009, Hair, 2010). Following Stevens (2002) recommendations, only factor loadings above 0.4, which explain approximately 16% of the variance in the variables, will be interpreted in this research.

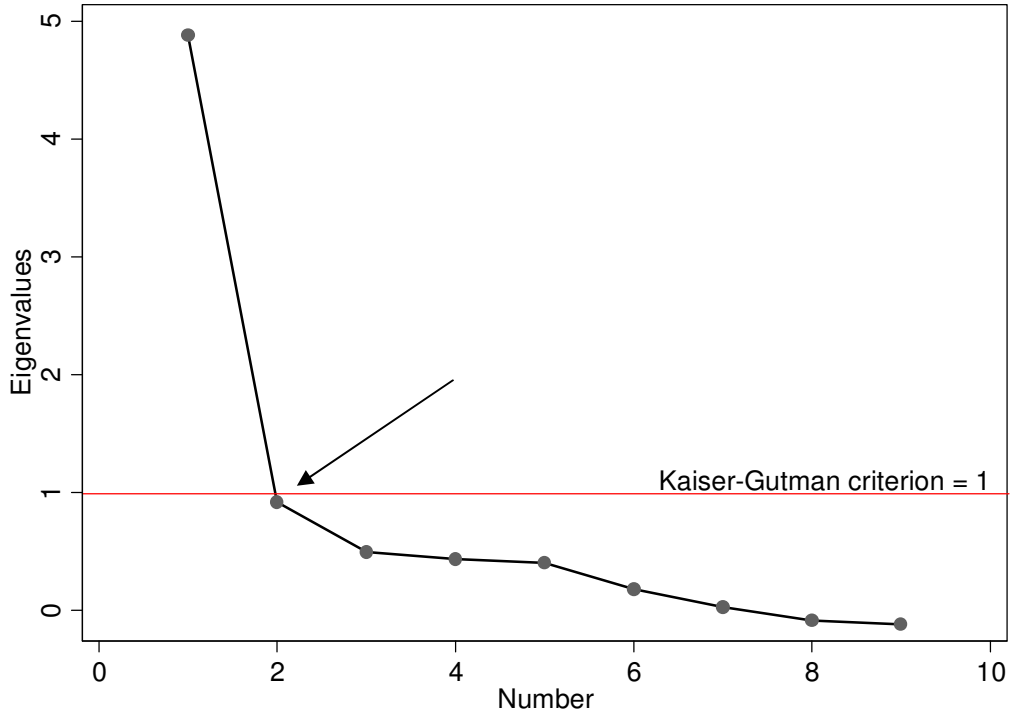
After running the EFA, which will extract as many factors as there are variables, in decreasing order of statistical importance, a judgement has to be made on the importance of factors and how many to retain based on various statistical and subjective criteria. Each factor extracted has an associated 'eigenvalue' which indicates the statistical importance of that factor (Field, 2009: 639). The standard

practice is to adhere to the Kaiser or Kaiser-Guttman criterion, which recommends retaining factors with an eigenvalue greater than 1.0 (Kaiser, 1960, Cramer, 2003, Thompson, 2004).

The Kaiser-Guttman criterion is shown to be most accurate when the number of variables from which the factor is extracted number fewer than 30 (Field, 2009). As the number of variables being used to construct the key factors pertaining to social assets and financial vulnerabilities in this thesis are all fewer than 30, Kaiser's critical value of an eigenvalue greater than 1.0 will be used as one of the criteria for selecting the number of factors to retain. However, other statistical criteria, along with studying the substantive interpretation of the different factors, will be applied as more than one method of gauging how many factors to retain is recommended (Field, 2009).

Cattell (1966: 248) posits that the Kaiser-Guttman criterion is a '*shifting standard*' that retains too many factors when there are many variables and, when there are few variables, '*it stops factoring too soon',* resulting in too few factors being retained. This is pertinent to this thesis as the EFAs for social assets and financial vulnerabilities do not use large numbers of variables. As an additional method of gauging the number of factors to be retained, Cattell (1966) proposes another criterion, one which graphically displays the eigenvalues on a plot, known as a 'scree plot'.

Figure 6.2 Scree plot of eigenvalues after EFA



Source: GUS sweep 5
N = 3823

The scree-plot displays the eigenvalues of the extracted factors against the number of factors in their order of extraction and the shape of the resulting curve is used to evaluate the threshold for retention (Hair, 2010: 144). What becomes clear using a scree plot is that a few factors have high eigenvalues and others have comparatively low eigenvalues, so the graph has a characteristic shape of a steep slope, followed by a sharp turn (the point of inflection) followed by a straightening out of the curve (Thompson, 2004, Field, 2009). It is this point of inflection, as indicated by the arrow in Figure 6.2, that is used to indicate the number of factors to be extracted (Cattell (1966). Stevens (2002) notes that using a scree plot gives a fairly reliable threshold for selecting the number of factors to retain when you have a sample greater than 200. As the data used in this study number several thousand, there is greater certainty that using this method will yield accurate results for the study.

An additional consideration for the number of factors to retain is the substantive interpretation of the factors themselves. Factor analysis relies on the variance shared

by all the independent variables (common variance) and each factor explains a proportion of the common variance. It is usual for increasing numbers of factors to explain a decreasing amount of the common variance. There are different suggestions as to what percentage of total variance explained is sufficient for the extracted factors to cover. Hair recommends that enough factors ought to be retained to meet around 60% of total variance or higher (2010: 146). Stevens, in contrast, recommends retaining as many factors as will account for at least 70% of the total variance (2002: 390). This thesis will aim towards the higher of these critical values; however, both thresholds will be considered when selecting the number of extracted factors to retain.

In this thesis, using Stata version 12, exploratory factor analysis will be carried out on categorical variables. Stata 12 is the first version of the software to allow EFA with categorical variables. To carry out an EFA with categorical variables in Stata 12 involves a two-stage process. The first is to instruct the software to construct a matrix of polychoric correlations, instead of its default Pearson's correlation matrix, and the second is to instruct the software to carry out an EFA that uses the polychoric matrix. From the factor analysis, factor scores for each respondent will be estimated and retained for use in the substantive analysis of this thesis. A factor score is '*a composite measure created for each observation of each factor extracted in the factor analysis'* (Hair, 2010: 126). Factor scores are continuous variables, calculated as Z scores, with a mean of zero and a standard deviation of one. Individual factor scores will give an indication of how much support the GUS respondent (the mother) feels she receives from friends and family (social assets), how much debt she is in (debt factor), and how financially stressed she feels (financial stress factor).

Once material deprivation, social assets and financial vulnerabilities have been constructed, they will be used to answer the three research questions. For the first research question, the purpose is to test what impact longitudinal income poverty, longitudinal income inequality and material deprivation are having on children's CSEB developmental outcomes when the sociodemographic control variables are taken into consideration. For research question two, social assets are added to the

model and, for research question three financial vulnerabilities are added. This will ascertain whether mothers' social assets and financial vulnerabilities are associated with higher or lower CSEB outcomes for children and if these impacts differ across the socioeconomic spectrum as set out in the hypotheses at the end of chapter four.

The analysis technique used to answer these research questions should be able to assess whether the impacts of social assets and financial vulnerabilities are associated with increasingly low CSEB developmental outcomes and, whether assets in one domain (social) counteract vulnerabilities in another (financial). Controlling for the sociodemographic variables commonly held to be associated with low CSEB developmental outcomes as derived from the literature, and suggested for use in a new child poverty measure as discussed in the policy section of chapter two, will also allow this research to gauge whether they continue to be important when economic disadvantage, social assets and financial vulnerabilities are taken into consideration.

The measures of longitudinal income poverty, longitudinal income inequality and material deprivation, social assets and financial vulnerabilities will be entered into models with the three outcome (dependent) variables that make up the CSEB developmental outcomes: naming vocabulary, picture similarities, and social, emotional and behavioural (SEB) development. As there are three dependent variables, one technique that could be used is a multivariate outcome model. This type of model estimates a single regression model with more than one outcome variable. However, the BAS II technical manual emphasises that the two cognitive development variables should not be analysed together given their conceptual distinctiveness and SEB is an entirely unrelated concept; therefore, this technique would not be appropriate. Another method that could be used would be to analyse the three outcome variables in their own separate regression models, thus maintaining their distinctiveness.

6.4 Simple and multiple regressions

For each of the three research questions, before testing the impacts of the economic disadvantage variables (longitudinal income poverty, longitudinal income inequality

and material deprivation), social assets and financial vulnerabilities on children's CSEB outcomes in full models with the sociodemographic control variables, it is first of all useful to look at the associations between the economic disadvantage variables and: (1) CSEB developmental outcomes for research question one; (2) social assets for research question two; and (3) financial vulnerabilities for research question three. This will give insights into whether these characteristics vary across different levels of income and material deprivation.

There are various techniques that can be applied to this, such as analyses of variance (ANOVA). ANOVA has stringent requirements on the quality of variances in the data which determine the types of statistical tests and post hoc tests of significance that can be used. ANOVA additionally has strict criteria in the distribution of the data and has a parametric and nonparametric (Kruskal-Wallis) variation. Early explorations of these techniques using the data in this thesis showed that the situation was different for each of the findings chapters. The first had data with equal variances which could have used straightforward ANOVA. The second had data with unequal variances which require different statistical and post hoc tests. The third required the nonparametric variation, Kruskal-Wallis. This means that a different method would have to be used for each chapter, which would preclude consistency across the thesis and make it difficult to follow due to a wide range of tests requiring different presentations and statistics.

A method that can test CSEB outcomes, social assets and financial vulnerabilities with the economic disadvantage variables, using a single technique that can be applied consistently across the data in this thesis is simple linear regression using quasi variance (Gayle and Lambert, 2007). Simple linear regression estimates the relationship between a dependent variable and a single independent variable. Its equation is given as follows:

Equation 6.1

$$y = \alpha + \beta_1 x_1 + \varepsilon$$

Where:

y	=	dependent variable
α	=	constant
β_1	=	coefficient of first independent variable
x_1	=	first independent variable
ε	=	error term

When the independent variable in a simple regression is categorical, such as is the case with each of the economic disadvantage variables used in this thesis, the categories are converted into single indicator (dummy) variables, which are entered into the regression model minus the chosen reference category, against which the remaining categories (n-1) are compared. At this point the simple regression does not allow comparison between all the categories of the independent variable, only each category against the reference category individually. In order to compare all the categories of the independent variable with each other, the simple regression could be repeated several times with the reference category changed each time; however, this is time-consuming, cumbersome and would result in a lot of output tables. Firth (2003) has developed a flexible method that assists an interpretation of all the categories of the independent variable, allowing them to easily be compared to each other, called quasi variance. This method has been usefully applied in the context of Sociological research by Gayle and Lambert (2007).

Firth's solution is to display quasi variance in the table alongside the regression coefficients, which allows the reader to make their own calculations of the differences between the categories of the independent variable. Quasi variance is calculated using the variance-covariance matrix of the parameter estimates (Gayle and Lambert, 2007), which is not routinely displayed by many statistical software packages, but which can be requested when using Stata 12. Firth has devised an online calculator to provide quasi variance for each level of the categorical independent variable when the covariance matrix is entered along with the number of

levels of the categorical independent variable (Firth, no date). Gayle and Lambert (no date) have devised an online spreadsheet that uses the coefficients from the simple regression and the quasi variances of the different levels of the categorical independent variable to produce Wald statistics to test the differences between the levels of the categorical independent variable. This is a neat solution to the reference category problem and one that is appropriate to apply to the simple regressions at the beginning of each of the three findings chapters in this thesis. This will allow exploration of CSEB developmental outcomes, social assets and financial vulnerabilities with the three economic disadvantage variables before the sociodemographic control variables are entered into the model. Thus each findings chapter begins with a simple regression with quasi variance to determine the associations with longitudinal income poverty, longitudinal income inequality and material deprivation, allowing the categories of each of these variables to be compared to each other. This allows a consistent method of analysis and consistent presentation of results across this thesis.

Research questions one and two and their associated hypotheses, set out at the end of chapter four, derived from my previous qualitative research and supported by the qualitative empirical research also discussed in chapter three, state that families' social assets and financial vulnerabilities can have a beneficial or detrimental impact, not only on adults, but also on the children in a family. Chapter four shows that children, even young children, are very sensitive to the stresses that parents may experience. This thesis will test these hypotheses quantitatively by exploring the impacts of mothers' social assets and financial vulnerabilities on children's CSEB outcomes. In order to isolate these impacts, one needs to hold the other independent variables, i.e. the sociodemographic control variables generated by the literature review, constant, in order to test the unique contribution made by the economic disadvantage variables, social assets and financial vulnerabilities.

OLS multiple regression is a technique that allows two or more independent variables to be present in the models (Cramer, 2003), allows for the simultaneous assessment of relationships between each independent variable and the dependent

variable and gives the relative importance of each independent variable (Hair, 2010: 215). As each independent variable's impact is calculated whilst holding all the other independent variables constant, the regression coefficient for each independent variable indicates the unique contribution made by that independent variable (Hutcheson and Sofroniou, 1999). This technique is entirely suitable to explore the impacts of assets and vulnerabilities on children's CSEB developmental outcomes across the income inequality spectrum while holding all the sociodemographic control variables constant.

In this thesis, the CSEB outcomes - naming vocabulary, picture similarities and social, emotional and behavioural outcomes (SEB) - are continuous, conceptually distinct variables that approximate a normal distribution, as demonstrated in chapter five. As Hair (2010: 37) notes, where there is a single dependent variable that is continuous and normally distributed, the most appropriate dependence technique is OLS multiple regression. Thus OLS multiple regression is the entirely appropriate technique for the analysis of the three findings chapters in this thesis.

The hypotheses set out at the end of chapter four state that in addition to exploring the impacts of maternal assets and vulnerabilities on children's CSEB outcomes, it also sets out to test whether these impacts differ across the income inequality spectrum. In order to test whether one independent variable varies with a second independent variable, an interaction term between the two independent variables can be applied. An interaction effect occurs when the relationship between an independent variable (X_1) and the dependent variable (Y) is affected by another independent variable ($X_{2)}$. It is also known as a 'moderator' as it moderates the relationship between X_1 and the dependent variable (Hair, 2010). OLS multiple regression is an incredibly useful modelling tool as regression models can incorporate interaction terms. In order to determine whether the interaction is significant, it is necessary to enter the two independent variables into the regression as well as the interaction term. As Cramer notes, '*if the interaction term explains a significant increment in the variance of the dependent variable, then a moderating effect is present'* (2003: 75). If an interaction term is significant, it means that a

different regression coefficient for X_1 is needed for different values of X_2 (Tabachnick and Fidell, 2012).

The hypotheses for this thesis posit that social assets and financial vulnerabilities have a stronger beneficial or impact on children's CSEB outcomes for different levels of family income. Thus, the hypotheses state that social assets and financial vulnerabilities *moderate* the impacts of income on children's CSEB outcomes. As social assets and financial vulnerabilities are latent constructs, created as continuous variables, an interaction term using them as continuous variables is not recommended as this would be considered difficult to interpret. For this reason, interactions are less common among continuous measures and more common between categorical variables (Tabachnick and Fidell, 2012).

When interaction terms are statistically significant, plots are useful for interpretation (Tabachnick and Fidell, 2012: 158). If the variables used to create the interaction effect were categorical, then a separate line for X_1 at each level of X_2 (the moderator) could be plotted and each line would have a different slope. In order to replicate this technique with continuous variables, distinct values for X_2 (the moderator) would have to be used (Tabachnick and Fidell, 2012). Cohen et al (2003) suggest that when no theoretical reasons for choice of thresholds are present, levels corresponding to the mean of X_2, one standard deviation above and one standard deviation below the mean as medium, high and low levels respectively should be used. Thus, in this thesis, where interaction terms between income and assets/vulnerabilities are significant, this will be presented graphically to aid understanding.

The creation of new variables such as interaction effects provides greater flexibility in representing a wide range of relationships within regression models (Hair, 2010: 227). However, he notes that '*the desire for a better model fit leads to the inclusion of the special relationships without theoretical support*' (Hair, 2010: 227). He emphasises that to use these techniques, it is important to be guided by theory supported by empirical analysis. This thesis hypothesises that social assets and financial vulnerabilities moderate the effects of poverty/income inequality on

children's CSEB development. It hypothesises that having higher social assets while living in poverty will be associated with greater levels of CSEB development in children more than higher social assets for families not living in poverty. Likewise, a family with a low income who experiences financial vulnerabilities will have a lower effect on children's CSEB outcomes compared to those who may be financially vulnerable but who do not experience concomitant low income. As such, the hypothesis for research questions two and three at the end of chapter four can be tested with the use of interaction effects.

6.4.1 Interpreting the OLS multiple regression model

An OLS multiple regression model is interpreted in relation to (1) the importance of the independent variables, (2) the types of relationships found, and (3) the interrelationships among the independent variables (Hair, 2010: 214). The coefficients tell us whether the relationship is positive or negative, and gives an indication of the strength of the relationship between the independent and dependent variables (Hair, 2010). Coefficients can be standardised or unstandardised. Unstandardised coefficients represent the change in the dependent variable (y in the regression equation) associated with a one unit change in the independent variable measured in the units of the independent variable. Standardised coefficients do not depend on the units of measurement of the independent variable and represent the standard deviation change in the dependent variable associated with a standard deviation change in the independent variable. Standardised coefficients cannot be generalised to a wider population as they have been standardised according to the scales in the sample data. This thesis uses unstandardised coefficients to allow interpretation of the size of the coefficient and to ensure generalisability to a wider population of families with children.

The OLS multiple regression models that will be used in the findings chapters to explore the impacts of social assets and financial vulnerabilities on children's CSEB developmental outcomes across the income inequality spectrum will be interpreted using two goodness-of-fit measures: R^2 which provides information on the model fit, and the F statistic, which provides a measure of significance of the model

(Hutcheson and Sofroniou, 1999). R^2 ranges in value from zero, which indicates no linear relationship, to 1, which indicates a perfect linear relationship, and it will also be multiplied by 100 to give the percentage of variability explained by the model (Hutcheson and Sofroniou, 1999: 65).

6.4.2 Weakness of methods

In order to utilise the OLS multiple regression method, the adherence to a strict set of assumptions governing both the dependent variable and the independent variables is required (Aiken et al., 1991, Hutcheson and Sofroniou, 1999, Cohen, 2003, Cramer, 2003, Field, 2009, Hair, 2010, Tabachnick and Fidell, 2012). These assumptions will be addressed as they apply to this thesis.

The assumption of multicollinearity can occur when the independent variables have large amounts of shared variance and low levels of unique variance, which renders the coefficients of the individual independent variables less distinguishable (Hair, 2010). Stevens (2002: 92) explains that multicollinearity is problematic when using OLS multiple regression for three reasons: (1) it limits the size of R because the independent variables are sharing much of the same variance on the dependent variable, (2) it makes determining the importance of a given independent variable difficult because the effects of the independent variables are confounded due to the correlations among them, and (3) it increases the variances of the regression coefficients, which risks making the equation unstable.

Two statistical techniques for diagnosing multicollinearity is to examine the tolerance levels (Hair, 2010) and the variance inflation factors (VIF) of the independent variables (Stevens, 2002). The general rule for accepted levels of multicollinearity is a tolerance value above 0.10, or sometimes 0.20, with values close to 1.0 showing virtually no collinearity at all, and a VIF of no higher than 10. A thorough examination of the data used in this thesis shows there are no problems with multicollinearity. The tolerance values between the social assets and financial vulnerabilities' factors are all very close to 1.0, with VIF statistics marginally greater

than 1.0, showing that there are no instances of multicollinearity in the data used in this thesis.

There is the assumption of normality. Each of the three dependent variables used in this thesis are continuous and normally distributed. The assumption of normality extends to the distribution of the sample too (Field, 2009). Having a large sample size makes it more likely that the sample is normally distributed: given the size of the sample in GUS, it is presumed that this thesis does not violate the assumption of normality. A further key assumption is that of linearity. The data used in this thesis does not violate the assumption of linearity.

There is also the assumption of independence, which means that the data from different respondents are independent. Using GUS data we cannot be sure that the data from the respondents do not relate to each other due to the complex sample design as set out in chapter five. The primary sampling unit (PSU) of GUS is based on a clustered sample which means that people living within each cluster are more likely to have similarities, i.e. not adhere to the assumptions of independence, than a completely random sample. This can result in inflated standard errors (Stata, 1985-2011). To overcome this weakness in the data, robust standard errors can be calculated and the complex sample taken into account. In Stata, this is done using the –svyset- command which applies a series of weights and corrections for the type of sample used. This technique will be applied to this thesis, producing robust standard errors and accurate coefficients. There are no other anticipated weaknesses in the data as regards violations of regression assumptions from using GUS.

6.5 Conclusion

The chapter concludes that the most appropriate method to reduce the multiple observed variables measuring social assets and financial vulnerabilities into their underlying latent constructs is Exploratory Factor Analysis (EFA) with categorical data using Stata version 12. In order to provide an initial exploration of children's CSEB outcomes, mothers' social assets and their financial vulnerabilities, with the multiple dimensions of economic disadvantage, at the start of each of the relevant

findings chapters, simple linear regression with quasi variance to produce a table of Wald statistics to compare the categories of the categorical variables is used. To explore the magnitude and direction of the impacts of multiple dimensions of economic disadvantage, mothers' social assets and their financial vulnerabilities on children's CSEB outcomes, while holding impacts of the control variables constant, OLS multiple regression is the most appropriate technique to apply. In order to ascertain whether mothers' social assets and financial vulnerabilities vary across the income inequality spectrum, interaction effects in the OLS multiple regression models are the most suitable technique.

6.6 Remainder of the thesis

Following on from this chapter on methodology are three findings chapters and the conclusions chapter. Chapter seven explores the impacts of multiple dimensions of economic disadvantage on children's CSEB outcomes. Chapter eight explores the impacts of mothers' social assets on children's CSEB outcomes for children across the income inequality spectrum both with and without material deprivation. Chapter nine explores the impacts of mothers' financial vulnerabilities on children's CSEB outcomes for children across the income inequality spectrum both with and without material deprivation. Chapter ten concludes the thesis and discusses its implications in relation to theory, policy and practice before discussing the limitations of the research and suggesting pertinent areas of future research.

7 Money matters? Exploring the impacts of multidimensional poverty on children's CSEB outcomes

7.1 Introduction

This chapter seeks to understand different dimensions of poverty and focuses on four measures specifically: longitudinal income poverty; material deprivation; longitudinal income poverty and material deprivation combined; and longitudinal income *inequality;* to test whether income and material deprivation have an individual and combined association with children's cognitive, social, emotional and behavioural (CSEB) developmental outcomes. Longitudinal income poverty and longitudinal income inequality are compared to examine if these income-based variables have a differential association with children's CSEB developmental outcomes, and whether the substantive interpretation of the impact of income poverty and income inequality differs using one measure rather than the other. The rationale for and composition of these three variables measuring economic disadvantage is fully described in chapter five. This chapter addresses research question one at the end of chapter four:

What impacts do multiple dimensions of economic disadvantage, as measured by longitudinal income poverty, material deprivation and longitudinal income inequality, have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes in Scotland?

7.2 Analysis

As described in chapter five, section 5.4, multiple dimensions of economic disadvantage have been calculated. The first is longitudinal income poverty, calculated using below 60% median equivalised income, which has four poverty typologies: no poverty; transient poverty; recurrent poverty; and persistent poverty. The second is material deprivation, calculated, after a comparison with the UK government method of prevalence weighting, using the PSE method of a direct count of items of deprivation with a threshold of four or more items indicating the presence of material deprivation, as set out in section 5.4.1. The third dimension of economic

disadvantage is longitudinal income inequality, which takes the average of income over the five sweeps of data and divides it into quintiles. Persistent low income is measured by the lowest quintile (Q1) and persistent high income by the highest quintile (Q5). Finally, a combined longitudinal low income and material deprivation variable is calculated, which combines the 4 longitudinal poverty typologies at 70% median equivalised income, in keeping with the measures used by the government described in section 2.4.6, with material deprivation. This results in a variable which has eight categories comprising the four poverty typologies (<70% median equivalised income) with and without material deprivation.

7.3 Descriptive statistics

The proportions of these four dimensions of economic disadvantage in the GUS data are displayed in table 7.1.

Table 7.1 Proportions of poverty dimensions in GUS

Measures of poverty	Count	Households (%)
Longitudinal income inequality		
Quintile 1 (lowest)	713	19.79
Quintile 2	772	21.42
Quintile 3	719	19.95
Quintile 4	723	20.05
Quintile 5 (highest)	677	18.78
Longitudinal income poverty (60% e. m. i.)		
Non-poor	1969	54.64
Transient poverty	412	11.43
Recurrent poverty	467	12.96
Persistent poverty	756	20.97
Material deprivation:		
Deprived	733	20.21
Not deprived	2894	79.79
Income poor (70% e. m. i.) and materially deprived		
Neither poverty nor material deprivation	1557	47.36
Material deprivation, no poverty	107	3.26
Transient poverty, no material deprivation	338	10.30
Transient poverty plus material deprivation	47	1.43
Recurrent poverty no material deprivation	331	10.07
Recurrent poverty plus material deprivation	106	3.22
Persistent poverty no material deprivation	399	12.15
Persistent poverty plus material deprivation	401	12.21

Counts and percentages based on weighted data
Sweep 5 longitudinal weight and survey weights used
Material deprivation sweep 4 cross-sectional weight and survey weights used
Source: GUS sweeps 1 to 5
N at sweep 4 = 3,994; N at sweep 5 = 3,833
Multidimensional measures of poverty as described from page 101

Table 7.1 shows that almost 17% of families in the GUS study are living in some type of income poverty and material deprivation combined, with 12% of families living in *persistent* income poverty and material deprivation combined. Fewer people experience income poverty and material deprivation combined than they do income poverty on its own. This supports the evidence in chapter four that these measures are tapping into different facets of poverty and that direct and indirect measures of poverty together capture the multiple dimensions, and the dynamism, of poverty. Material deprivation in GUS increases the longer a family lives in poverty, as can be seen by the higher proportion of families living in material deprivation with either recurrent or persistent poverty, supporting the theory that income poverty and material deprivation do not have a greater overlap when measured cross-sectionally

due to the lagged effects of income poverty on living standards and that the longer time spent living in poverty results in deeper levels of material deprivation as hypothesised by Pantazis et al (2006) in chapter two.

What is key to this variable is that it not only combines longitudinal income poverty and material deprivation, it also separates them out. There are longitudinal poverty categories in table 7.1 that exclude material deprivation, which is not the case with the ordinary longitudinal poverty variable. This allows for the impact of longitudinal income poverty without material deprivation; material deprivation with no poverty; and longitudinal income poverty combined with material deprivation, to be explored separately.

The remainder of this chapter tests whether these multiple dimensions of poverty have a differential impact to the one associated with income poverty alone. The hypotheses posit that, when combined, low income and material deprivation are associated with lower scores on the CSEB outcomes than income poverty on its own. The two methods used to examine the size and the significance of the impacts of multidimensional poverty on children's CSEB outcomes are: simple regressions with quasi variance for each of the 3 outcome variables with multidimensional poverty measures to examine the difference between the categories *within* each dimension of poverty; and OLS multiple regression models to understand the differences *between* the different dimensions of poverty, separately and combined, to ascertain whether the substantive interpretation changes compared to using longitudinal income poverty alone.

Table 7.2 Means of dependent variables with multidimensional measures of poverty

Measures of poverty	Naming vocabulary	Picture similarities	SEB
Longitudinal income poverty (60% e. m. i.)			
Non-poor	0.178	0.099	0.167
Transient poverty	-0.084	-0.024	-0.056
Recurrent poverty	-0.390	-0.248	-0.440
Persistent poverty	-0.485	-0.265	-0.486
Longitudinal income inequality:			
Quintile 1 (lowest)	-0.551	-0.298	-0.569
Quintile 2	-0.227	-0.152	-0.250
Quintile 3	0.042	0.026	0.054
Quintile 4	0.177	-0.001	0.100
Quintile 5 (highest)	0.264	0.269	0.322
Material deprivation:			
Deprived	-0.378	-0.208	-0.521
Not deprived	0.023	0.015	0.065
Income poor (70% e. m. i.) and materially deprived			
Neither poverty nor material deprivation	0.205	0.118	0.224
Material deprivation, no poverty	0.061	-0.012	-0.159
Transient poverty, no material deprivation	0.044	0.052	0.120
Transient poverty plus material deprivation	-0.049	-0.081	-0.232
Recurrent poverty no material deprivation	-0.196	-0.090	-0.179
Recurrent poverty plus material deprivation	-0.485	-0.297	-0.738
Persistent poverty no material deprivation	-0.389	-0.209	-0.150
Persistent poverty plus material deprivation	-0.463	-0.225	-0.575

Sweep 5 longitudinal weight and survey weights used
Source: GUS sweeps 1 to 5
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101
Mean of 3 outcome variables = 0
N = 3,833

Table 7.2 gives the means of each of the three outcome variables by longitudinal income poverty, longitudinal income inequality and longitudinal income poverty/material deprivation combined. The scores on the three outcome variables are comparable because they have been standardised and the SEB score has been reordered so that the scores go in the same direction as the two cognitive ability scores. The mean of the three dependent variables is zero, with lower than mean scores (negative) meaning poorer development and higher than mean scores (positive) meaning better development.

The first table partial gives the mean scores for longitudinal income poverty. It appears that the number of years that a child lives in income poverty is associated with lower levels of development on all three of the developmental outcome measures. Only those who have never been poor have development that is some way above the mean. For those with only a single episode of poverty children's development on the three measures is close to the mean. With increasing lengths of time spent in poverty lower levels of development on these measures occur. The potentially problematic relationship suggested between persistent and recurrent poverty categories of the longitudinal income poverty variable as outlined in chapter five, i.e. that due to missing data in one or more sweeps of the data, those who are persistently poor may be categorised as recurrently poor, may result in these two categories not being significantly different from each other, appears to be substantiated. Although there seems to be a lack of distinction between these two categories, particularly for picture similarities and SEB, the scores do suggest that increasing length of time living in poverty is associated with lower CSEB development.

There is no such problem in differentiating between the categories for the longitudinal income inequality variable in the second table partial. For a child living in persistently low income, i.e. the lowest 20% of income across the five year period, his/her CSEB outcomes are very low, even lower than those for recurrent/persistent poverty in the first partial. There is a tapering incremental increase across the quintiles for two of the three outcome variables, naming vocabulary and SEB; picture similarities, in contrast, appears to have low scores for the lowest two income quintiles and high scores for the highest income quintile. There is no gradual increase in scores across the income quintiles as is evident for naming vocabulary and SEB development. For all three developmental outcomes, only the lowest two income quintiles have development below the mean of all children.

The third table partial shows that those who are materially deprived have lower than average scores across the three variables, with SEB being particularly low. The fourth table partial gives the means by income poverty and material deprivation combined. This plot indicates that the mean score for SEB development is lower for those living in material deprivation than it is for those living in transient poverty, and is much lower for those living in recurrent and persistent income poverty and material deprivation combined compared to recurrent and persistent income poverty only. This suggests that material deprivation is having a strong impact on SEB developmental outcomes. This relationship does not appear to hold for either of the two cognitive development variables suggesting that income and not material deprivation may be relevant to these variables.

The suggested relationship is that material deprivation does not have an additional impact over and above the one noted for income poverty alone for picture similarities or naming vocabulary, but that for SEB development material deprivation has a separate, additional impact. This will now be tested statistically using a simple regression technique with quasi variance to test the differences between the categories within each dimension of poverty.

7.4 Multiple dimensions of poverty and CSEB outcomes

7.4.1 Longitudinal income poverty

To establish if the relationship between the categories of each of the three dimensions of poverty that have multiple categories - longitudinal income poverty, longitudinal income inequality and longitudinal income poverty/material deprivation combined - is of statistical significance for the three outcome variables - cognitive, social, emotional and behavioural (CSEB) development - simple regression analyses using quasi variance is used. Wald tests using the quasi variance and coefficients are used to test for significance between the categories within each dimension. There follows three subsections presenting these simple regression models and Wald tests for each dimension of poverty with the CSEB outcome variables.

Table 7.3 Simple regression with quasi variance for longitudinal income poverty and CSEB outcomes

	Coef.	Std. Err.	t	P>t	Quasi Variance	CI_qv lower	CI_qv upper
Naming vocabulary:							
No poverty (ref)	-	-	-	-	0.001	-0.062	0.062
Transient poverty	-0.2620	0.062	-4.22	0.000	0.002	-0.350	-0.174
Recurrent poverty	-0.5682	0.064	-8.93	0.000	0.005	-0.707	-0.430
Persistent poverty	-0.6624	0.052	-12.72	0.000	0.003	-0.770	-0.555
constant	0.1778	0.024	7.44	0.000	-	-	-
r^2	0.079						
N	3505						
df_r	65						
Picture similarities:							
No poverty (ref)	-	-	-	-	0.001	-0.062	0.062
Transient poverty	-0.1236	0.057	-2.18	0.033	0.002	-0.211	-0.036
Recurrent poverty	-0.3476	0.073	-4.75	0.000	0.004	-0.472	-0.224
Persistent poverty	-0.3646	0.051	-7.1	0.000	0.002	-0.452	-0.277
constant	0.0992	0.028	3.5	0.001	-	-	-
r^2	0.026						
N	3502						
df_r	65						
SEB:							
No poverty (ref)	-	-	-	-	0.001	-0.062	0.062
Transient poverty	-0.2226	0.058	-3.87	0.000	0.002	-0.310	-0.135
Recurrent poverty	-0.6069	0.079	-7.66	0.000	0.005	-0.745	-0.468
Persistent poverty	-0.6530	0.062	-10.58	0.000	0.003	-0.760	-0.546
constant	0.1669	0.020	8.47	0.000	-	-	-
r^2	0.080						
N	3562						
df_r	65						

Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

Increasing poverty is associated with a decrease in coefficients, since for each variable each category shows a negative coefficient in relation to the reference category as shown in table 7.3. For naming vocabulary, the relationship appears to be incrementally detrimental as the length of time spent living in poverty corresponds to increasingly large negative coefficients. For picture similarities, there is not an incremental increase with length of time of living in poverty, rather there appears to be a dichotomous divide between those in recurrent/persistent poverty and those in

transient/no poverty. So length of time is important but not incrementally so. Children living in persistent poverty have naming vocabulary and SEB development that is approximately 0.65 of a standard deviation lower than those who have never lived in poverty. This is a large coefficient which is almost double the one found for picture similarities. Clearly, the length of time child spends in income poverty is associated with increasingly poor CSEB development. To ascertain whether these differences are statistically significant, Wald tests are carried out and the results presented in table 7.4.

Table 7.4 Wald tests for longitudinal poverty with CSEB outcomes

Longitudinal income poverty:	No poverty	Transient poverty	Recurrent poverty
Naming vocabulary:			
Transient poverty	22.89***		
Recurrent poverty	53.81***	13.39***	
Persistent poverty	109.70***	32.06***	1.11
Picture similarities:			
Transient poverty	5.09*		
Recurrent poverty	24.17***	8.37 ***	
Persistent poverty	44.30***	14.52***	0.05
SEB:			
Transient poverty	16.51***		
Recurrent poverty	61.38***	21.10***	
Persistent poverty	106.60***	37.05***	0.27

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

For naming vocabulary in table 7.4 almost all of the longitudinal income poverty categories are statistically different from each other, showing that the longer a child has lived in poverty the more detrimental the association with his/her naming vocabulary ($p \leq 0.001$). There is no statistically significant difference between the recurrent and persistent poverty categories, as anticipated in the data chapter, which is likely to be an artefact of how this variable was constructed. For picture similarities, there is a difference in scores between those who are non-poor and those who live in transient poverty that is only just statistically significant, but a much more strongly significant difference between no poverty/transient poverty and

recurrent/persistent poverty. As anticipated by the construct of the variable, there is no difference between those living in recurrent and persistent poverty. For SEB development in table 7.4, the impacts of living in longitudinal income poverty are as strong and as incrementally detrimental over time as they are for naming vocabulary, with the same caveat applicable for recurrent and persistent poverty.

7.4.2 Longitudinal income inequality

Longitudinal income inequality is a variable derived to show the differences, if any, between children who have spent their lives in persistently low and persistently high incomes. Table 7.5 presents the regression models with quasi variance and table 7.6 the Wald tests for the differences between the categories of longitudinal income inequality.

Table 7.5 Simple regression with quasi variance for longitudinal income inequality and the three dependent variables

	Coef.	Std. Err.	t	P>t	Quasi Variance	Cl_qv lower	Cl_qv upper
Naming vocabulary:							
Quintile 1	-	-	-	-	0.003	-0.107	0.107
Quintile 2	0.3236	0.066	4.90	0.000	0.002	0.236	0.411
Quintile 3	0.5927	0.065	9.16	0.000	0.001	0.531	0.655
Quintile 4	0.7281	0.066	11.05	0.000	0.001	0.666	0.790
Quintile 5	0.8142	0.075	10.88	0.000	0.002	0.727	0.902
constant	-0.5506	0.057	-9.66	0.000	-	-	-
r^2	0.083						
N	3505						
df_r	65						
Picture similarities:							
Quintile 1	-	-	-	-	0.003	-0.107	0.107
Quintile 2	0.1457	0.076	1.92	0.060	0.003	0.038	0.253
Quintile 3	0.3243	0.065	4.96	0.000	0.001	0.262	0.386
Quintile 4	0.2968	0.059	5.02	0.000	0.001	0.235	0.359
Quintile 5	0.5666	0.069	8.26	0.000	0.002	0.479	0.654
constant	-0.2981	0.059	-5.04	0.000	-	-	-
r^2	0.034						
N	3502						
df_r	65						
SEB:							
Quintile 1	-	-	-	-	0.004	-0.124	0.124
Quintile 2	0.3192	0.076	4.22	0.000	0.002	0.232	0.407
Quintile 3	0.6232	0.080	7.79	0.000	0.001	0.561	0.685
Quintile 4	0.6690	0.073	9.16	0.000	0.001	0.607	0.731
Quintile 5	0.8916	0.073	12.17	0.000	0.001	0.830	0.954
constant	-0.5695	0.063	-9.06	0.000	-	-	-
r^2	0.088						
N	3562						
df_r	65						

Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

In table 7.5, the models show a highly statistically significant association between longitudinal income inequality and all three CSEB outcome variables, with p values less than 0.001, and with increasingly large positive coefficients as income increases. For naming vocabulary, there is greater variation in coefficient sizes in the lower income quintiles than in the higher income quintiles. For picture similarities the

coefficient for income quintile five is much higher than the others, suggesting that the differences in picture similarities appear to be happening at the higher end of the income inequality spectrum. For SEB, there is an incremental spread of increasing scores with increasing income, except for quintiles three and four which are very similar, suggesting that the scores are different for the persistently poor and persistently wealthy.

Table 7.6 Wald tests for longitudinal income inequality with the three dependent variables

Longitudinal income inequality:	Quintile 1	Quintile 2	Quintile 3	Quintile 4
Naming vocabulary:				
Quintile 2	20.95***			
Quintile 3	87.83***	24.14***		
Quintile 4	132.52***	54.53***	9.16***	
Quintile 5	132.58***	60.17***	16.35***	2.47
Picture similarities:				
Quintile 2	3.54			
Quintile 3	26.29***	7.97***		
Quintile 4	22.03***	5.71*	0.300	
Quintile 5	64.20***	35.43***	19.57***	24.26***
SEB:				
Quintile 2	16.98***			
Quintile 3	77.68***	30.81***		
Quintile 4	89.52***	40.80***	1.05	
Quintile 5	159.00***	109.23***	36.02***	24.78***

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

The top partial of table 7.6 shows that for naming vocabulary, children living in persistently low income, i.e. the lowest 20% of income across five years have significantly different naming vocabulary scores than children in all the other income quintiles. This pattern is the same for children in all the other income quintiles with the exception of those living in the highest two income quintiles (4 and 5): they are not different from each other. This indicates that differences in naming vocabulary lie at the lower end of the income inequality spectrum rather than the higher end.

For picture similarities, there are no differences in scores between income quintiles one and two, three and four, and only just a significant difference between quintiles two and four. Income quintile five is statistically different from all the other quintiles, i.e. only those children living in persistent high income across all five years have picture similarity scores that are significantly different from all the other income quintiles. The differences in picture similarities appear to be happening at the higher end of the income inequality spectrum rather than at the lower end, in contrast with naming vocabulary. This may explain why picture similarities have not been responsive to the socio-demographic characteristics used as control variables, which are associated with lower socioeconomic status, in previous research. Previous research has tended to focus on poverty and low socioeconomic status; whereas the income inequality variable in this research allows the impact of high socioeconomic status to be studied. It may be that high levels of picture similarities are a function of high rather than low income.

For SEB development, there is a statistically significant difference between all income quintiles except between quintiles three and four. The differences in coefficient are increasingly large, from 0.3 of a standard deviation between quintiles one and two, to 0.86 of a standard deviation difference between quintiles one and five. Thus, the differences are relatively evenly spread, with increasing levels of SEB development being found from the lower to the higher ends of the income inequality spectrum.

Longitudinal income inequality is an interesting variable that provides more detail and differentiation than longitudinal income poverty. This is likely to be because longitudinal income poverty is constructed from combining five binary poverty/no poverty variables which reduces all the information contained in the continuous income measure into a dichotomy and removes the gradations and variations therein. Longitudinal income inequality, by contrast, manages to capture these gradations and variations rendering it an informative variable.

7.4.3 Longitudinal income poverty and material deprivation combined

For material deprivation on its own, those children who live in material deprivation have lower levels of CSEB development than those who do not. The t-test statistics for all three outcome variables and material deprivation on its own are significant at $p \leq 0.001$ (table not shown). This section tests the impact of material deprivation and longitudinal income poverty combined. Table 7.7 gives the results of the simple regression with quasi variance and table 7.8 gives the Wald statistics to test the differences between the categories of the combined income and material deprivation variable with the three outcome variables.

Table 7.7 Longitudinal income poverty/material deprivation combined

	Coef.	Std. Err.	t	P>t	Quasi Variance	CI_qv lower	CI_qv upper
Naming vocabulary:							
Neither poverty nor MD	-	-	-	-	0.001	-0.062	0.062
Material deprivation only	-0.1107	0.100	-1.1	0.274	0.008	-0.286	0.065
Transient poverty only	-0.1606	0.064	-2.51	0.015	0.003	-0.268	-0.053
Transient poverty plus MD	-0.2997	0.140	-2.14	0.036	0.019	-0.570	-0.030
Recurrent poverty only	-0.4333	0.066	-6.52	0.000	0.004	-0.557	-0.309
Recurrent poverty plus MD	-0.8083	0.160	-5.04	0.000	0.022	-1.099	-0.518
Persistent poverty only	-0.6491	0.077	-8.41	0.000	0.005	-0.788	-0.511
Persistent poverty plus MD	-0.6706	0.069	-9.74	0.000	0.004	-0.795	-0.547
constant	0.1942	0.027	7.21	0.000	-	-	-
r^2	0.081						
N	3223						
df_r	65						
Picture similarities:							
Neither poverty nor MD	-	-	-	-	0.001	-0.062	0.062
Material deprivation only	-0.1523	0.075	-2.02	0.048	0.006	-0.304	0.000
Transient poverty only	-0.0705	0.059	-1.19	0.237	0.003	-0.178	0.037
Transient poverty plus MD	-0.2642	0.145	-1.82	0.073	0.02	-0.541	0.013
Recurrent poverty only	-0.2670	0.081	-3.29	0.002	0.005	-0.406	-0.128
Recurrent poverty plus MD	-0.4607	0.167	-2.76	0.008	0.025	-0.771	-0.151
Persistent poverty only	-0.4040	0.090	-4.46	0.000	0.008	-0.579	-0.229
Persistent poverty plus MD	-0.3437	0.081	-4.24	0.000	0.006	-0.496	-0.192
constant	0.1169	0.032	3.66	0.001	-	-	-
r^2	0.028						
N	3221						
df_r	65						
SEB:							
Neither poverty nor MD	-	-	-	-	0.001	-0.062	0.062
Material deprivation only	-0.3752	0.100	-3.75	0.000	0.011	-0.581	-0.170
Transient poverty only	-0.1104	0.062	-1.77	0.081	0.003	-0.218	-0.003
Transient poverty plus MD	-0.4115	0.153	-2.69	0.009	0.025	-0.721	-0.102
Recurrent poverty only	-0.4615	0.089	-5.2	0.000	0.007	-0.626	-0.298
Recurrent poverty plus MD	-0.9124	0.144	-6.36	0.000	0.019	-1.183	-0.642
Persistent poverty only	-0.4484	0.085	-5.25	0.000	0.006	-0.600	-0.297
Persistent poverty plus MD	-0.8086	0.077	-10.5	0.000	0.005	-0.947	-0.670
constant	0.2050	0.021	9.54	0.000	-	-	-
r^2	0.089						
N	3274						
df_r	65						

Source: GUS sweeps 1 to 5 Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

Table 7.7 shows that for naming vocabulary, living in transient poverty with no material deprivation has a greater negative coefficient than living in material deprivation alone, suggesting that income is the dominant of these two poverty domains. Each subsequent level of poverty without material deprivation has an increasingly high negative coefficient; however, when material deprivation is combined with transient and recurrent income poverty, the coefficients almost double in size, indicating that income and material deprivation have an additive association with naming vocabulary. There is little change in the coefficients for persistent poverty with and without material deprivation, which suggests that there is a 'floor', below which the deepest levels of poverty and material deprivation combined do not continue to have an additive impact. For picture similarities, the pattern is the same as that for naming vocabulary.

For SEB development, the story is different. The SEB developmental outcome of a child is on average 0.38 of a standard deviation lower when material deprivation is present, even when there is no incidence of income poverty. For each poverty typology, the addition of material deprivation is associated with a doubling of coefficients, even for persistent poverty, indicating that there is no 'floor' to the cumulative association of income and material deprivation, as there was for cognitive development. Instead, with the presence of material deprivation, the coefficients for children's SEB continue to be cumulatively negative.

Table 7.8 Wald tests for longitudinal poverty and material deprivation combined with the three dependent variables

Poverty and material deprivation (MD) combined:	Neither poverty nor MD	Material deprivation only	Transient poverty only	Transient poverty plus MD	Recurrent poverty only	Recurrent poverty plus MD	Persistent poverty only
Naming vocabulary:							
Material deprivation only	1.36						
Transient poverty only	6.45*	0.23					
Transient poverty plus MD	4.49*	1.32	0.57				
Recurrent poverty only	37.55***	8.67***	3.91*	0.78			
Recurrent poverty plus MD	28.41***	16.22***	11.34***	6.31*	5.41*		
Persistent poverty only	70.23***	22.30***	11.93***	5.09*	5.17*	0.94	
Persistent poverty plus MD	89.95***	26.12***	13.69***	5.98*	7.04***	0.73	0.05
Picture similarities:							
Material deprivation only	3.31						
Transient poverty only	1.24	0.74					
Transient poverty plus MD	3.32	0.48	1.63				
Recurrent poverty only	11.88***	1.2	4.82*	0			
Recurrent poverty plus MD	23.59***	3.07	13.84***	1.38	1.25		
Persistent poverty only	18.14***	4.53*	10.11***	0.7	1.45	0.13	
Persistent poverty plus MD	16.88***	3.05	8.30***	0.24	0.54	0.44	0.26
SEB:							
Material deprivation only	11.73***						
Transient poverty only	3.05	5.01*					
Transient poverty plus MD	16.94 ***	0.04	3.24				
Recurrent poverty only	26.63***	0.41	12.33***	0.08			
Recurrent poverty plus MD	41.62***	9.62***	29.23***	5.70*	7.82***		
Persistent poverty only	28.72***	0.31	12.69***	0.04	0.01	8.61***	
Persistent poverty plus MD	108.97***	11.74***	60.93***	5.25*	10.04***	0.45	11.79***

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Source: GUS sweeps 1 to 5; Sweep 5 longitudinal weight and survey weights applied

N = 3,223 to 3,274; Dependent variables as described from page 95; Multidimensional measures of poverty as described from page 101

Table 7.8 presents the results for the Wald tests for the three dependent variables with longitudinal income poverty and material deprivation combined. For naming vocabulary, there is no statistically significant difference between no poverty/material deprivation and material deprivation only. Nor is there any statistically significant difference between material deprivation only and transient poverty with or without material deprivation. The statistically significant differences only emerge at the deeper levels of poverty, recurrent poverty without material deprivation, which differs from recurrent poverty with material deprivation, and from persistent poverty with or without material deprivation. Looking at the deeper levels of poverty, there is no statistically significant difference between recurrent poverty with material deprivation and persistent poverty with or without material deprivation. Thus, levels of income poverty are most importantly associated with naming vocabulary and material deprivation has little accumulative impact in combination with it. Thus, for naming vocabulary, the null hypothesis for hypothesis number two of research question one, that multiple measures of poverty combined have no differential impact on cognitive development compared to income poverty alone, cannot be rejected.

For picture similarities there are no statistically significant differences between income poverty and material deprivation. Instead, it is the length of time spent living in income poverty that has greatest statistical significance, indicating that cognitive development is highly associated with income, but not with material deprivation on its own. Thus, for picture similarities, the null hypothesis for hypothesis number two of research question one, that multiple measures of poverty combined have no differential impact on cognitive development compared to income poverty alone, cannot be rejected.

For SEB development, the pattern is not the same as for cognitive development. There is a very strong statistically significant association between SEB and income, and between SEB and material deprivation on its own. This is a very strong statistically significant additive association between income and material deprivation that occurs right across the durations of poverty (with the exception of transient

poverty), from no poverty to persistent poverty, providing quantitative evidence to support the qualitative findings that material deprivation is very strongly associated with children's SEB development. The coefficient for persistent poverty and SEB development is -0.45 of a standard deviation, while the one for persistent poverty with material deprivation is -0.81, a difference that is statistically significant at $p \leq 0.001$. While income is also strongly associated with lower SEB development, when material deprivation is removed from the equation, the differences between income categories do not become statistically significant until children have been living in recurrent or persistent poverty. This allows the first hypothesis of research question one, that material deprivation and income poverty are having separate and cumulative impacts on SEB development, to be accepted. This result for SEB development is very pronounced and worthy of note.

This result was not expected to be so strong or so statistically significant due to the young ages of the children in the study. The literature in chapter four shows that qualitative research with older children indicates that material deprivation affects their wellbeing, self-esteem, confidence, ability to participate in peer activities, and can result in shame and stigma - which would explain the negative association between material deprivation and SEB outcomes. However, for children this young, many of these suggested causal pathways would not be expected to be discernible yet and the children's understanding of participation in social and leisure activities would be expected to be low. So, why is material deprivation so strongly associated with lower SEB development in children this young?

Previous qualitative research I have undertaken, which informed the topic and design of this study, suggests that children are aware of, and adversely affected by, the financial vulnerability experienced by their mothers. In children this young, this association is thought to operate through maternal wellbeing, psychosocial stress and mental health, all of which are suggested to have a detrimental impact on parent/child warmth, relationships, conflict and parenting. Given that this chapter shows that material deprivation is strongly associated with SEB development, and the children are so young, this would support the idea that the negative impacts of

material deprivation are indirect, mediated perhaps by maternal mental health and/or parenting.

For persistent poverty and the cognitive development variables, there is no difference between persistent poverty with material deprivation and persistent poverty without material deprivation for naming vocabulary; the coefficients are almost exactly the same and they are both significant to $p < 0.001$. This pattern is repeated for picture similarities. This does indicate that for cognitive development, income over time, in particular persistent income poverty, is more highly significantly associated with cognitive development than material deprivation.

7.4.4 Exploring CSEB outcomes with multiple dimensions of poverty and wider sociodemographic variables

The simple regression models with quasi variance show that CSEB outcomes are significantly associated with income poverty, income inequality and material deprivation and results on each category of income poverty and income inequality individually are presented. What these models do not provide information on are the wider sociodemographic variables indicated to be associated with CSEB outcomes in the literature and discussed in chapter five. To investigate the impacts of multiple dimensions of poverty while accounting for the impacts of the sociodemographic control variables, I will use OLS multiple regression analysis, as set out in chapter six.

The following sections look at each dependent variable separately and each of the following tables comprise five models that look at the impacts of: a sociodemographic model only (model 1); with longitudinal income poverty added (model 2); with longitudinal income poverty and material deprivation combined added (model 3); with longitudinal income inequality added (model 4) and with longitudinal income inequality and material deprivation added (model 5).

Table 7.9 Naming vocabulary and multidimensional poverty

	model 1	model 2	model 3	model 4	model 5
Birth order (ref: first born)	-0.329***	-0.237***	-0.238***	-0.213***	-0.211***
	(0.040)	(0.039)	(0.043)	(0.040)	(0.044)
Sex of child (ref: female)	-0.166**	-0.172***	-0.161**	-0.169***	-0.155**
	(0.049)	(0.048)	(0.050)	(0.048)	(0.050)
Ethnicity of mother (ref: White)	-0.927***	-0.695***	-0.755***	-0.697***	-0.754***
	(0.179)	(0.151)	(0.181)	(0.146)	(0.180)
Longitudinal family composition (ref: stable couple family)					
Stable lone parent family	-0.272**	0.0380	0.0543	0.0546	0.0631
	(0.082)	(0.097)	(0.100)	(0.108)	(0.113)
Lone parent who repartnered	-0.264*	-0.0524	-0.0390	-0.106	-0.0955
	(0.107)	(0.105)	(0.107)	(0.105)	(0.108)
Couple who separated	-0.221**	-0.0423	-0.0791	-0.0767	-0.116
	(0.068)	(0.066)	(0.074)	(0.067)	(0.076)
Separations and repartnerings	-0.356*	-0.127	-0.122	-0.165	-0.163
	(0.140)	(0.154)	(0.171)	(0.154)	(0.170)
Maternal age at first birth (ref: 40 or over)					
30 to 39	-0.0743	-0.113	-0.0621	-0.104	-0.0578
	(0.124)	(0.125)	(0.128)	(0.122)	(0.125)
20 to 29	-0.284*	-0.222	-0.166	-0.205	-0.149
	(0.126)	(0.127)	(0.129)	(0.125)	(0.128)
Under 20	-0.489*	-0.324	-0.242	-0.281	-0.205
	(0.199)	(0.199)	(0.199)	(0.191)	(0.192)
Maternal Education (ref: Degree)					
Vocational qualification below degree	-0.0736	-0.0822	-0.0717	-0.0838	-0.0773
	(0.050)	(0.048)	(0.053)	(0.048)	(0.053)
Higher Grade or equivalent	-0.0249	-0.0185	-0.0103	-0.0167	-0.0142
	(0.067)	(0.068)	(0.072)	(0.067)	(0.070)
Standard Grade or equivalent	-0.153*	-0.145*	-0.0971	-0.146*	-0.105
	(0.062)	(0.060)	(0.064)	(0.058)	(0.064)
Other	0.259	0.244	0.323	0.256	0.303
	(0.258)	(0.253)	(0.291)	(0.270)	(0.307)
No Qualifications	-0.139	-0.152	-0.129	-0.161	-0.148
	(0.098)	(0.094)	(0.097)	(0.091)	(0.093)
Longitudinal income poverty (ref: no poverty)					
Transient poverty		-0.227**	-0.249**		
		(0.070)	(0.076)		
Recurrent poverty		-0.497***	-0.496***		
		(0.067)	(0.077)		
Persistent poverty		-0.538***	-0.534***		
		(0.073)	(0.092)		
Material deprivation			-0.0401		-0.0133
			(0.074)		(0.070)
Longitudinal income inequality (ref: highest quintile):					
Quintile 1				-0.655***	-0.659***
				(0.095)	(0.117)
Quintile 2				-0.393***	-0.431***
				(0.072)	(0.078)
Quintile 3				-0.134*	-0.152*
				(0.064)	(0.068)
Quintile 4				-0.0716	-0.0791
				(0.054)	(0.054)
Constant	0.539***	0.605***	0.538***	0.635***	0.579***
	(0.126)	(0.130)	(0.134)	(0.133)	(0.134)
r^2	0.094	0.124	0.126	0.123	0.125
N	2571	2557	2341	2557	2341

df_r	65	65	65	65	65

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

Approximately 10% of the variance in naming vocabulary is accounted for by the sociodemographic control variables when there is no poverty or income inequality in the model (model one in table 7.9). In this control variable only model all of the control variables are significant to a greater or lesser extent. In the existing literature on children's naming vocabulary, maternal education is a characteristic that is highly associated with this cognitive development variable, with Melhuish (2008, 2010) arguing that it is perhaps the most important factor. Here, however, only one category of maternal education, a mother having attained a standard grade education or equivalent, is statistically significantly associated with lower naming vocabulary compared to a mother with degree level education. Even the category 'no qualifications' has no statistically significant association with naming vocabulary. This lack of association with maternal education is unexpected and could be more easily understood if there were other socioeconomic variables, such as income poverty or social class, in the model. Here in the control variable only model it is surprising that maternal education lacks importance and significance. Melhuish noted in his earlier research using GUS that maternal education did not behave as expected in relation to children's cognitive development and he posited that this may be because maternal education may be closely related to socioeconomic inequalities. However, in this control variable only model there are no other socioeconomic variables with which to confound maternal education and yet it is only significant in this one category, and then, only at the 5% level. To try to understand what may be confounding maternal education, tests for multicollinearity were carried out (not shown) and the results showed that there were no problems of collinearity between income, maternal education or social class.

The relationships between the other control variables and the outcome variables are as expected from the literature. Children who are not the firstborn, boys, children of

non-white mothers, lone parent families, lone parents who re-partnered, couples who separated, those who have separated and re-partnered, and younger parents are sociodemographic characteristics that are associated with lower levels of naming vocabulary. However, when longitudinal income poverty is added to the model (model two), the longer a child has lived in poverty is highly significantly associated with incremental decreases in naming vocabulary scores, showing that the duration of poverty is very important. Living in persistent poverty is associated with more than 0.50 of a standard deviation decrease in naming vocabulary. Including longitudinal income poverty in the model also attenuates the impacts associated with family composition in the control variable only model, until they are reduced almost to zero. Now there are no differences between stable lone parents, lone parents who re-partnered and separated couples compared to stable couple families when economic circumstances are taken into account.

For maternal age at first birth, the negative impacts associated with being a younger mother in the control variable only model also lose their significance when longitudinal income poverty (model two), longitudinal income poverty and material deprivation (model three), longitudinal income inequality (model four) and longitudinal income inequality material deprivation (model five) are taken into account. This suggests that negative associations with non-couple families and younger mothers are statistically significantly associated with poverty and income inequality rather than with their family demographics per se.

As was the case in the simple regression with quasi variance tables, material deprivation is not statistically associated with naming vocabulary when longitudinal income poverty (model three) and longitudinal income inequality (model five) are present in the model. What is shown in table 7.9 is that naming vocabulary is statistically significantly associated with income, with incrementally poorer outcomes for those living with lower levels of income across time, using both the longitudinal income poverty and the longitudinal income inequality variables.

Table 7.10 Picture similarities and multidimensional poverty

	model 1	model 2	model 3	model 4	model 5
Birth order (ref: first born)	-0.146***	-0.0919*	-0.0954*	-0.0640	-0.0664
	(0.039)	(0.040)	(0.043)	(0.043)	(0.044)
Sex of child (ref: female)	-0.113*	-0.112*	-0.0826	-0.115*	-0.0821
	(0.046)	(0.046)	(0.047)	(0.046)	(0.046)
Ethnicity of mother (ref: White)	-0.120	-0.0170	-0.111	-0.0188	-0.119
	(0.126)	(0.126)	(0.129)	(0.118)	(0.124)
Longitudinal family composition (ref: stable couple family)					
Stable lone parent family	-0.221*	-0.0507	-0.0105	-0.0315	-0.0153
	(0.095)	(0.111)	(0.116)	(0.118)	(0.123)
Lone parent who repartnered	-0.189*	-0.0650	-0.0273	-0.0932	-0.0667
	(0.093)	(0.092)	(0.107)	(0.093)	(0.110)
Couple who separated	-0.120	-0.0157	-0.0342	-0.0346	-0.0587
	(0.077)	(0.078)	(0.090)	(0.076)	(0.087)
Separations and repartnerings	-0.121	0.0200	-0.0142	0.00888	-0.0316
	(0.103)	(0.103)	(0.115)	(0.106)	(0.115)
Maternal age at first birth (ref: 40 or over)					
30 to 39	-0.0278	-0.0375	-0.0467	-0.0324	-0.0424
	(0.086)	(0.090)	(0.097)	(0.088)	(0.095)
20 to 29	-0.146	-0.0968	-0.106	-0.0677	-0.0744
	(0.089)	(0.093)	(0.095)	(0.092)	(0.094)
Under 20	-0.153	-0.0535	-0.118	0.00114	-0.0667
	(0.168)	(0.170)	(0.191)	(0.168)	(0.188)
Maternal Education (ref: Degree)					
Vocational qual. below degree	-0.0167	-0.0211	-0.0168	-0.0206	-0.0207
	(0.049)	(0.048)	(0.051)	(0.048)	(0.050)
Higher Grade or equivalent	0.0970	0.109	0.115	0.122	0.122
	(0.062)	(0.063)	(0.066)	(0.063)	(0.066)
Standard Grade or equivalent	-0.178**	-0.181**	-0.158*	-0.180**	-0.161*
	(0.066)	(0.065)	(0.067)	(0.065)	(0.067)
Other	-0.0454	-0.0531	-0.0319	-0.0286	-0.0397
	(0.141)	(0.134)	(0.152)	(0.134)	(0.153)
No Qualifications	-0.0431	-0.0537	-0.0658	-0.0581	-0.0820
	(0.096)	(0.095)	(0.100)	(0.094)	(0.099)
Longitudinal income poverty (ref: no poverty)					
Transient poverty		-0.132	-0.129		
		(0.067)	(0.068)		
Recurrent poverty		-0.357***	-0.337***		
		(0.072)	(0.080)		
Persistent poverty		-0.282***	-0.299***		
		(0.076)	(0.084)		
Material deprivation			-0.0339		-0.00746
			(0.091)		(0.091)
Longitudinal income inequality (ref: highest quintile):					
Quintile 1				-0.510***	-0.483***
				(0.092)	(0.111)
Quintile 2				-0.423***	-0.442***
				(0.070)	(0.071)
Quintile 3				-0.174*	-0.166*
				(0.068)	(0.071)
Quintile 4				-0.303***	-0.274***
				(0.058)	(0.060)
Constant	0.254**	0.281**	0.279**	0.417***	0.405***
	(0.093)	(0.100)	(0.104)	(0.104)	(0.108)
r^2	0.024	0.037	0.036	0.045	0.044
N	2570	2556	2340	2556	2340

df_r	65	65	65	65	65

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

For picture similarities, the control variable only model without socioeconomic variables (model one in table 7.10) accounts for only 2.4% of the variation in the model. The control variables that are statistically significantly associated with lower picture similarities are: not being the first born, being a boy, coming from a stable lone parent family, coming from a lone parent who re-partnered, and having a mother educated up to standard grade level only. When longitudinal income poverty is added to the model (model two), recurrent and persistent poverty are highly significantly associated with lower picture similarities scores, but with little differentiation between them.

Looking at income inequality in model four, this variable is also highly significantly associated with picture similarities, with all categories being significantly different to income quintile five. This model was repeated (not shown) omitting different income quintile categories. What model four here indicates, that is substantiated by the repeated analyses with the changing reference categories, is that differentiation in this variable is in operation at the highest income level, which cannot be ascertained by the longitudinal income poverty variable in model two. That is to say that income quintile 5 is different from all the other income quintiles in a way that they are not different to each other. As indicated in the previous section, material deprivation is not statistically significantly associated with picture similarities.

In conclusion, picture similarities are very much associated with income, and income inequality reveals more differentiation than longitudinal income poverty, suggesting that those who have lived in persistently high income may have different levels of picture similarities than those who have lived in the other four income quintiles. This suggests that there is something different about families living in the highest income quintile across all five years that is statistically significantly associated with

children's picture similarities scores. Given that the second highest income quintile is different from the highest income quintile for picture similarities, this would indicate that it is not the family stress model outlined in chapter 3 that differentiates those living in persistently high income from everyone else, i.e. it is not likely to be a lack of financial stress that is driving this association. It is possible that the family investment model, whereby wealthier parents can command access to higher levels of education, income, cultural and social capital, resources and services to improve child development, could be used to explain the differentiation found for those living in persistently high income. This allows the third hypothesis of research question one, that using longitudinal income inequality rather than longitudinal income poverty will produce stronger associations with children's CSEB outcomes, to be partially accepted.

Table 7.11 SEB and multidimensional poverty

	model 1	model 2	model 3	model 4	model 5
Birth order (ref: first born)	-0.000930	0.0867	0.0829	0.141**	0.121*
	(0.048)	(0.047)	(0.051)	(0.047)	(0.050)
Sex of child (ref: female)	-0.273***	-0.279***	-0.281***	-0.276***	-0.281***
	(0.042)	(0.040)	(0.042)	(0.039)	(0.041)
Ethnicity of mother (ref: White)	-0.583***	-0.309*	-0.431**	-0.273*	-0.285*
	(0.133)	(0.125)	(0.134)	(0.131)	(0.126)
Longitudinal family composition (ref: stable couple family)					
Stable lone parent family	-0.346***	-0.0385	-0.0535	0.0364	0.0152
	(0.096)	(0.102)	(0.109)	(0.115)	(0.119)
Lone parent who repartnered	-0.290*	-0.0683	-0.0571	-0.0855	-0.0591
	(0.116)	(0.118)	(0.122)	(0.122)	(0.124)
Couple who separated	-0.318***	-0.140	-0.130	-0.144	-0.131
	(0.077)	(0.075)	(0.086)	(0.074)	(0.085)
Separations and repartnerings	-0.619***	-0.397**	-0.347**	-0.400**	-0.346**
	(0.116)	(0.115)	(0.117)	(0.120)	(0.119)
Maternal age at first birth (ref: 40 or over)					
30 to 39	0.0845	0.0592	0.0184	0.0603	0.0290
	(0.096)	(0.093)	(0.099)	(0.093)	(0.098)
20 to 29	-0.145	-0.0770	-0.136	-0.0343	-0.0913
	(0.094)	(0.093)	(0.102)	(0.093)	(0.101)
Under 20	-0.277	-0.0986	-0.186	-0.00810	-0.101
	(0.156)	(0.155)	(0.141)	(0.159)	(0.148)
Maternal Education (ref: Degree)					
Vocational qual. below degree	-0.0164	-0.0237	0.00187	-0.0254	-0.00452
	(0.055)	(0.052)	(0.048)	(0.051)	(0.047)
Higher Grade or equivalent	0.0406	0.0565	0.0659	0.0709	0.0755
	(0.076)	(0.074)	(0.076)	(0.075)	(0.078)
Standard Grade or equivalent	-0.0188	-0.00665	0.0352	-0.00709	0.0474
	(0.066)	(0.064)	(0.057)	(0.061)	(0.054)
Other	-0.0682	-0.0542	-0.0733	-0.0424	-0.0845
	(0.320)	(0.300)	(0.313)	(0.313)	(0.324)
No Qualifications	0.0772	0.0660	0.0670	0.0503	0.0397
	(0.103)	(0.097)	(0.099)	(0.095)	(0.099)
Longitudinal income poverty (ref: no poverty)					
Transient poverty		-0.244***			
		(0.069)			
Recurrent poverty		-0.477***			
		(0.086)			
Persistent poverty		-0.534***			
		(0.074)			
Longitudinal income poverty and material deprivation combined (ref: No poverty/no material deprivation)					
Material deprivation, no poverty			-0.336**		
			(0.117)		
Trans poverty, no material deprivation			-0.146		
			(0.079)		
Trans poverty plus material deprivation			-0.457*		
			(0.175)		
Recurrent poverty no material deprivation			-0.360***		
			(0.086)		
Recurrent poverty plus material deprivation			-0.795***		
			(0.131)		
Persistent poverty no material deprivation			-0.319**		
			(0.104)		
Persistent poverty plus material deprivation			-0.732***		
			(0.094)		

Longitudinal income inequality (ref: highest quintile):					
Quintile 1				-0.869***	-0.656***
				(0.102)	(0.128)
Quintile 2				-0.563***	-0.485***
				(0.072)	(0.077)
Quintile 3				-0.286***	-0.259***
				(0.061)	(0.065)
Quintile 4				-0.264***	-0.259***
				(0.055)	(0.057)
Material deprivation					-0.324***
					(0.070)
Constant	0.238*	0.293**	0.366***	0.431***	0.482***
	(0.092)	(0.090)	(0.096)	(0.092)	(0.101)
r^2	0.088	0.118	0.137	0.134	0.144
N	2612	2598	2387	2598	2376
df_r	65	65	65	65	65

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

For SEB development, not all of the variables suggested by the literature are significant in the control variable only model (model one in table 7.11); both maternal education and maternal age at first birth are completely insignificant for SEB. The control variable only model accounts for almost 9% of the variance in SEB. When longitudinal income poverty is entered into the model (model two), only one category of the family composition variable remains significant - separations and re-partnerings. This suggests that the negative associations attributed to different family compositions ceases to be significant when families' economic circumstances are added to the models. Although the significance of the category 'separations and re-partnerings' remain significant when longitudinal income poverty is entered into the model, its coefficients are reduced by approximately one third.

When longitudinal income poverty and material deprivation are combined (model three), the coefficients for income and material deprivation combined are far greater than that for income alone. The relationship found in the simple regression models remains when the control variables are present in the multivariate models. For recurrent and persistent poverty, the inclusion of material deprivation doubles the coefficient of these poverty categories alone. Recurrent poverty and material deprivation is associated with a 0.80 standard deviation reduction in SEB

development compared to 0.36 of a standard deviation reduction with recurrent poverty and no material deprivation.

Once again, longitudinal income inequality is a variable that provides more nuanced analysis than does longitudinal income poverty (model four). There is an incrementally negative association across the five income quintiles, resulting in quintile one being almost 0.9 of a standard deviation lower on SEB scores than income quintile five. Living in longitudinal income inequality also accounts for more variance in the model, 13.4% compared to 11.8% for longitudinal income poverty. When material deprivation is added to longitudinal income inequality, the variance explained increases to 14.4%. These models show that for SEB development, material deprivation has an additive impact on income, corresponding to the literature that the consequences of poverty, i.e. material deprivation, in addition to the lack of income associated with poverty, are detrimental to children's SEB development.

For SEB development, material deprivation is a key variable, significant on its own, with no income poverty at all, with $p < 0.001$. It has a coefficient (-0.336) that is greater than the coefficient of persistent poverty with no material deprivation (-0.319, $p<0.01$). When material deprivation is combined with recurrent and persistent poverty, the coefficients more than double; they leap from -0.360 to -0.795 for recurrent poverty, and from -0.319 to -0.732 for persistent poverty; all of which are significant at $p < 0.001$. The association between material deprivation and SEB development is also shown in the transient poverty category, which on its own is insignificant, but once material deprivation is combined with it, it becomes significant at the 0.05 level. This indicates that material deprivation is strongly associated with SEB outcomes, not only in conjunction with, but over and above, longitudinal income poverty.

This indicates that all three dimensions of poverty are significant for SEB development but that it is primarily income that is important for cognitive

development, noting the caveat in the earlier section that material deprivation does not collect any educational related items, which I return to in the discussion.

7.5 Discussion

Townsend's theory of relative deprivation posits that deprivation, although caused by lack of resources, is a distinct state and should be measured in its own right. Townsend's theory on the relationship between income poverty and material deprivation shows that together they result in an improved measure of poverty than does income alone, as combined they allow poverty to be measured both indirectly (income) and directly (living standards). The benefits of measuring poverty through standards of living are many, including that measuring material deprivation can circumnavigate the issue of intra-familial transfer commonly associated with measures of income; i.e. that higher levels of income earned by a partner may not be spent on a spouse or children, leaving them deprived but in such a way that income measures of poverty would not detect.

However, material deprivation is not without flaws. The major criticisms of material deprivation are that ultimately there is an element of choice in what to own, that those who are living in material deprivation may possess items that are considered non-essential and that people may choose not to have certain items, or may say they cannot afford them, even if their income indicates otherwise. Ergo, material deprivation without an associated measure of income poverty does not provide a robust or useful measure in and of itself. For these valid reasons, income and material deprivation are combined, which has been incorporated into the DWP's official child poverty measure.

The literature chapter emphasises that cognitive ability in the early years is associated with family income, with low income having a detrimental impact on it. Income in particular, rather than broader measures of economic inequality, is shown to be especially linked to cognitive development. The analysis in this chapter shows that for cognitive development, the association with longitudinal income poverty is very strong ($p < 0.001$) for naming vocabulary and picture similarities. The impact

of income poverty combined with material deprivation is not significant. This may be because, as with the empirical evidence reviewed, income, rather than material deprivation, is the factor of economic disadvantage more significantly associated with cognitive development.

One reason for material deprivation not having an impact on cognitive development, other than the pre-eminence of income theory, is that of the 20 items that make up material deprivation, there are no items that one would normally associate with cognitive development, i.e. educational resources such as books in the home. This was an aspect of material deprivation noted by Plewis and Hawkes (2005). There has been research on educational resources and child cognitive development using GUS when Melhuish constructed the Home Learning Environment (HLE) index of the child.

Melhuish's aim was not to create a measure of educational resource deprivation, but rather a composite measure of the learning environment within the home; however, the components of this composite construct do contain items that would be included on an education resource deprivation index, were one to be created. For example, Melhuish's HLE index includes variables such as 'how many children's books aimed at the under-fives do you have in your home'; 'frequency of visits to art galleries, zoos'; 'reading stories'; and other developmental activities requiring time and monetary resources such as 'painting and drawing in the past week'.

Therefore, for argument's sake, Melhuish's HLE can act as a proxy educational resource deprivation measure. The difference between the HLE and an actual education resource deprivation index is that Melhuish (2010) was trying to measure the extent of these activities and their positive influence on cognitive development, which has an inherent middle class bias, and not the absence of such materials/activities and their potential negative impact, which would make more sense to a study of children living in poverty. Melhuish's HLE index is significantly associated with increased cognitive development, particularly on the naming vocabulary score. Therefore, one can surmise that if a deprivation index were to be

devised that was dedicated to educational resources and activities, then deprivation on this index would likely be significantly associated with children's cognitive development given the effect of Melhuish's HLE.

In contrast to cognitive development, the impacts of material deprivation on social, emotional and behavioural (SEB) development are highly significant with large coefficients. SEB developmental outcomes are conclusively affected by income poverty and material deprivation individually and combined, with the coefficients of the combined measures more than double those of the individual measures. The existing qualitative literature addresses the impacts of poverty on older children's lives, impacts that are actually the impacts of poverty on living standards, i.e. material deprivation. That these impacts are discernible in older children is due to their sensitised appreciation of living in poverty and material deprivation. Older children show a nuanced understanding of poverty and its associated vulnerabilities; however, what are unexpected findings in this chapter are the strength of the association and the coefficients of material deprivation on the SEB development of children so young. It is beyond the scope of the analysis in this chapter to provide causal reasons for why this may be the case, but it is reasonable to hypothesise that this impact may be indirect, mediated through the impact of (persistent) material deprivation on the wellbeing of their mothers.

This confirms that for SEB outcomes, multidimensional measures of poverty have a cumulative effect, an additive impact leading to lower SEB scores than any of the poverty dimensions individually. The evidence presented in this chapter lends weight to the cogency of the concept of relative deprivation which stipulates that multiple dimensions are necessary to the study of poverty and strengthens the argument for measuring poverty indirectly through income and directly through living standards. The fact that the measures are accumulatively associated with children's SEB outcomes lends credence and strength to the government's official child poverty measure too. Most importantly, what it shows is that children's SEB development is adversely associated with the level of income available to a family *and* what the concomitant living standards a family can afford to have. All of these conditions of

economic disadvantage have an individual and accumulated statistically significant association with children's SEB development.

The literature mentions three aspects of time that are pertinent to the analysis in this chapter. These are the timing, duration and lagged effect of poverty on living standards and on children's outcomes, in particular on cognitive ability. This discussion will address these in turn. As regards the timing of poverty, the existing evidence shows that early childhood is a key developmental period and the negative impact of poverty experienced at this point in the life course persists with associated lower cognitive ability in adolescence. What the evidence in this chapter shows is that income poverty and income inequality are highly associated with lower cognitive development at this tender age; however, it is also possible that the children are not yet showing the full effects of living in poverty in early childhood in GUS. This can only be tested in future research when the children are older. Fortunately, the Scottish government has committed the funds to the GUS study that will allow this data to be available in the future.

As for duration of poverty, the evidence shows that longer spells of living in poverty is associated with incrementally lower scores on children's CSEB developmental outcomes. Although five sweeps of the data are sufficiently long to derive a measure of persistent poverty (measured as at least three consecutive years out of four), it is still not sufficient to reveal the long-term impact of persistent poverty on children's outcomes, nor indeed to examine the factors that may mitigate its detrimental impacts. These are issues that can best be addressed using future sweeps of the data.

As for the final element of time, the lagged effect of income poverty on standards of living, there is no definitive answer as to the length of time it takes income poverty to cause material deprivation. A decline in living standards is affected by other conditions such as existing wealth (e.g. savings), access to financial support from family and friends, and access to credit. However, the analysis presented in this chapter does show that longer spells of living in poverty is associated with deeper

levels of material deprivation, lending power to the theory of the lagged effect of poverty on living standards.

Research on the effects of economic disadvantage has tended to focus on poverty and persistent low income, or related proxy measures such as benefit receipt and unemployment. This chapter chose to examine another measure of economic disadvantage based on income, longitudinal income inequality, for two reasons. The first is that it enables the full spectrum of income to be used, which means that there is no loss of information in the statistical analyses. The second is that it facilitates a comparison between persistent low income and persistent high income as well as those on middle incomes. Using income inequality has been an incredibly useful exercise from a methodological, as outlined above, and a substantive perspective. For naming vocabulary and SEB developmental outcomes, longitudinal income inequality shows the same pattern of incremental change as longitudinal income poverty does. However, instead of length of time spent living in poverty, it is the depth of low income over time that is measured. For picture similarities, in contrast, an unexpected and informative pattern emerges. Using longitudinal income inequality suggests that the change in picture similarity scores associated with income is operating at the upper end of the income spectrum, a change that has gone unrecognised due to the extant literature's focus on poverty rather than inequality. This implies that there is something distinct about the behaviours, experiences or characteristics of those living in persistently high income that is associated with significantly higher picture similarity scores.

7.6 Conclusions

This first of this chapter's conclusions is that using income poverty and income inequality gives a more nuanced substantive understanding of the impacts of persistent low and high income on children's CSEB developmental outcomes than would income poverty alone. Using income poverty highlights the incrementally lower scores on naming vocabulary associated with children living in recurrent and persistent poverty, providing support to the existing evidence that income is the important socioeconomic variable as regards cognitive development. What income

poverty also shows here is that it is *low* income that is associated with lower naming vocabulary scores, suggesting that there is an experiential differentiation in the acquisition of language in families with lower levels of income. What the analysis of naming vocabulary also shows is that it is significantly associated with the wider family sociodemographic variables, suggesting perhaps that this cognitive development variable is malleable and may be responsive to policy and practice interventions.

In contrast, it is income inequality, rather than income poverty, that is more revealing of the impact of income on picture similarities. While picture similarities is highly significantly associated with income poverty, it is only when income inequality is used that it emerges that there is not an incremental increase in picture similarities as income increases, as there is with naming vocabulary. Instead, the difference in picture similarities, which measures higher-order problem solving abilities, occurs at the *upper* end of the income spectrum, suggesting that there is a difference in characteristics or experience that is distinctive for those of higher socioeconomic status. As this has not been explored in the existing literature and is a novel finding of this research, there is no means of corroborating this result as yet. However, further research could replicate this with other birth cohort studies for confirmation or repudiation of results.

The second conclusion is that material deprivation has a highly significant association with SEB developmental outcomes that is greater than income poverty or income inequality on their own. The combined measure has a cumulative association with SEB outcomes, showing that a family's standard of living is associated with a child's social, emotional and behavioural development. Material deprivation does not have any independent association with children's cognitive development; however, this is postulated to be due to the lack of educational resource type of items in the material deprivation index. When research is conducted using the Home Learning Environment (HLE), an index which utilises a range of educational resource items, it shows a statistically significant impact with naming vocabulary to a greater extent and picture similarities to a lesser extent. Thus, future research may create an index

of educational resource deprivation to test whether this type of material deprivation has an impact on children's cognitive development.

The third conclusion of this chapter is that using income poverty, income inequality and material deprivation together shows that the concept of relative deprivation is cogent, it reinforces the argument for measuring poverty indirectly through income and directly through living standards, and provides authority and power to the official child poverty measure currently in use and under threat from the Coalition. The recent consultation for a new measure of child poverty, initiated by the Coalition, suggests that family composition, conceptualised as 'family breakdown' in policy terminology, is a factor of poverty that is related to poor child outcomes and their future chances. The analysis of this chapter leads to its fourth conclusion that lack of income is the driving force behind this relationship, rather than family composition per se.

In chapter five, table 5.4, a crosstabulation of longitudinal income poverty and longitudinal income inequality shows that almost eighty per cent of those living in persistent poverty were in the lowest income quintile (one). Furthermore, due to the problem identified between persistent and recurrent poverty, this percentage is likely to be considerably higher. In fact, one hundred per cent of those living in recurrent and persistent poverty were in the lowest income quintile (one). From a methodological perspective, reducing a continuous measure of income to a binary variable vitiates its usefulness, results in the loss of graded information, and precludes comparison between the highest and lowest incomes. The analysis in this chapter shows that longitudinal income inequality, being able to utilise the entire income spectrum compared to the dichotomy of the income poverty variable, is a better measure of poverty and inequality as it allows for differentiation between those living in persistently high and persistently low incomes. Thus, this fifth conclusion of this chapter is that longitudinal income inequality is the more informative measure and will be the one used in the remaining two findings chapters to explore the impacts of low and high income.

Finally, this chapter shows that material deprivation is strongly associated with children's SEB development but not with their cognitive development. As this chapter has answered research question one, material deprivation, longitudinal income poverty and their combined variable, are not used in the following findings chapter on social assets. Furthermore, the control variable maternal education has been tested in this chapter and does not add to the substantive story nor is it strongly associated with any of the three dependent variables. Maternal education, therefore, is henceforth dropped as a control variable. The following chapter begins with constructing the latent measure social assets before carrying out simple and multiple regression models (with interaction effects).

8 Social advantage? Exploring the association between mothers' social assets and children's CSEB outcomes

8.1 Introduction

This chapter focuses on testing the merits of applying the concept of *social assets* from the Sustainable Livelihoods Approach (SLA) to children's cognitive, social, emotional and behavioural (CSEB) developmental outcomes for children living in income inequality. The qualitative concept of social assets is operationalised quantitatively and the resulting construct(s) used to answer research question two raised at the end of chapter four:

> *What impacts do the social assets of families living in Scotland have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes? Do families' social assets reduce or augment the impacts of poverty on children's early CSEB outcomes? How does this differ by income inequality?*

8.2 Analysis

As set out in the methodology chapter 6, there are two strands to the analysis. The first is the task to derive the latent construct social assets from the 26 social support and networks variables described in chapter five and appendix B at the back of the thesis. The second task is to examine whether social assets have a significant, and/or moderating, impact on children's CSEB outcomes for children living in persistent low income and income inequality. To do so it uses OLS multiple regression with interaction terms, consistent with other researchers of capital (Sullivan, 2002) and with other researchers of CSEB outcomes (Sullivan et al., 2010, Schoon et al., 2012). A moderating effect either reinforces or attenuates a positive or negative impact of another variable. Here social assets are examined to see if they moderate the negative impacts associated with persistent low income and income inequality.

First, the impacts of social assets across the income spectrum will be explored, and secondly, those living with persistently low income (Q1) will be compared and

contrasted to those living with persistently high income (Q5). This will test whether social assets moderate the impacts of income inequality, i.e. is persistent low income but high social assets associated with higher CSEB outcomes, and does this relationship hold for those in the higher income quintiles.

8.3 Task 1 - deriving social assets

GUS collects data in sweeps 1-4 on social support, activities and networks, although the same data are not collected in each sweep (Corbett et al., 2005, Corbett et al., 2006a, Corbett et al., 2007a, Scotcen, 2008). A summary of these variables is given in table 8.1. These variables are used to operationalise the concept of social assets by mapping them onto the qualitative interview schedule used by Oxfam.

Table 8.1 Variables used in the EFA to construct social assets

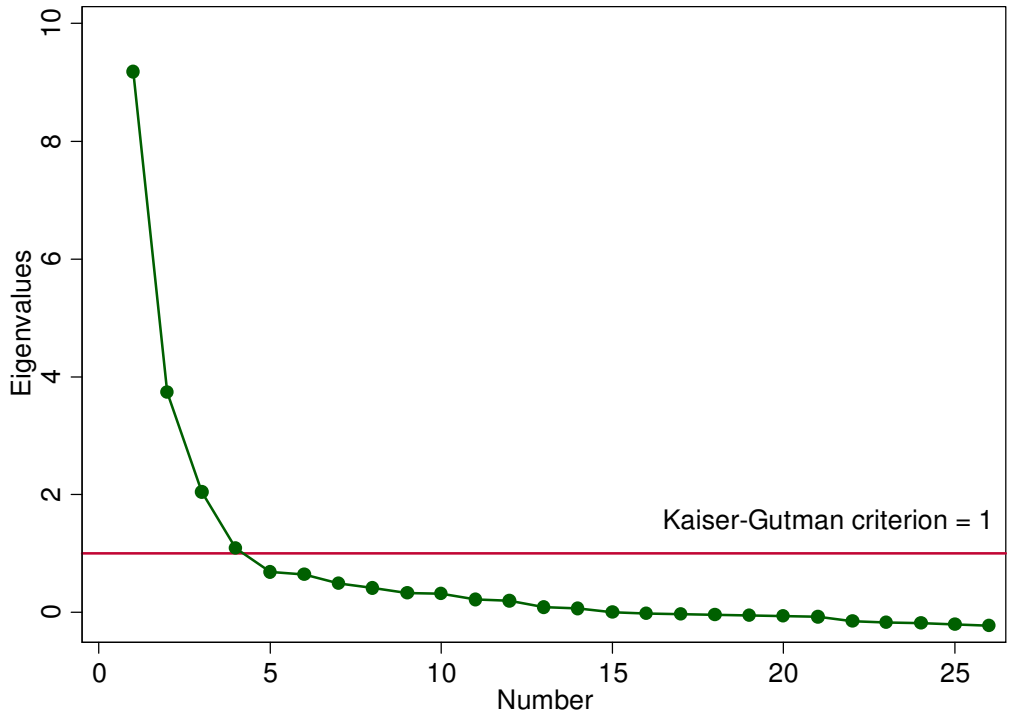
Variable name	Variable label
Sweeps 1 - 4	In an emergency how easy would it be to leave child for short time
Sweeps 1- 4	In an emergency how easy would it be to leave child whole day
Sweeps 1 - 4	In an emergency how easy would it be to leave child overnight
Sweeps 2 - 4	frequency visited friends with kids
Sweeps 2 - 4	frequency visited by friends with kids
Sweeps 2 and 4	how many people respondent close to
Sweeps 2 and 4	respondent close to most of family
Sweeps 2 and 4	respondent friends take notice of opinion
Sweeps 2 and 4	respondent support from family/friends

Source: GUS sweeps 1 - 4

The questions are designed in order to capture parental social support, networks and social activities undertaken with the study child. What these measures do not capture is the *quality* of respondents' social assets. As discussed in the critique of social capital in chapter two, the strength and quality of social capital is not well addressed and not widely measured. Bourdieu (1986) does indicate that social capital connections require continuous maintenance, but one cannot assume that frequency of contact is a measure of the strength of the connection nor of the quality of the relationship.

Exploratory Factor Analysis (EFA), as set out in the methodology chapter (six), is used to derive the latent construct(s) social assets. As EFA relies on the correlations between variables to extract common variance, and the variables used here are categorical (ordinal), full details of which are given in appendix B at the back of the thesis, the usual Pearson correlation matrix is not appropriate. In order to calculate an EFA with categorical variables, polychoric correlations are first calculated, and the EFA commands in Stata amended to instruct the use of the resulting polychoric correlation matrix rather than the default Pearson's matrix. The matrix of polychoric correlations used in this EFA can be found in appendix D at the back of the thesis. As discussed in chapter six, social assets are likely to correlate, which will require the EFA to be carried out using the oblique rotation *Promax*. The following tables and figures present the results of the EFA.

Figure 8.1 Social assets scree plot of eigenvalues after EFA



The scree plot in Figure 8.1 indicates that a four factor solution may be appropriate as the point of inflection is at the fourth factor which just reaches an eigenvalue above the Kaiser-Gutman criterion of 1.0. However, scrutiny of the loadings of a four factor solution does not produce a definitive substantive interpretation as the

variables are spread quite evenly across all four factors (loadings of the four factor solution is not shown). A three factor solution, in contrast, has three high eigenvalues and factor loadings that load decisively onto three distinct factors, which allows for a definitive substantive interpretation. Using the amount of variance explained by the number of factors retained as a second criterion to judge how many factors ought to be retained, as set out in chapter six, table 8.3 shows that the three factor solution explains a very high percentage of variance (96.20%): the additional percentage of variance explained by the four factor solution is minimal (not shown). Given the successful adherence to these criteria, coupled with its intuitive and definitive substantive interpretation, the three factor solution is preferred.

Table 8.2 Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
In an emergency how easy would it be to leave child for short time	0.795			0.412
In an emergency how easy would it be to leave child whole day	0.830			0.362
In an emergency how easy would it be to leave child overnight	0.763			0.433
In an emergency how easy would it be to leave child for short time	0.839			0.31
In an emergency how easy would it be to leave child whole day	0.861			0.27
In an emergency how easy would it be to leave child overnight	0.797			0.346
frequency visited friends with kids			0.734	0.456
frequency visited by friends with kids			0.732	0.451
how many people respondent close to		0.599		0.569
respondent close to most of family		0.776		0.42
respondent friends take notice of opinion		0.608		0.652
respondent support from family/friends		0.449		0.599
how easy would it be to leave child for short time	0.823			0.318
how easy would it be to leave child whole day	0.862			0.274
how easy would it be to leave child overnight	0.797			0.348
frequency visited friends with kids			0.803	0.363
frequency visited by friends with kids			0.796	0.364
how easy would it be to leave child for short time	0.758			0.368
how easy would it be to leave child whole day	0.805			0.307
how easy would it be to leave child overnight	0.742			0.388
frequency visited friends with kids			0.76	0.415
frequency visited by friends with kids			0.756	0.421
how many people respondent close to		0.628		0.554
respondent close to most of family		0.759		0.422
respondent friends take notice of opinion		0.629		0.633
respondent support from family/friends		0.465		0.581

blanks represent absolute (loading) <.4
N = 3,039
Source: GUS sweeps 1 - 4

Table 8.2 gives the rotated factor loadings of the three factor solution for social assets. The rotated factor loadings are all above the 0.4 threshold recommended by Stevens (2002) in chapter six. This table displays the variables from which the factors draw their information and from which the substantive interpretation of the factors will be derived. What can be shown from this table is that the factor loadings group on similar questions over time and extract their common variance.

Table 8.3 Rotated factors

Factor	Variance	Proportion	Cumulative Percent
Factor1	8.75	0.48	47.69
Factor2	4.88	0.27	74.31
Factor3	4.01	0.22	96.20

LR test: independent vs. saturated: chi2(325) = 7.1e+04 Prob>chi2 = 0.0000
Rotated factors are correlated

Table 8.3 shows that the three rotated factors account for an accumulative 96.20% of the variance available in the variables, significantly higher than the recommended threshold of 70% advised by Stevens (2002) in chapter six.

8.3.1 Substantive interpretation of the three retained factors

Table 8.2 presents the rotated factor loadings from which the substantive interpretation of the factors is drawn. Factor one draws its information from the factors that ask 'In an emergency, how easy would it be to leave the child for: a short time, a whole day or overnight', and which are designed to measure the ease and access to unexpected or emergency childcare. Factor one is therefore referred to as the *leave child* factor.

Factor two draws its information from the variables: 'how many people respondent is close to', whether the 'respondent is close to most of their immediate family', whether the 'respondent's friends take notice of the opinion', and whether the 'respondent receives support from family and friends'. These variables measured the closeness and supportiveness of relationships with family and friends and is therefore referred to as the *closeness/support* factor. What is interesting about this factor is that as it is derived from ordinal variables which measure the extent or strength of closeness and support of friends and family, it is the factor that is most able to give a measure of the *quality* of the social assets held by mothers in the GUS study. A higher score on *closeness/support* means a higher level and a greater quality of closeness and support from family and friends.

Factor three draws its information from the variables 'frequency of being visited by friends with children' and 'frequency of visiting friends with children'. This factor measures social visits that revolve around the study child and is known as the *visiting* factor. For all three factors, a higher score indicates a higher level of social assets.

8.3.2 Descriptive statistics of the 3 social asset factors

Table 8.4 Summary of Social Asset factors

Factor	Name	Count	Mean	Std. Dev.	Min	Max
SA factor 1	Leave child	3039	0	1	-2.72	1.36
SA factor 2	Closeness/support	3039	0	1	-4.68	1.82
SA factor 3	Visiting	3039	0	1	-4.16	1.51

Source: GUS sweeps 1 – 5

Table 8.4 provides summary statistics for the three factors. Factor scores are equal to Z scores and have a mean of zero and a standard deviation of one. A negative score denotes lower than average social assets and a positive score denotes higher than average social assets.

The descriptive statistics for the social assets factors are presented in table 8.5, which gives the means of the three social assets factors against the control variables used in this study: birth order of child, ethnicity of the mother, sex of the child, age of the mother at first birth and longitudinal measure of family composition. Following the table of descriptive statistics is a table of means showing the level of social assets for the three factors across the five permanent income quintiles (see table 8.6). Following the table of means are simple regression models with quasi variance (see table 8.7). Table 8.8 gives a series of Wald tests which allow analysis between the different quintile categories of income inequality to investigate whether the level of social assets measured by these three factors differ by level of income.

Table 8.5 Means of social asset factors with the control variables

Control variables	%	Mean of 'Leave child' (C.I.s)		Mean of 'close-ness/support' (C.I.s)		Mean of 'visiting' (C.I.s)	
Birth order:							
First born child	50.37	0.107	(0.045 - 0.168)	0.055	(-0.012 - 0.123)	-0.012	(-0.068 - 0.044)
Not first born child	49.63	-0.104	(-0.164 - -0.045)	-0.067	(-0.134 - -0.0001)	-0.016	(-0.086 - 0.054)
Ethnicity of mother:							
White	3.61	0.010	(-0.035 - 0.055)	0.007	(-0.044 - 0.059)	-0.002	(-0.048 - 0.044)
Other ethnic background	96.39	-0.148	(-0.447 - 0.152)	-0.424	(-0.731 - -0.118)	-0.481	(-0.781 - -0.181)
Sex of child:							
Female	48.34	0.051	(-0.004 - 0.106)	0.009	(-0.045 - 0.063)	0.003	(-0.053 - 0.059)
Male	51.66	-0.036	(-0.10 - 0.028)	-0.014	(-0.085 - 0.0558)	-0.029	(-0.101 - 0.043)
Age of mother at first birth:							
under 20	16.49	0.027	(-0.09 - 0.144)	-0.079	(-0.204 - 0.046)	0.035	(-0.090 - 0.159)
20 to 29	50.21	0.082	(0.029 - 0.135)	0.039	(-0.032 - 0.111)	-0.032	(-0.094 - 0.031)
30 to 39	31.64	-0.072	(-0.152 - 0.008)	0.028	(-0.032 - 0.088)	0.002	(-0.062 - 0.066)
40 or over	1.65	-0.634	(-0.961 - -0.307)	-0.481	(-0.743 - -0.218)	-0.123	(-0.396 - 0.150)
Family transitions:							
Stable couple family	72.22	0.009	(-0.044 - 0.063)	-0.001	(-0.053 - 0.050)	0.000	(-0.044 - 0.043)
Stable lone parent family	11.01	-0.103	(-0.263 - 0.057)	0.030	(-0.177 - 0.237)	-0.104	(-0.277 - 0.070)
Lone parent who repartnered	6.66	0.194	(0.032 - 0.356)	0.158	(-0.017 - 0.333)	0.102	(-0.084 - 0.289)
Couple who separated	5.92	-0.017	(-0.161 - 0.127)	-0.178	(-0.368 - 0.012)	-0.180	(-0.404 - 0.045)
Separations and repartnerings	4.19	-0.089	(-0.310 - 0.132)	-0.155	(-0.361 - 0.052)	0.009	(-0.191 - 0.210)

Social assets factors, true mean = 0

Group means based on weighted data
Sweep 5 longitudinal weight and survey weights used
Source: GUS sweeps 1 to 5 N = 2870

Table 8.5 presents the means of the three social asset factors for the control variables generated by the literature review. The first column of numbers gives the percentages of the control variables in the sample; the next three table partials contain two columns each that give the mean value of the mothers' social assets, measured by the three factors: *leave child*, *closeness/support*, and *visiting*; and the confidence intervals at the 95% confidence level for the means of the three factors. The confidence intervals indicate whether each category's mean is likely to be found in the wider population with 95% confidence, depending on whether or not the confidence intervals cross zero. If the confidence intervals cross zero, there is no statistical likelihood that the social assets factor mean will be found in the wider population. What these means do not show is whether each category is significantly different from the other categories that make up their variable. For example, there is 95% confidence that the mean of factors two and three for being non-white is significantly lower than the mean in the wider population, but the same cannot be said for those from a white ethnic background.

For factor 1, *leave child*, those whose means are lower than average are those whose child is not the first born ($\bar{x}$ = -0.104) and those aged over 40 years at the time of first birth ($\bar{x}$ = -0.634). Those whose means are higher than average are those whose child is firstborn ($\bar{x}$ = 0.107), those aged 20 to 29 ($\bar{x}$ = 0.082) and lone parents who have re-partnered ($\bar{x}$ = 0.194). This shows that women who become mothers aged 40+ are less likely to, and that lone parents who re-partner are more likely to, have people close by with whom to leave their child in an emergency situation.

For factor two, *closeness and support*, those with lower than average scores are those whose child is not the first born ($\bar{x}$ = -0.067), those from a non-white ethnicity ($\bar{x}$ = -0.424) and those aged 40 years over at the time of first birth ($\bar{x}$ = -0.481). There are no categories with significantly higher than average social assets as measured by the *closeness/support* factor. From a demographic perspective, the lack of social assets of those aged 40+ at the age of first birth may be due to them having no living parents, or parents who are older and perhaps less able to provide support, than those who become parents at a younger age. It is also possible that this age-group have

moved away from close ties for education and professional reasons before starting a family.

For factor three, *visiting with children*, only one category is significantly different from the rest of the population – non-white mothers have lower than average visits to and from friends with children ($\bar{x}$ = -0.481).

8.3.3 Differences in social assets factors by income inequality

Table 8.6 presents a table of means of the social assets factors against the income inequality quintiles. Following this table are simple regressions with quasi variance (table 8.7 and table 8.8) which analyse whether the 5 permanent income categories are significantly different from each other for each of the social assets factors.

Table 8.6 **Social assets factors and income inequality**

Longitudinal income inequality	Mean of 'Leave child' (C.I.s)		Mean of 'closeness/support' (C.I.s)		Mean of 'visiting' (C.I.s)	
Quintile 1	-0.051	(-0.166 - 0.065)	-0.163	(-0.310 - -0.016)	-0.071	(-0.199 - 0.057)
Quintile 2	-0.056	(-0.153 - 0.041)	-0.119	(-0.218 - -0.021)	-0.137	(-0.248 - -0.026)
Quintile 3	0.110	(0.010 - 0.211)	-0.007	(-0.099 - 0.086)	-0.008	(-0.102 - 0.086)
Quintile 4	0.042	(-0.040 - 0.125)	0.034	(-0.035 - 0.103)	0.102	(0.026 - 0.179)
Quintile 5	-0.020	(-0.110 - 0.070)	0.221	(0.146 - 0.296)	0.037	(-0.029 - 0.104)

Mean of social asset factors = 0
Means based on weighted data
Sweep 5 longitudinal weight and survey weights used
Source: GUS sweeps 1 to 5

The means for each of the three factors (remembering that a positive score denotes higher than average social assets and a negative score lower than average social assets) shows that generally speaking, social assets on all three factors are lower for those living with a lower income. For each factor, the two bottom income quintiles show lower than average social assets; this provides support for the first hypothesis that social assets are lower for those living with a low income. As was indicated by the table of means (table 8.6), for factor one, *leave child*, those with higher incomes (income quintile five) have lower than average scores on this factor than do income

quintiles three and four (but not as low as income quintiles one and two). For factor three, visiting with children, those in income quintile five have above average scores, higher than the lowest three income quintiles, but lower than those in income quintile four. This shows that on these two factors, which imply geographical proximity to friends and family, those with the highest incomes do not score most highly. There are likely to be demographic variations of particular pertinence to mothers who are aged over 40 years at the time of first birth, as previously postulated. Where those in income quintile five do score most highly by a long way, is on the social assets factor two – *closeness/support* from friends and family. This visual inspection will be tested statistically in the following simple regressions.

8.3.4 Factor 1 - leave children in an emergency/at short notice

The simple regression with quasi variance for the first factor, *leave child*, has p-values for each of the income quintiles that are not below the 0.05 required at the 95% confidence level, showing that there are no statistically significant differences in this factor across the income spectrum (see table 8.7). As this factor does not differ across the income quintiles it is of no further use in the analysis of this chapter. Ergo, it has been dropped from the remainder of this chapter with the conclusion that being able to leave your child at short notice or in an emergency has no differential impact depending on level of income. This factor will be reintroduced in the following chapter when the impact of social assets on financial vulnerabilities is examined.

Table 8.7 Simple regression with quasi variance for social assets

Social Assets	Coef.	Std. Err.	t	P>t	Quasi Variance	CI_qv lower	CI_qv upper
Leave child:							
Quintile 1	-	-	-	-	0.004	-0.124	0.124
Quintile 2	-0.005	0.071	-0.08	0.939	0.003	-0.113	0.102
Quintile 3	0.161	0.082	1.96	0.054	0.002	0.073	0.249
Quintile 4	0.093	0.073	1.28	0.205	0.001	0.031	0.155
Quintile 5	0.031	0.073	0.42	0.678	0.002	-0.057	0.118
constant	-0.051	0.058	-0.88	0.384	-	-	-
r^2	0.004						
N	2862						
df_r	65						
Closeness and support:							
Quintile 1	-	-	-	-	0.005	-0.139	0.139
Quintile 2	0.044	0.090	0.48	0.630	0.002	-0.044	0.131
Quintile 3	0.156	0.082	1.90	0.062	0.002	0.069	0.244
Quintile 4	0.197	0.080	2.46	0.016	0.001	0.135	0.259
Quintile 5	0.384	0.078	4.93	0.000	0.001	0.322	0.446
constant	-0.163	0.074	-2.22	0.030	-	-	-
r^2	0.017						
N	2862						
df_r	65						
Visiting:							
Quintile 1	-	-	-	-	0.003	-0.107	0.107
Quintile 2	-0.066	0.089	-0.74	0.464	0.004	-0.189	0.058
Quintile 3	0.063	0.070	0.90	0.370	0.001	0.001	0.125
Quintile 4	0.173	0.069	2.53	0.014	0.001	0.112	0.235
Quintile 5	0.108	0.068	1.59	0.116	0.001	0.046	0.170
constant	-0.071	0.064	-1.11	0.271	-	-	-
r^2	0.007						
N	2862						
df_r	65						

Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Longitudinal income inequality as described from page 101
N = 2862

Table 8.8 Wald tests for longitudinal income inequality and social assets

Longitudinal income inequality:	Quintile 1	Quintile 2	Quintile 3	Quintile 4
Leave child:				
Quintile 2	0			
Quintile 3	4.32*	5.55*		
Quintile 4	1.72	2.41	1.56	
Quintile 5	0.16	0.26	4.26*	1.29
Closeness and support:				
Quintile 2	0.27			
Quintile 3	3.49	3.17		
Quintile 4	6.46*	7.82***	0.55	
Quintile 5	24.62***	38.68***	17.33***	17.58***
Visiting:				
Quintile 2	0.61			
Quintile 3	0.99	3.3		
Quintile 4	7.52***	11.42***	6.12*	
Quintile 5	2.94	6.05*	1.03	2.12

Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Longitudinal income inequality as described from page 101
N = 2862

8.3.5 Factor 2 -closeness and support of friends and family

For factor two, *closeness and* support, table 8.7 and table 8.8 show that mothers living in different income quintiles have different levels of *closeness/support*. Table 8.7 shows that those who have lived for five years in persistent high income (Q5) have a coefficient on *closeness/support* that is almost 0.4 of a standard deviation higher than those living in persistent low income (Q1), which is significant at the 0.001 level. Families living in the second highest income quintile (Q4) have a coefficient that is approximately 0.2 of a standard deviation higher than those living in persistent low income (Q1), which is significant at the 0.05 level.

Table 8.8 shows that those living in persistent high income (Q5) have higher *closeness and support* than mothers in every other income quintile, significant at the 0.001 level, which confirms the visual inspection of the means in table 8.6. Moreover, those in persistent high income (quintile 5) have incrementally higher *closeness and support* than each of the other income quintiles, with the greatest

difference being between income quintile five (persistent high income) and quintile one (persistent low income). Hypotheses four and five of research question two, that those with low income have lower social assets and that those with high incomes have higher social assets, are accepted.

The closeness and support factor is based on ordinal variables with increasing levels of closeness and support, which is the only factor with an indication of the quality of closeness and support provided by these relationships. As this analysis confirms the differential relationship between *closeness/support* and income, this social assets factor will be used in further analysis to test its impact on children's CSEB outcomes across the income inequality spectrum.

8.3.6 Factor 3 - visiting and being visited by friends with children

For factor three, table 8.7 shows that the only income quintile statistically significantly different to quintile one is quintile four. None of the other quintiles differ significantly across the income inequality spectrum. Table 8.8 confirms that it is income quintile four that differs from all the other quintiles but that there is little significant variation otherwise. Thus, there is insufficient differentiation by income quintile to merit further analysis of factor three and so the social assets relating to visiting and being visited by friends with children will not be explored further in this chapter, but will be reintroduced in the following chapter.

There remains one strong factor representing the latent concept social assets, the one pertaining to *closeness and support* from family and friends, which has a strong, statistically significant association with income inequality; which incorporates a measure of the strength and quality of the relationships captured in the factor; and which more strongly corresponds to the concept of social assets set out in the SLA and to the concept of social capital advocated by Coleman. This is the factor that will be used in the following analyses to test the remaining hypotheses.

8.4 Task 2 – the impact of social assets on children's CSEB outcomes

From this point forward in this chapter, the concept of social assets is represented by *closeness/support*. The other two factors have been dropped from the remaining analysis of this chapter. The following sections look at each dependent variable separately and each of the multiple regression tables include three models that comprise: a sociodemographic model with longitudinal income inequality (model 1); with *closeness/support*, added (model 2); and with interaction terms between longitudinal income inequality and *closeness/support* added (model 3).

8.4.1 Social assets and cognitive development

As discussed earlier, qualitative research indicates that closeness to and support from friends and family have a beneficial impact on children's wellbeing and help to reduce the negative impacts of living in poverty (Ridge, 2002a). If an association between social assets and children's CSEB outcomes is present in the upcoming analyses, it is hypothesised to be a positive one – that social assets will be significantly associated with higher levels of CSEB development. Additionally, it is hypothesised that social assets will have a different impact for those on lower incomes compared to those on higher incomes. That is to say that having high social assets while living in persistent low income will attenuate the negative impacts of living in persistent low income on children's CSEB outcomes. This hypothesised relationship between social assets and income inequality is theorised to occur due to social assets having a moderating effect on children's CSEB development, which is tested using interaction effects. Moderation/interaction effects are explained in chapter six.

This application of social assets is different to the one suggested by Bourdieu whose theory stipulates that those in high socioeconomic circumstances have high social capital and those in low socioeconomic circumstances have low social capital, which reinforce advantage and disadvantage respectively. This is in contrast to the application of social assets in this research, which aims to examine if mothers living

in persistent low income can have high social assets and, if so, whether they have an advantageous impact on their children's CSEB development.

Table 8.9 SA factor 2 - Closeness/support and Naming Vocabulary

	Model 1 Naming Vocabulary	Model 2 Naming Vocabulary	Model 3 Naming Vocabulary
Permanent income (ref: highest quintile 5):			
Quintile 1 (lowest)	-0.635***	-0.631***	-0.625***
	(0.086)	(0.094)	(0.092)
Quintile 2	-0.364***	-0.338***	-0.349***
	(0.061)	(0.063)	(0.062)
Quintile 3	-0.149*	-0.132	-0.147*
	(0.059)	(0.066)	(0.066)
Quintile 4	-0.0415	-0.0293	-0.0442
	(0.050)	(0.053)	(0.053)
Birth order (ref: first born)	-0.237***	-0.202***	-0.203***
	(0.037)	(0.044)	(0.044)
Sex of child (ref: female)	-0.161***	-0.171***	-0.171***
	(0.042)	(0.045)	(0.045)
Ethnicity of mother (ref: White)	-0.635***	-0.461*	-0.458*
	(0.129)	(0.188)	(0.181)
Longitudinal family composition (ref: stable couple family)			
Stable lone parent family	0.0433	0.0478	0.0344
	(0.096)	(0.107)	(0.104)
Lone parent who repartnered	-0.0498	0.0196	0.00491
	(0.089)	(0.098)	(0.098)
Couple who separated	-0.0291	0.0397	0.0505
	(0.054)	(0.061)	(0.061)
Separations and repartnerings	-0.139	-0.0089	-0.0127
	(0.116)	(0.151)	(0.148)
Maternal age at first birth (ref: 40 or over)			
30 to 39	-0.125	-0.181	-0.163
	(0.108)	(0.116)	(0.113)
20 to 29	-0.263*	-0.335**	-0.315*
	(0.106)	(0.124)	(0.121)
Under 20	-0.329*	-0.410*	-0.395*
	(0.158)	(0.191)	(0.188)
Social assets factor 2			
Closeness and support from friends and/or family		0.0487*	-0.0204
		(0.021)	(0.036)
Interactions with permanent income quintiles and factor 2			
Income Q4 and *Closeness and support*			0.0628
			(0.056)
Income Q3 and *Closeness and support*			0.0333
			(0.054)
Income Q2 and *Closeness and support*			0.0847
			(0.056)

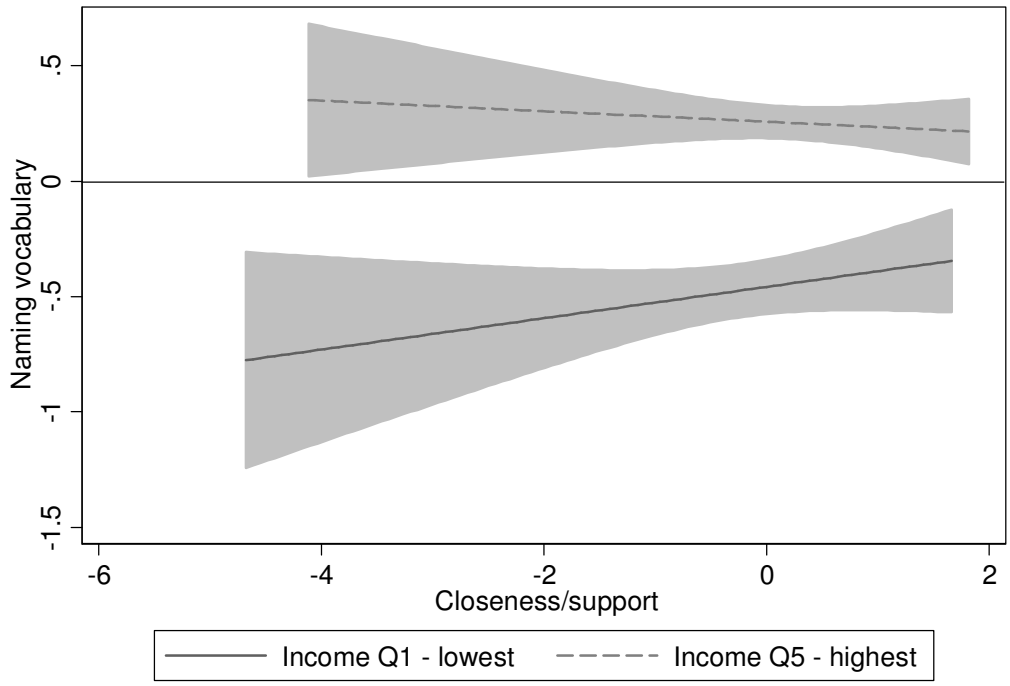
Income Q1 and *Closeness and support*			0.149*
			(0.075)
Constant	0.602***	0.626***	0.624***
	(0.112)	(0.124)	(0.122)
R-squared	0.113	0.098	0.100
No. of cases	3463	2760	2760
dfres	65	65	65

Standard errors in parentheses
* p<0.05 ** p<0.01 *** p<0.001
Sweep 5 longitudinal weight and survey weights used
Source: GUS sweeps 1 to 5
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

Social assets, as measured by *closeness/support* from friends and family, have a statistically significant positive impact on naming vocabulary when they are entered into the analysis at model 2 in table 8.9. The coefficient is positive (0.0487), meaning that increasing levels of social assets are significantly associated with higher levels of cognitive development measured by naming vocabulary. This association is significant at the 95% level. This allows the second hypothesis of research question two, that higher social assets are associated with higher (better) cognitive development as measured by the naming vocabulary variable, to be accepted.

For those living in persistent low income (Q1), social assets do have a positive moderating effect on children's naming vocabulary, as can be seen from the interaction effects' coefficients in model 3 of table 8.9. The interaction effect between persistent low income (Q1) and social assets (0.149) is additive to the coefficient for the main coefficient of social assets (0.0487), providing evidence that the impacts of social assets increases for those on the lowest incomes.

Figure 8.2 Interaction of closeness/support and lowest/highest income quintile for naming vocabulary outcome



Data source: GUS, sweeps 1 - 5

This relationship is best observed in a graphical form (see Figure 8.2) which shows that those with lower incomes and higher social assets do have higher naming vocabulary scores. However, it should be noted that the coefficients are small and only significant at the 5% level. This means that the hypothesised relationship exists, i.e. those with lower income and higher social assets have children with higher levels of naming vocabulary cognitive development, but that the impact is not particularly large. Furthermore, the relationship is not terribly strong, and those with lower income and higher social assets still have children whose naming vocabulary does not reach the mean of all children across the study (mean = 0). This can be seen in Figure 8.2 where zero at the point of origin represents the mean of naming vocabulary, and zero on the X axis represents the mean of social assets.

When this analysis was repeated for the higher-order cognitive development variable, picture similarities, social assets factor two *closeness and support* was completely insignificant, which means that hypothesis 3 of research question two - higher social assets are associated with higher (better) cognitive development as measured by the

picture similarities variable - cannot be accepted. The tables for the picture similarities analysis have not been shown in this chapter as they are insignificant.

For cognitive development, therefore, social assets as measured by *closeness/support* have a positive association with naming vocabulary and no association with picture similarities; they have a moderating effect for those on the lowest incomes, but not for those on higher incomes (again only for naming vocabulary); and they reduce the negative impact associated with having a non-white mother by about a third (again for naming vocabulary). The reason *closeness/support* are having an impact on naming vocabulary and not on picture similarities may be due to the nature of the cognitive development variables themselves. Naming vocabulary does measure children's language development based on the knowledge and recognition of words. Having a mother who has closeness and support from family and friends may facilitate opportunities for the child to interact with interested adults other than his/her own parent(s). Picture similarities is a higher-order cognitive development variable that is not strongly statistically associated with the control variables but is associated with higher levels of income. It would seem that other, as yet unmeasured, factors influence this particular type of cognitive development.

There are four conclusions to be drawn from the analysis of *closeness/support* and cognitive development:

1. Income (and other factors related to it that are not present in the models) may be the most important explanatory variables for children's cognitive development.
2. The statistically significant (albeit weak) relationship between social assets and cognitive development may be stronger were data collected to specifically measure the concept. This analysis had to rely on the variables that were available in the GUS data.
3. Cognitive development is the development that relates to the more proximal characteristics of family and home, such as the home learning environment

and parental interaction, rather than the more distal milieu of wider family and friends.

4. Lower-order cognitive development (naming vocabulary) can be improved by these other factors more easily than higher-order cognitive development (picture similarities) which is remaining stubbornly impervious to all of the explanatory variables with the exception of income, and as the previous chapter shows, high income specifically. This implies that naming vocabulary may improve through direct intervention.

Despite the weakness of the relationship between social assets and naming vocabulary, it does exist, is statistically significant and is in the hypothesised direction, which allows for the rejection of the null hypotheses and acceptance that higher social assets are associated with higher cognitive development as measured by naming vocabulary for those living in persistent low income.

8.4.2 Social assets and SEB development

Social assets, as measured by factor two, *closeness and support* from friends and family, have a stronger statistical significance and a stronger association with children's SEB development than they do with cognitive development. Between models one and two in table 8.10, when social assets are introduced, the impact of income has fallen by between 20 and 30%, showing that the impacts of income are overestimated in the model if social assets are not included. Income and income inequality, however, still remain highly significant explanatory factors with each income quintile being statistically significant at the 0.001 level and, with coefficients that are incrementally stronger the lower the level of income. This corresponds to the analysis in chapter seven on the impacts of poverty and income inequality on children's SEB outcomes.

Table 8.10 Social, emotional and behavioural outcomes closeness/support

	Model 1 SEB	Model 2 SEB	Model 3 SEB
Permanent income (ref: highest quintile):			
Quintile 1 (lowest)	-0.834***	-0.680***	-0.663***
	(0.088)	(0.094)	(0.092)
Quintile 2	-0.519***	-0.402***	-0.417***
	(0.059)	(0.065)	(0.065)
Quintile 3	-0.265***	-0.186***	-0.200***
	(0.052)	(0.053)	(0.053)
Quintile 4	-0.217***	-0.168**	-0.181***
	(0.048)	(0.050)	(0.050)
Birth order (ref: first born)	0.180***	0.160***	0.157***
	(0.041)	(0.042)	(0.042)
Sex of child (ref: female)	-0.274***	-0.279***	-0.281***
	(0.036)	(0.041)	(0.041)
Ethnicity of mother (ref: White)	-0.229	-0.135	-0.131
	(0.139)	(0.191)	(0.195)
Longitudinal family composition (ref: stable couple family)			
Stable lone parent family	0.0389	0.0205	0.00179
	(0.102)	(0.104)	(0.105)
Lone parent who repartnered	-0.0459	-0.126	-0.138
	(0.112)	(0.121)	(0.122)
Couple who separated	-0.134*	-0.119	-0.110
	(0.065)	(0.079)	(0.079)
Separations and repartnerings	-0.505***	-0.504***	-0.509***
	(0.088)	(0.096)	(0.095)
Maternal age at first birth (ref: 40 or over)			
30 to 39	0.0323	-0.0345	-0.0191
	(0.085)	(0.090)	(0.090)
20 to 29	-0.0525	-0.118	-0.0989
	(0.083)	(0.092)	(0.091)
Under 20	-0.0732	-0.195	-0.185
	(0.140)	(0.156)	(0.158)
Social assets factor 2:			
Closeness and support from friends & family		0.173***	0.109**
		(0.019)	(0.036)
Interactions between SA and permanent income			
Income Q4 and *Closeness and support*			0.0161
			(0.047)
Income Q3 and *Closeness and support*			0.0600
			(0.064)
Income Q2 and *Closeness and support*			0.0396
			(0.046)

Income Q1 and *Closeness and support*			0.191*
			(0.073)
Constant	0.396***	0.425***	0.426***
	(0.083)	(0.092)	(0.092)
R-squared	0.133	0.152	0.157
No. of cases	3518	2804	2804
dfres	65	65	65

Standard errors in parentheses
* p<0.05 ** p<0.01 *** p<0.001
Sweep 5 longitudinal weight and survey weights used
Source: GUS sweeps 1 to 5
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

When *closeness/support* is entered into the analysis at model 2, it is highly significantly associated with SEB development, with a coefficient of 0.173, accounting for almost 20% of a standard deviation increase in SEB development across all children in the study. This provides evidence to allow hypothesis 1 of research question two - higher social assets of mothers are associated with children's higher (better) social, emotional and behavioural scores – to be accepted.

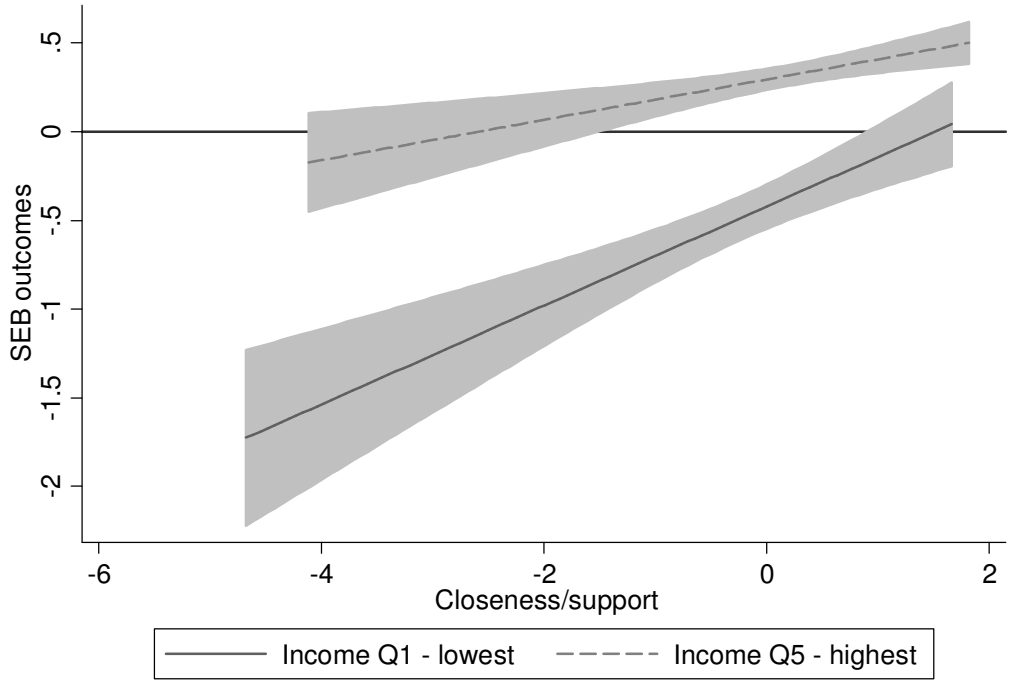
Having *closeness/support* in the model (m2) removes the significance of the negative coefficient for a 'couple who separated' on children's SEB development. This means that when *closeness/support* is controlled for, being a couple who separate has no negative impact on children's SEB development. Table 8.5 earlier in the chapter shows that being a couple who separates has the lowest mean of *closeness/support* compared to the other family composition categories. This analysis would indicate that it is the reduced level of *closeness/support* from extended family and friends of couples who separate, rather than the fact of their separation per se, that is associated with a negative impact on children's SEB development. What this analysis does not show is the impact of low or reduced *closeness/support* on maternal outcomes, e.g. maternal stress or depression, which may concur with a couple separating. Thus it is possible, but not tested in this analysis, that *closeness/support* moderates the negative coefficient associated with a couple separating and that these impacts are mediated from mother to child through an unobserved variable such as maternal distress. This is an area for future research with this social assets factor.

When the interaction effect between *closeness/support* and income is entered into the analysis at model 3, this moderating effect is significant for those on the lowest income, showing that *closeness/support* does have a differential impact on SEB outcomes depending on income quintile. The coefficient of the interaction term for income quintile one, persistent low income, compared to income quintile five, persistent high income, is positive at 0.191, which when added to the main coefficient for *closeness/support* (0.173), gives an accumulative increase in SEB development for those in persistent low income of 0.364, almost 40% of a standard deviation increase. Thus for the poorest families, *closeness/support* has more than double the coefficient of families in other income quintiles.

The variance explained by the model (r square) rises by 14% between models 1-2, when *closeness/support* is entered into the model and, by 18% between models 1-3, when the moderating effect of *closeness/support* is additionally entered, strengthening the evidence that *closeness/support* has a differentially positive impact on children's SEB outcomes for children living in persistent low income. The final hypothesis of this chapter, that those living in persistent low income with high *closeness/support* of mothers have higher levels of development is therefore accepted for SEB development.

This relationship between income inequality and *closeness/support* is graphically represented in Figure 8.3 where zero on the y axis represents the mean of SEB, and zero on the X axis represents the mean of *closeness/support*. This graph shows that for those living in persistent low incomes (Q1) but who have high *closeness/support*, their children's SEB development reaches the mean for all children, and in fact reaches a higher level than that of those living in persistent high income (Q5) who have low *closeness/support*. This definitively allows the hypothesis to be accepted that social assets as measured by *closeness/support* do attenuate the negative impact associated with living in persistent low income.

Figure 8.3 Interaction of SA factor 2 and lowest/highest income quintile for SEB



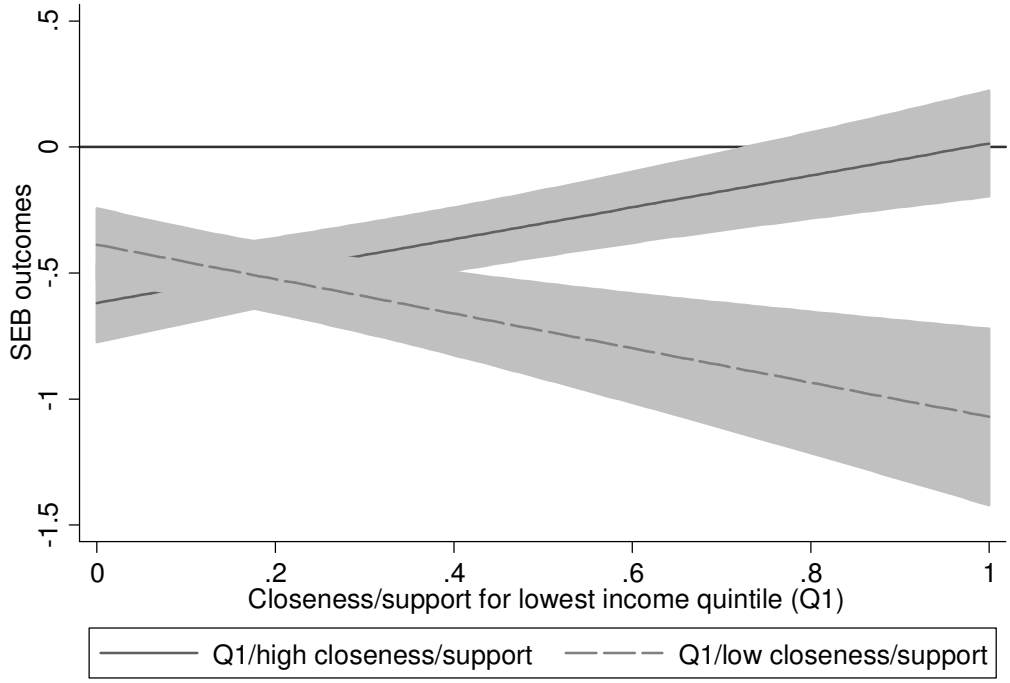
Data source: GUS, sweeps 1 - 5

To test this relationship further, and to examine whether different levels of *closeness/support* for those living in persistent low income are associated with higher or lower SEB development, *closeness/support* is split into low, medium and high categories. The category splits are made according to the method set out by Cohen (2003) in chapter six, who said that levels corresponding to the mean of the factor, one standard deviation above and one standard deviation below the mean as medium, high and low levels respectively should be used. Interaction terms with permanent income quintile 1 are then calculated to examine to what extent high *closeness/support* does indeed have a differential impact on those living in poverty.

In the nested regression models for these new interaction terms on SEB developmental outcomes, not shown here but given at the back of the thesis in appendix E, the interaction terms between the 'high' category *closeness/support* and income quintile one, the 'medium' category *closeness/support* and income quintile one, and the 'low' category *closeness/support* and income quintile one, are all highly significant at the 0.001 level. High *closeness/support* is associated with almost 0.8 of a standard deviation *increase*, and low social assets with almost 0.8 of a standard

deviation *decrease* in SEB development for those living in persistent low income (Q1).

Figure 8.4 Low/high closeness/support for Q1 and SEB development



Data source: GUS, sweeps 1 - 5

These relationships are graphically represented in Figure 8.4. This graph relates only to those living in the lowest income quintile across the five years of the study. It shows that those with persistently low income and high social assets have children whose SEB development extends beyond the mean for all children. Those with low social assets who live with persistent low income have a line which goes in the opposite direction, showing a strong negative relationship with children's SEB development. This is quite a stark contrast between those with the highest and those with the lowest social assets living in the lowest income quintile. This shows that the high levels of closeness and support from family and friends that some people enjoy have a positive impact on children's social, emotional and behavioural development. By contrast those who are living in poverty with low levels of *closeness/support* from friends and family have children with the lowest SEB outcomes, which suggests that this is a combination that makes children living in persistent low income particularly vulnerable.

The mechanisms through which maternal closeness and support from family and friends has a positive effect on children's SEB outcomes has not been modelled in this analysis. From the qualitative literature, there are various pathways through which the closeness and support of family and friends are suggested to operate. One is that the support that is received may ease the financial strain of families. The literature shows that often friends and family of those living in poverty help with costs such as school uniform, shoes, school trips, birthday and Christmas presents (Harris et al., 2009). This can have a direct effect on children's wellbeing as well as a possible indirect effect due to the easing of the financial stress on the parent. The second causal pathway suggested by the literature is that positive maternal wellbeing and mental health have a positive effect on the parent child relationship and thus a positive effect on children's CSEB outcomes (Schoon et al., 2010c), it is possible that the support and closeness afforded by the relationships in this thesis have a positive impact on maternal wellbeing and mental health. Another possible pathway is that if the mother has close and supportive relationships with family and friends, then the possibility is that this closeness and support extends to the child directly, thus possibly having a positive direct impact on children's development and wellbeing. It is possible too that the closeness and support provided by family and friends has a direct and/or indirect effect on parenting. These pathways have not been modelled in this study, as its focus is to operationalise the concept of social assets and test its impacts on those living in income inequality; however, studying the direct and indirect impacts that being close and supported by family and friends have may be analysed in a possible future study.

It should be noted that the analysis presented in this chapter does not give a direction of causation between social assets and CSEB development. A case could hypothetically be made that mothers with children with higher cognitive development and higher SEB development are more likely to have close and supportive relationships with close friends and family. However, given that: (1) the social assets measured pre-date the CSEB measurements, (2) the theory suggests the direction of causation runs from social assets having an improving effect on children

and families, and (3) the qualitative literature presents evidence that concurs with the theory that social assets have an advantageous impact on children and families, the conclusion of this analysis, therefore, is that social assets have an improving impact on children's CSEB outcomes for children living in persistent low income. This assertion is consistent with the theoretical and empirical evidence.

8.5 Discussion

The Sustainable Livelihoods Approach (SLA) posits that social assets have a beneficial impact on the experience of poverty and can enable people to sustain a livelihood. Social assets as defined by the SLA, and adapted for use in the UK, are shown qualitatively to have an advantageous impact on the lives of people living in poverty and are considered valuable for supporting individuals' livelihood strategies. This chapter set out to operationalise the concept of social assets and examine its impacts on children's CSEB outcomes.

In operationalising the concept of social assets, an exploratory factor analysis produced a 3 factor solution, the three factors were interpreted substantively as *leave child*, *closeness/support*, and *visiting*. Of these, factor two, *closeness to and support*, had the strongest association with income and children's CSEB development and had the strongest theoretical link to the SLA and to the concept of social capital advocated by Bourdieu. This factor was carried forward in the analysis to represent social assets.

The analysis showed that social assets have a positive statistically significant association with naming vocabulary, which supports the hypotheses and the related literature that asserts that social capital leads to higher educational attainment of young people. However, the relationship with cognitive ability was not strong and held only for naming vocabulary and not for picture similarities. It would therefore be disingenuous to claim that social assets are having a large statistical impact on cognitive development despite the strong statistical significance, with such slight coefficients.

Chapter five explains the difference between these two cognitive development variables and explains why they cannot be used in combination. Naming vocabulary has been tested to reliably and validly measure language acquisition, which is considered a lower-order aspect of cognitive functioning, whereas picture similarities has been tested to reliably and validly measure problem-solving skills, an aspect of cognitive function that is considered complex. The difference in these two functions and the cognitive processes that are believed to underlie them may explain why naming vocabulary is more receptive to social assets.

For naming vocabulary, social assets as measured by *closeness/support* are associated with a higher score and a greater proportion of variance explained in the model. While this enables the null hypothesis to be rejected, the study does not consider social assets to have a sufficiently large impact worthy of great note on naming vocabulary. The theory that social assets have an improving impact on children's cognitive development is not strongly supported in terms of the size of the coefficients or the proportion of variance explained but is certainly supported in terms of statistical significance.

The impact of social assets on children's SEB development is stronger both in terms of significance, coefficients and the proportion of variance explained. The association of social assets with SEB is one that resonates with the literature and theory. In the literature, after a systematic review of 22 peer-reviewed articles concerning social capital's impact on children's outcomes, where family social support was a main component of the measure of social capital, Ferguson (2006) concluded that social capital is the second best predictor of children's wellbeing next to poverty.

In the literature too, Ridge (Ridge and Wright, 2008b) notes that the main protective factor for wellbeing for young people living in poverty, and one that protects them against future negative outcomes, is the quality of their peer and family relationships. The measure of social assets used in this chapter cannot be said to measure either the detailed nature or quality of social relationships, but it certainly enables the strong

and firm conclusion that *closeness/support* has a large, statistically significant association with children's SEB developmental outcomes, even in children this young. It is hypothesised that this relationship will gather strength as the children grow older, which can be tested in future research.

8.6 Conclusions

The first conclusion of this chapter regards operationalising the latent construct social assets. In order to operationalise such a concept, it needs to be tightly defined and measured. The weakness of the construct in this study is the reliance on existing variables in GUS that were not collected specifically to measure this concept. Factor one, which measures whether a parent could leave a child in an emergency situation, and factor three, which measures the frequency of visits to and from friends with children, do not provide any useful information and do not relate strongly to the concept of social assets. These were discarded from further analysis. Factor two, closeness and support from family and friends, however, is the factor that most strongly relates to the concept of social assets and more strongly to Coleman's concept of social capital.

The second conclusion of this chapter is that social assets as measured by *closeness/support*, while statistically significant, are not strong for cognitive development. For the cognitive development measured by picture similarities, social assets is completely insignificant, confirming that this higher-order cognitive development variable is not as strongly affected by the sociodemographic environmental variables that have been tested in these recent chapters. Indeed, only income has been significant for this variable. *Closeness/support* is associated with higher levels of naming vocabulary and does somewhat moderate the negative coefficients for income on naming vocabulary. The moderation effects show that higher social assets and low income are associated with an increasing level of naming vocabulary, and that lower social assets and lower income is associated with diminishing levels of naming vocabulary. Although this relationship is significant statistically, it is not as strong, nor as significant, as the relationship between social assets and SEB development.

The third conclusion is that social assets do have a strong association with SEB development. Furthermore, for those living in persistent low income, possessing high social assets is significantly associated with far higher levels of SEB development. Although this chapter shows the positive association and differential effects based on income and social assets on SEB development, confirming the research questions and the resulting hypotheses, there are several aspects that would have improved the analysis and results in this chapter.

The first would be a measure of social assets that was planned prior to the study and piloted for reliability and validity. The measure of social assets used in this thesis is limited by the variables available in the study. The second aspect that would improve this thesis would be a better measure of income, such as the one collected in the Family Resources Study, but it is acknowledged that this is not possible outwith a government study dedicated to income and expenditure, and it is acknowledged that the measure of income in GUS, although imperfect, is in keeping with other studies of this type. This analysis would be interesting to repeat when the children are older and when there are measures of educational attainment. This would allow examination of whether social assets lead to a reproduction of advantage and disadvantage in education as per Bourdieu's thesis in social capital.

The final conclusion is that although social assets are socially patterned, and are associated with higher and lower levels of CSEB development, it is wrong to assume that only those with higher socioeconomic status have high social assets. This chapter shows that even those living in the lowest level of poverty have networks and connections that they can call upon, as measured by closeness and support of family and friends, which have a positive impact on children's CSEB development and which attenuate the negative impacts of persistent low income. The following chapter begins with constructing the latent measure financial vulnerabilities before carrying out simple and multiple regression models (with interaction effects).

9 Forever in debt: exploring the association between financial vulnerabilities and children's CSEB outcomes

9.1 Introduction

This chapter focuses on testing the merits of applying the concept of financial vulnerabilities from the Sustainable Livelihoods Approach (SLA) to children's cognitive, social, emotional and behavioural (CSEB) developmental outcomes for children living in income inequality. As discussed in chapter two, vulnerability is a phrase is often used interchangeably with poverty. However, the SLA emphasises that poverty is different to vulnerability: poverty indicates lack or want whereas vulnerability indicates insecurity, risk and stress. Moreover, income poverty can be reduced by borrowing, but the resulting debt increases vulnerability. In the SLA, financial assets relate to income and wealth; however, as income is used to derive the primary independent variable - longitudinal income inequality - used in this chapter, the examination, therefore, is not of the impact of financial assets, but of *financial vulnerabilities*.

This chapter uses the term 'financial vulnerability' as an overarching term, encompassing both financial stress and debt. Financial vulnerabilities are operationalised into quantitative indicators by matching questions in GUS to those in the SLA qualitative interview schedule to derive two latent constructs of financial vulnerability: *debt* and *financial stress*. In so doing, this chapter addresses research question three raised at the end of chapter four:

> *What impacts do the financial vulnerabilities of families living in Scotland have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes? Do families' financial vulnerabilities reduce or augment the impacts of poverty on children's early CSEB outcomes? How does this differ by income inequality?*

9.2 Analysis

Financial assets and vulnerabilities in the SLA, adapted for use in UK poverty studies, include earned income, pensions, savings, *credit*, state benefits and child

maintenance (May et al., 2009: 12 [my emphasis]). The operationalisation of financial vulnerabilities draws on the theoretical and empirical literature to inform its content and construct. As set out in the methodology chapter, there are two strands to the analysis. The first is the task to derive the latent construct financial vulnerabilities which comprises two measures: debt and financial stress. The second task uses OLS multiple regression with interaction terms to examine whether financial vulnerabilities have a significant, and/or moderating, effect on children's CSEB outcomes for children living in persistent low income and income inequality.

9.3 Task 1 - deriving financial vulnerability

In sweep five, GUS collects data on debt using 12 variables asking if families are behind on paying standard household bills. It should be noted that these questions are not gathering data on debt in the form of current credit owed, which could arguably be viewed as a financial asset; rather, the debt variables focus on whether families are *behind* on various payments: credit facilities, utility bills and other financial commitments. In this way, the debt measure in this thesis really does capture financial vulnerability as explicated by Chambers (2010). In sweep five, GUS also collects data on broader financial stress, such as how families are currently managing financially, whether they habitually struggle to service their debts and whether they are generally worried about money.

Using these variables on debt and broader financial stress, two measures representing the concept of financial vulnerability are derived for use in the analysis, using Exploratory Factor Analysis (EFA) as described in chapter six. The factors extracted from these two EFAs will provide continuous measures of *debt* and *financial stress*. Financial stress is a very similar construct to the one derived by Whelan and Maitre (Whelan and Maitre, 2008, Whelan and Maitre, 2010) as described in section 2.2.3. The next section presents the two exploratory factor analyses used to derive the two measures of financial vulnerability; the subsequent two sections comprise the analyses and the final two sections discuss the findings and conclude the chapter.

9.3.1 Exploratory Factor Analysis of debt variables

In this analysis, there are 12 variables collected on ‘debt', from which a smaller set of construct(s) will be derived.

Table 9.1 List of 12 debt variables tested for factor analysis

Variable	Count	Percent
Behind with household bills: electricity	150	3.92
Behind with household bills: gas	139	3.64
Behind with household bills: coal/oil	11	0.30
Behind with household bills: council tax	317	8.30
Behind with household bills: insurance policy	5	0.14
Behind with household bills: telephone	81	2.11
Behind with household bills: TV rental etc	20	0.51
Behind with household bills: other hire purchase payments	43	1.13
Behind with household bills: water	12	0.30
Behind with household bills: rent/mortgage	109	2.84
Behind with household bills: credit card	115	3.00
Behind with household bills: loan repayment	77	2.01

Counts and percentages based on weighted data
Sweep 5 cross-sectional weight and survey weights used
Source: GUS sweep 5
N = 3823

Table 9.1 displays the 12 types of bills that families may be indebted on, their counts and percentage incidence in the GUS data. From the descriptive statistics it is clear that four of the debt variables have less than 1% incidence in the data and may not therefore be suitable for factor analysis. These are:

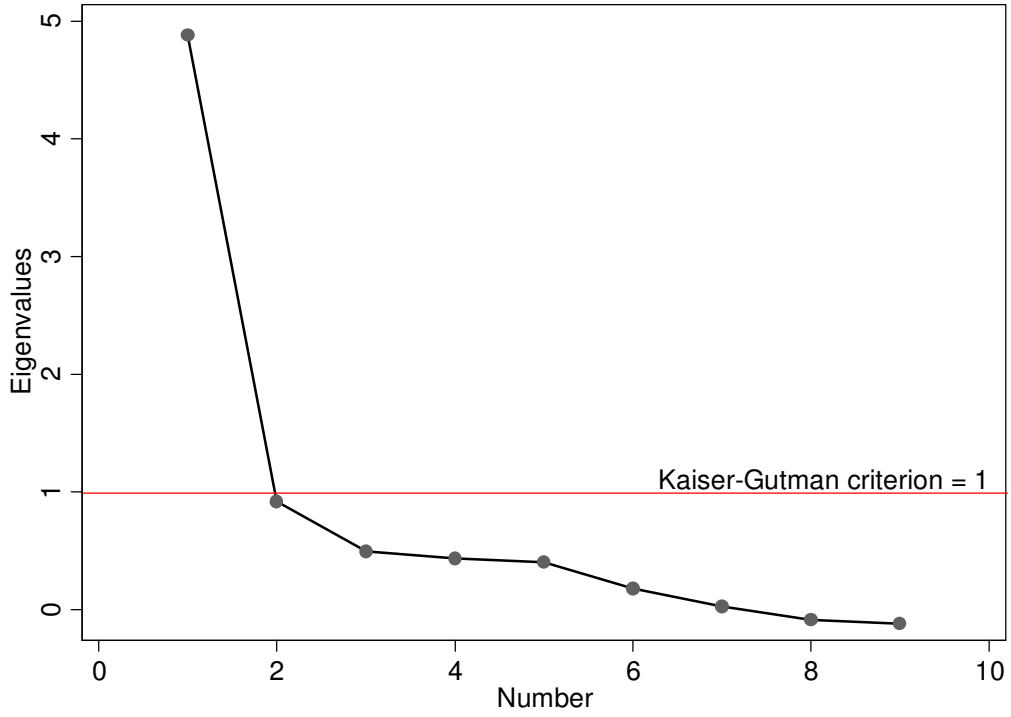
- item 3 - being behind on coal/oil bills;
- item 5 - being behind on insurance policy bills;
- item 7 - being behind on TV rental bills; and
- item 9 - being behind on water bills.

To further test their suitability for factor analysis, a correlation matrix is calculated using Stata (version 12) polychoric correlation routine for categorical data due to the nature of the debt variables. The resulting matrix of polychoric correlations (not shown) shows that three of those four variables are unable to generate many correlations at all due to insufficient number of cases; items three (coal/oil bills), five

(insurance policy bills) and nine (water bills). This confirms their unsuitability for the factor analysis technique and so variables three, five and nine were removed from any further analysis. Item 7, being behind on TV rental bills, did generate sufficient correlations and so is kept in the analysis.

The polychoric correlations matrix of the remaining nine debt variables can be found at the back of the thesis in appendix F. All correlations are higher than 0.3, which is the suggested threshold for factor analysis (Field, 2009). This shows that they correlate well, indicating their suitability for factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.682, which is above the commonly recommended value of 0.6, and is therefore acceptable but not exceptional. Bartlett's test of sphericity X^2 (28) = 3210.47, $p < 0.001$ is significant, indicating that correlations between items are sufficiently large for factor analysis. An exploratory factor analysis for categorical data was identified as the optimum method to reduce the nine debt variables to one usable construct representing ‘debt', as discussed in chapter six. The following tables and figures present the results of the two EFAs; the first for debt and the second for financial stress.

Figure 9.1 Scree plot of eigenvalues after Debt EFA



The scree plot in Figure 9.1 displays the eigenvalues graphically. The point of inflection is at the second factor which is below the recommended value of the criterion. As the remaining factors do not add a great deal to the variance and their eigenvalues do not achieve the suggested value of 1.0, a one factor solution is preferred. The internal consistency for the one factor solution was tested using Cronbach's alpha, which was moderate but acceptable at 0.63. No increases in the alpha would have been achieved by eliminating any more of the debt items. As this factor solution comprises just one factor, rotation of the factor would not be appropriate as discussed in chapter six.

Table 9.2 Factor loadings and communalities

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.88356	3.96411	0.6824	0.6824
Factor2	0.91945	0.42174	0.1285	0.8109
Factor3	0.49772	0.06215	0.0696	0.8805
Factor4	0.43556	0.02928	0.0609	0.9413
Factor5	0.40628	0.22209	0.0568	0.9981
Factor6	0.18419	0.15383	0.0257	1.0238
Factor7	0.03036	0.11444	0.0042	1.0281
Factor8	-0.08408	0.03274	-0.0117	1.0163
Factor9	-0.11681	.	-0.0163	1

Source: GUS sweep 5
N = 3823

In the eigenvalues in table 9.2 there is only one factor with an eigenvalue greater than the Kaiser-Gutman criterion of 1.0. This single factor accounts for over 68% of the variance as shown in table 9.3.

Table 9.3 Debt factor analysis (one factor)

Variable label	Factor 1 loadings	Communality
Behind with household bills: electricity	0.802	0.644
Behind with household bills: gas	0.701	0.492
Behind with household bills: council tax	0.868	0.753
Behind with household bills: telephone	0.698	0.487
Behind with household bills: TV rental etc	0.766	0.586
Behind with household bills: other hire purchase payments	0.683	0.467
Behind with household bills: rent/mortgage	0.754	0.569
Behind with household bills: credit card	0.670	0.450
Behind with household bills: loan repayment	0.661	0.437
Eigenvalue	4.884	
% of total variance	68.240	
Total variance	**68.240%**	

Source: GUS sweep 5
N = 3823

Table 9.3 provides information on the one factor solution. The communalities are all above 0.4, higher than the recommended threshold, showing that each debt item shares some common variance with the other debt items. The factor loadings too are all above the threshold of 0.4 suggested by Stevens (2002). These are necessary preconditions of factor analysis. This single factor accounts for 68.24% of the variance of all the items. The factor label for this one factor is *Debt*. Factor scores

were calculated and stored for use as a single variable. A higher score on the debt factor indicates a higher incidence of debt.

9.3.2 Exploratory factor analysis of financial stress

GUS collects data in sweep five on financial stress, similar to the one generated qualitatively in the SLA and the one derived quantitatively by Whelan et al (2001, 2008, 2010). The exact wording of the questions and their possible responses are set out below (Bradshaw et al., 2010):

- Thinking back over the past 12 months, how often would you say you have had trouble with debts that you found hard to repay?
    - 1 almost all the time,
    - 2 quite often,
    - 3 only sometimes,
    - 4 never
- How often would you say you have been worried about money during the last few weeks?
    - 1 almost all the time,
    - 2 quite often,
    - 3 only sometimes,
    - 4 never
- Taking everything together, which of the phrases on this card best describes how you and your family are managing financially these days?
    - 1 Manage very well
    - 2 Manage quite well
    - 3 Get by alright
    - 4 Don't manage very well
    - 5 Have some financial difficulties
    - 6 Are in deep financial trouble

The first of these three variables representing *financial stress* questions the frequency with which families have had difficulty paying debts. While not identical, this

variable does have an overlap with the debt variables in the previous section. The extent of this overlap will be tested with a correlation between the debt factor and the financial stress factor once it has been calculated. These three variables are ordinal with between four and six response categories as described in chapter five, therefore a matrix of polychoric correlations is calculated to test the three variables' suitability for factor analysis.

Table 9.4 Polychoric correlation matrix

	MeWdeb	MeWmnw	MeWmnf01
MeWdeb	1		
MeWmnw	0.713	1	
MeWmnf01	0.678	0.700	1

Source: GUS sweep 5
N = 3823

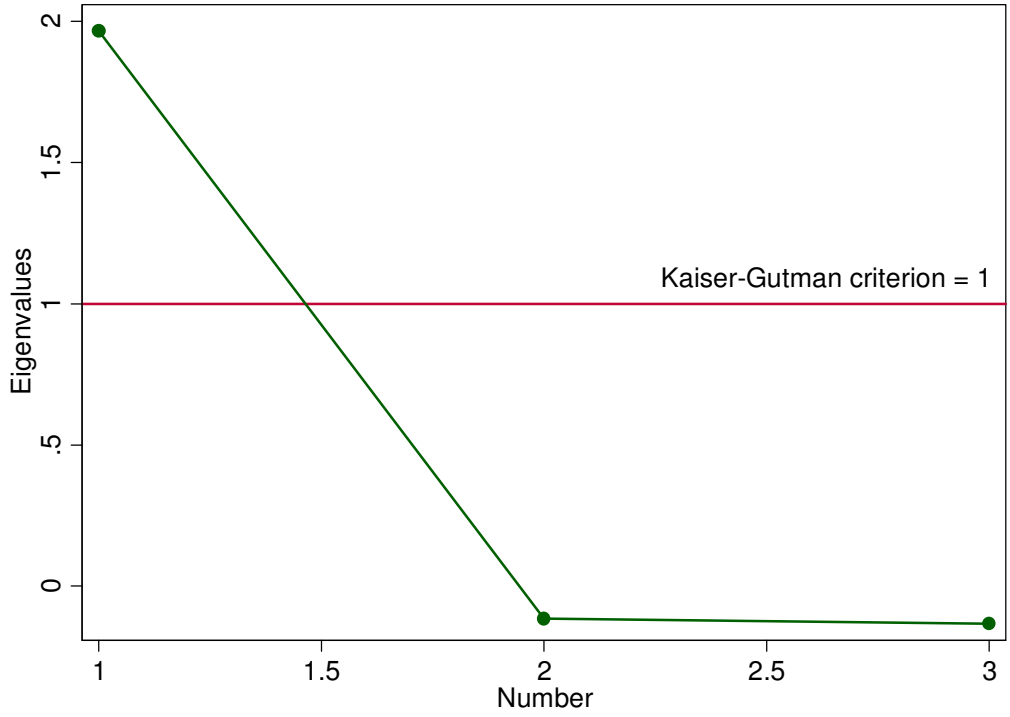
Table 9.4 shows that all of the correlations are higher than the recommended 0.3, showing they have sufficient correlation for factor analysis for the financial stress variables. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.702, which is above the commonly recommended value of 0.6, and is considered good. Bartlett's test of sphericity X^2 (3) = 3192.14, $p < 0.001$ is significant, indicating that correlations between items are sufficiently large for factor analysis. An exploratory factor analysis for categorical data was used because the purpose of the factor analysis was to reduce the three financial stress variables to one composite construct representing *financial stress* as discussed in chapter six.

Table 9.5 factor loadings and communalities

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	1.96756	2.08207	1.1435	1.1435
Factor2	-0.11451	0.01794	-0.0665	1.077
Factor3	-0.13245		-0.077	1

Source: GUS sweep 5
N = 3823

Figure 9.2 Scree plot of eigenvalues after financial stress EFA



The eigenvalues presented in table 9.5 and the point of inflection shown on the scree plot at Figure 9.2 show that there is very clearly only one factor with an eigenvalue higher than the Kaiser Goodman criterion of 1.0. As the remaining factors do not add a great deal to the variance and their eigenvalues do not achieve the suggested value of 1.0, a one factor solution is preferred.

Table 9.6 Financial stress factor analysis (one factor)

Variable name	Variable label	Factor loadings	Communality
MeWdeb	How often are household debts hard to pay?	0.807	0.652
MeWmnw	How often money worries in the past weeks?	0.826	0.682
MeWmnf01	How does household manage financially	0.796	0.634
	Eigenvalue	1.968	
	% of total variance	114.3	
	Total variance	**114.3%**	

Source: GUS sweep 5
N = 3823

In table 9.6 the total variance explained is greater than one. This is called negative residual variance and can be caused by having skewed variables, which, if sufficiently small can be ignored (Muthen, 2005).

9.4 Descriptive statistics

Table 9.7 presents summary statistics for the two financial vulnerability factors including their range.

Table 9.7 Summary of financial vulnerabilities factors

Factor	Count	Mean	Std. Dev.	Min	Max
Financial Stress factor	3825	0	1	-1.018	2.382
Debt factor	3823	0	1	-0.323	9.291

Source: GUS sweep 5
N = 3823

The two financial vulnerability factors are expected to correlate due to the question on debt highlighted in the financial stress factor. In fact, the Pearson's product moment correlation is 0.486, which gives a shared variance of 22%. This is not high and indicates that although they have a moderate relationship with each other they are still measuring different concepts.

The debt and the financial stress factors have a mean of 0 and a standard deviation of 1. This means that any factor score below zero, i.e. a negative number, indicates lower than average financial vulnerabilities and any factor score above zero indicates higher than average financial vulnerabilities on these two factors. As indicated by the negative residual variance of the debt factor, this factor is skewed as only a minority of people (16%, n=598) have debt as measured by being behind on bills. For the debt factor, the skewness is 3.83 and the kurtosis is 19.79, which shows that its distribution is not normal. Regression analysis is very robust to non-normal data so has been used in this chapter for consistency and comparability across the thesis. However, for rigour, the results of the simple regression for the debt factor have been checked against those of the nonparametric Kruskal-Wallis technique, which can be

found at the back of the thesis in appendix G. As expected, this gives the same results as the OLS regressions.

The descriptive statistics for the two measures of financial vulnerability are presented as a table of means with confidence intervals, where higher means indicate higher financial vulnerability, against the control variables used in this study: birth order of child, ethnicity of the mother, sex of the child, age of the mother at first birth, and longitudinal measure of family composition. These data are replicated using ranked data and the same relationship is confirmed, as can be seen in appendix G.

Table 9.8 Difference in means of financial vulnerabilities factors

Control variables	Financial stress (mean)	Confidence Intervals (CIs)	Debt factor (mean)	Confidence Intervals (CIs)
Birth order:				
First born child	0.052	(-0.015 - 0.118)	0.051	(-0.016 - 0.118)
Not first born child	0.117	(0.060 - 0.173)*	0.098	(0.038 - 0.158)*
Maternal Ethnicity:				
White	0.082	(0.031 - 0.132)*	0.070	(0.023 - 0.117)*
Other ethnic background	0.163	(-0.063 - 0.389)	0.194	(-0.135 - 0.523)
Sex:				
Female	0.054	(-0.008 - 0.117)	0.032	(-0.024 - 0.088)
Male	0.112	(0.046 - 0.177)*	0.114	(0.034 - 0.193)*
Age of mother at first birth:				
under 20	0.472	(0.356 - 0.588)*	0.505	(0.347 - 0.662)*
20 to 29	0.164	(0.095 - 0.233)*	0.078	(0.004 - 0.151)*
30 to 39	-0.237	(-0.300 - -0.174)*	-0.168	(-0.225 - -0.110)*
40 or over	-0.144	(-0.365 - 0.076)	-0.085	(-0.325 - 0.155)
Family transitions:				
Stable couple family	-0.106	(-0.158 - -0.054)*	-0.092	(-0.136 - -0.049)*
Stable lone parent family	0.611	(0.465 - 0.756)*	0.570	(0.365 - 0.774)*
Lone parent who repartnered	0.515	(0.368 - 0.661)*	0.477	(0.256 - 0.699)*
Couple who separated	0.653	(0.530 - 0.776)*	0.504	(0.306 - 0.702)*
Separations and repartnerings	0.495	(0.319 - 0.670)*	0.402	(0.157 - 0.648)*

Source: GUS sweeps 1 to 5
N = 3823
* $p < 0.05$

Table 9.8 above is presented in three sections. Section 1 lists the control variables. Section 2 divides into two columns: the first column gives the means of the financial

stress factor and the second column gives the confidence intervals around these means. Section 3 also divides into two columns: the first column gives the means of the debt factor and the second column gives the confidence intervals around these means.

In the second column of the second and third sections the asterisks highlight those who have higher and lower than average levels of financial vulnerability on the financial stress and the debt factors respectively. What is immediately noticeable is that it is the same categories of people who are vulnerable on both measures of financial vulnerability.

Those who have higher than average levels of financial vulnerability on both measures are: those whose child is not the first born, those who are aged under 30 years old (but especially those aged under 20 years) at the time of birth of their first child, and all family compositions except a stable couple family. Those who experienced the highest levels of financial vulnerability are: stable lone parent families, couples that have recently separated, and those aged less than 20 years old at the time of first birth. What is striking about this table is just how widespread financial vulnerability is. It is easier to describe those who are in less vulnerable: those aged 30 and over, those who are white and those in a stable couple family, than it is to list those experiencing some level of financial vulnerability.

What the means of the two financial vulnerability measures also show is the incremental nature of financial vulnerability for the various groups; e.g. those aged less than 20 years old are *three times* more vulnerable as those aged 20 to 29 years old, and *five times* more vulnerable than those aged over 30 years old on the financial vulnerabilities factor. Those aged less than 20 years old have *double* the level of debt as those aged 20 to 29 years old, and *five times* the level of debt as those aged 30 to 39 years old. For family composition, those who score more highly than average on the two measures of financial vulnerability have similar levels of vulnerability; the most vulnerable in this category is a couple who have separated, followed by a stable lone parent family.

9.5 Differences in financial vulnerabilities by income inequality

Table 9.9 presents a table of means of the financial vulnerabilities factors against the income inequality quintiles. Following this table are simple regressions with quasi variance (table 9.10 and table 9.11) which analyse whether the 5 permanent income categories are significantly different from each other for each of the financial vulnerability factors.

Table 9.9 **Financial vulnerabilities factors and income inequality**

	Financial stress factor (mean)	95% Confidence Interval		Debt factor (mean)	95% Confidence Interval	
Income inequality:						
Quintile 1	0.677	0.568	0.786	0.637	0.496	0.779
Quintile 2	0.446	0.367	0.525	0.323	0.212	0.435
Quintile 3	0.038	-0.036	0.111	-0.112	-0.166	-0.058
Quintile 4	-0.216	-0.279	-0.153	-0.216	-0.254	-0.178
Quintile 5	-0.565	-0.619	-0.510	-0.294	-0.315	-0.273

Mean of social asset factors = 0
Means based on weighted data
Sweep 5 longitudinal weight and survey weights used
Source: GUS sweeps 1 to 5

The table of means in table 9.9 shows that debt and financial stress decrease as income increases and higher levels of debt correspond to lower levels of income. The pattern for each factor is very similar. Income quintiles one and two, the two lowest income quintiles, have the highest levels of debt and financial stress. Those in income quintiles three, four and five, have much lower levels of debt and financial stress. These findings will now be tested using simple regression with quasi variance in table 9.10 and the significance of the differences between the categories of income inequality tested using Wald statistics in table 9.11. The result of this analysis is confirmed using Kruskal Wallis tests, nonparametric analyses of variance, with post hoc Mann Whitney U tests, in appendix G.

Table 9.10 Simple regression with quasi variance for financial vulnerabilities

Financial vulnerabilities	Coef.	Std. Err.	t	P>t	Quasi Variance	CI_qv lower	CI_qv upper
Debt:							
Quintile 1 (ref)	-	-	-	-	0.005	-0.1386	0.1386
Quintile 2	-0.314	0.095	-3.32	0.001	0.003	-0.3760	-0.2520
Quintile 3	-0.750	0.074	-10.14	0.000	0.001	-0.812	-0.688
Quintile 4	-0.853	0.074	-11.55	0.000	0.000	-0.853	-0.853
Quintile 5	-0.932	0.072	-12.88	0.000	0.000	-0.932	-0.932
constant	0.637	0.071	9.01	0.000	-	-	-
r^2	0.100						
N	2862						
df_r	65						
Financial stress:							
Quintile 1 (ref)	-	-	-	-	0.003	-0.107	0.107
Quintile 2	-0.230	0.066	-3.5	0.001	0.002	-0.318	-0.143
Quintile 3	-0.639	0.069	-9.32	0.000	0.001	-0.701	-0.577
Quintile 4	-0.893	0.060	-14.79	0.000	0.001	-0.955	-0.831
Quintile 5	-1.241	0.062	-19.93	0.000	0.001	-1.303	-1.179
constant	0.677	0.055	12.4	0.000	-	-	-
r^2	0.185						
N	2862						
df_r	65						

Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Longitudinal income inequality as described from page 101

The simple regression with quasi variance for the first factor, *debt*, has highly significant p-values for each of the income quintiles at the 95% confidence level, showing that there are statistically significant differences in this factor across the income spectrum (see table 9.10). Those living in income quintile 5 are almost a whole standard deviation lower on the debt factor than those in income quintile one and, those in income quintiles three, four and five have coefficients that are large, negative and reflect a great difference between people living in these income quintiles and income quintiles one and two. Ten per cent of the variance in the debt factor is explained by income as shown by the r-squared value.

The levels of financial stress in the second half of the table are incrementally lower for increasing income quintiles. The coefficients are even larger for financial stress than they are for the debt factor, with income quintile five being 1.24 of a standard

deviation lower in financial stress than income quintile one. As with the debt factor, there appears to be a divide between those in the bottom two income quintiles compared to the higher three income quintiles. However, this model does not indicate whether each of the income quintiles is different from the others. In order to ascertain whether or not there is a significant difference between the income quintiles a series of Wald tests given in table 9.11. Income accounts for approximately 18% of the variance in the financial stress factor as shown by the r-squared value.

Table 9.11 Wald tests for longitudinal income inequality and financial vulnerabilities

Longitudinal income inequality:	Quintile 1	Quintile 2	Quintile 3	Quintile 4
Debt:				
Quintile 2	12.32***			
Quintile 3	93.67***	47.46***		
Quintile 4	145.66***	96.99***	10.76***	
Quintile 5	173.54***	127.11***	33.06***	-
Financial stress:				
Quintile 2	10.60***			
Quintile 3	102.00***	55.63***		
Quintile 4	199.30***	146.36***	32.29***	
Quintile 5	385.23***	340.78***	181.56***	60.72***

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Longitudinal income inequality as described from page 101
N = 2862

The results show that there is a statistically significant difference between the underlying distributions of the debt and financial factor scores of each of the permanent income quintiles, which can be determined by the very high levels of significance, revealing that those on persistent low incomes have higher levels of debt and financial stress. The differences in financial vulnerability are incremental across the income quintiles and there is a statistically significant difference between each and every income quintile.

9.6 The impact of financial vulnerabilities on CSEB outcomes

Using the technique of OLS multiple regression models with interaction effects described in chapter six, this section explores the 3 outcome variables with longitudinal income inequality, material deprivation and the two financial vulnerability factors. The two financial vulnerability factors are entered into the model together so each regression table represents financial vulnerability in its entirety rather than the two financial vulnerability measures separately. Each of the following three tables (table 9.12, table 9.13 and table 9.14) includes three models comprising: a sociodemographic model with longitudinal income inequality (model 1); with financial vulnerabilities added (model 2); and with material deprivation added (model 3).

Table 9.12 Naming vocabulary and financial vulnerabilities

	Model 1 Coef./Std. err.	Model 2 Coef./Std. err.	Model 3 Coef./Std. err.
Permanent income quintiles (ref: Q5 – highest)			
Quintile 1	-0.635***		-0.578***
	(0.086)		(0.100)
Quintile 2	-0.364***		-0.349***
	(0.061)		(0.065)
Quintile 3	-0.149*		-0.142*
	(0.059)		(0.063)
Quintile 4	-0.0415		-0.0340
	(0.050)		(0.049)
Birth order (ref: first born)	-0.237***	-0.326***	-0.240***
	(0.037)	(0.039)	(0.041)
Sex of child (ref: female)	-0.161***	-0.144***	-0.142**
	(0.042)	(0.043)	(0.043)
Ethnicity of mother (ref: white)	-0.635***	-0.843***	-0.670***
	(0.129)	(0.148)	(0.161)
Longitudinal family composition (ref: stable couple family)			
Stable lone parent family	0.0433	0.213**	0.0695
	(0.096)	(0.078)	(0.105)
Lone parent who repartnered	-0.0498	-0.175	-0.0323
	(0.089)	(0.088)	(0.098)
Couple who separated	-0.0291	-0.0904	-0.0297
	(0.054)	(0.058)	(0.065)
Separations and repartnerings	-0.139	-0.281*	-0.146
	(0.116)	(0.116)	(0.132)
Maternal age at first birth (ref: 40 or over)			
30 to 39	-0.125	-0.124	-0.107
	(0.108)	(0.112)	(0.115)
20 to 29	-0.263*	-0.334**	-0.241*
	(0.106)	(0.109)	(0.112)
Under 20	-0.329*	-0.503**	-0.296
	(0.158)	(0.160)	(0.164)
Financial stress factor		-0.0552**	-0.0187
		(0.019)	(0.020)
Debt factor		-0.0555**	-0.0401*
		(0.017)	(0.019)
Materially deprived			-0.0279
			(0.057)
Constant	0.602***	0.501***	0.559***
	(0.112)	(0.107)	(0.114)
R-squared	0.113	0.094	0.118
No. of cases	3463	3471	3166
dfres	65	65	65

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

The control variable only model (1) in table 9.12 presents the naming vocabulary outcome variable with the longitudinal income inequality variable and control variables, which shows, as per chapter 7, that income has a highly significant association with naming vocabulary. In the control variable only model, sociodemographic variables such as birth order of the child, sex of the child, ethnicity of the mother and maternal age at first birth are all statistically significant, and continue to be so at the same significance level and coefficient after the two financial vulnerability variables are entered into the equation at model two.

In model two, financial vulnerabilities are entered into the analysis without the longitudinal income inequality variable. Here, both the debt and the financial stress factors are highly significantly associated with lower scores on naming vocabulary; although they barely alter the coefficients of the control variables from those in the control variable only model (model one). Ergo, while financial vulnerabilities are significantly associated with naming vocabulary, they are not having an important impact.

In model three financial vulnerabilities are entered into the analysis with the longitudinal income inequality variable. The introduction of longitudinal income inequality renders the financial stress factor insignificant; however, the debt variable continues to be significant at the reduced level of five per cent. The change in variance explained as shown by the R squared is negligible indicating that neither debt nor financial stress is having an important impact on naming vocabulary.

As with the results from chapter eight on social assets, financial vulnerabilities are not important to naming vocabulary. What is coming through strongly is that, of all the independent variables in the model, income appears to have the most persistent negative association with naming vocabulary, taking precedence over other measures of economic inequality such as material deprivation. Income itself proves to be more important to children's naming vocabulary cognitive development than family social or financial assets.

Interestingly, one of the family characteristics widely assumed to have a negative impact on child development, family composition (or family breakdown to use the terminology of the Coalition), is completely insignificant even in the control variable only model. This means that being part of a lone, separated or reconstituted family has no adverse impact on early years' cognitive development for naming vocabulary, when income is taken into the equation.

Table 9.13 Picture similarities and financial vulnerabilities

	model 1 Coef./Std. err.	model 2 Coef./Std. err.	model 3 Coef./Std. err.
Permanent income quintiles (ref: Q5 – highest)			
Quintile 1	-0.472***		-0.410***
	(0.073)		(0.091)
Quintile 2	-0.367***		-0.342***
	(0.066)		(0.069)
Quintile 3	-0.210***		-0.169**
	(0.053)		(0.054)
Quintile 4	-0.247***		-0.199***
	(0.050)		(0.051)
Birth order (ref: first born)	-0.0595	-0.128***	-0.0661
	(0.038)	(0.037)	(0.039)
Sex of child (ref: female)	-0.115**	-0.106**	-0.0861*
	(0.039)	(0.038)	(0.040)
Ethnicity of mother (ref: white)	0.0251	-0.0616	-0.0310
	(0.119)	(0.126)	(0.122)
Longitudinal family composition (ref: stable couple family)			
Stable lone parent family	-0.0436	-0.193*	-0.0164
	(0.092)	(0.079)	(0.097)
Lone parent who repartnered	-0.0511	-0.127	-0.0126
	(0.077)	(0.077)	(0.086)
Couple who separated	-0.0547	-0.0910	-0.0456
	(0.064)	(0.067)	(0.075)
Separations and repartnerings	-0.0421	-0.130	-0.0846
	(0.106)	(0.109)	(0.117)
Maternal age at first birth (ref: 40 or over)			
30 to 39	-0.0228	-0.0318	-0.0458
	(0.078)	(0.076)	(0.083)
20 to 29	-0.0736	-0.145	-0.102
	(0.087)	(0.085)	(0.090)
Under 20	-0.0918	-0.224	-0.172
	(0.149)	(0.143)	(0.165)
Financial stress factor		-0.0610**	-0.0321
		(0.020)	(0.023)
Debt factor		0.00747	-0.00960
		(0.024)	(0.028)
Materially deprived			0.0158
			(0.078)
Constant	0.380***	0.227***	0.356***
	(0.087)	(0.076)	(0.092)
R-squared	0.037	0.024	0.037
No. of cases	3460	3468	3164
dfres	65	65	65

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

Picture similarities is a higher order cognitive development variable associated with more complex cognitive processing such as problem solving (Hill, 2005). What can be seen from model one in table 9.13 is that the sociodemographic variables often reported as being related to child development are not all significant here, such as age of the parent and family composition. Of the control variables in the model, only the sex of the child is statistically significantly associated with the acquisition of picture similarities in model one. Interestingly, the ethnicity of the mother has no bearing on picture similarities; although this caveat should also be borne in mind with the caveat in chapter five that the British Ability Scales II are not suitable for use with children for whom English is not their first language (Hill, 2005).

Once again, family composition has no statistical significance. This means that there is no difference in cognitive development for the children of a stable couple family, a lone parent family, a separated or reconstituted family. Maternal age is also insignificant, showing that the age of the mother is not pertinent to cognitive development on either of the cognitive development outcome measures. In model one, longitudinal income inequality is highly significantly associated with picture similarities. Each income quintile is significantly associated with lower scores compared to the highest income quintile, but not incrementally so.

In model two, financial stress is significant with picture similarities; however, in model three, when longitudinal income inequality is entered into the model, financial stress becomes insignificant. In the final model (three), the only variables significantly associated with picture similarities are the sex of the child and longitudinal income inequality. All other variables are insignificant. This shows quite strongly that income has high explanatory power when it comes to cognitive development which supports the existing research evidence from chapter four. How income affects cognitive development is unable to be untangled from this analysis, although its substantive results are the same as the studies into income and cognitive development elsewhere in the literature. Possible pathways for income's impact on cognitive development may be explained by the family investment model, discussed in section 4.3.1.

Table 9.14 SEB and financial vulnerabilities

	model 1 Coef./Std. err.	model 2 Coef./Std. err.	model 3 Coef./Std. err.
Permanent income quintiles (ref: Q5 – highest)			
Quintile 1	-0.834***		-0.535***
	(0.088)		(0.108)
Quintile 2	-0.519***		-0.332***
	(0.059)		(0.066)
Quintile 3	-0.265***		-0.161**
	(0.052)		(0.054)
Quintile 4	-0.217***		-0.172**
	(0.048)		(0.052)
Birth order (ref: first born)	0.180***	0.0919*	0.158***
	(0.041)	(0.042)	(0.044)
Sex of child (ref: female)	-0.274***	-0.255***	-0.270***
	(0.036)	(0.038)	(0.036)
Ethnicity of mother (ref: white)	-0.229	-0.489**	-0.221
	(0.139)	(0.144)	(0.145)
Longitudinal family composition (ref: stable couple family)			
Stable lone parent family	0.0389	0.185*	0.0772
	(0.102)	(0.079)	(0.099)
Lone parent who repartnered	-0.0459	-0.150	0.0193
	(0.112)	(0.111)	(0.113)
Couple who separated	-0.134*	-0.124	-0.0539
	(0.065)	(0.063)	(0.075)
Separations and repartnerings	-0.505***	-0.609***	-0.441***
	(0.088)	(0.094)	(0.102)
Maternal age at first birth (ref: 40 or over)			
30 to 39	0.0323	0.0149	-0.0148
	(0.085)	(0.083)	(0.087)
20 to 29	-0.0525	-0.120	-0.0973
	(0.083)	(0.083)	(0.084)
Under 20	-0.0732	-0.255*	-0.141
	(0.140)	(0.127)	(0.126)
Financial stress factor		-0.187***	-0.137***
		(0.019)	(0.023)
Debt factor		-0.0677**	-0.0566*
		(0.023)	(0.024)
Materially deprived			-0.166*
			(0.065)
Constant	0.396***	0.175*	0.363***
	(0.083)	(0.083)	(0.089)
R-squared	0.133	0.136	0.161
No. of cases	3518	3527	3216
dfres	65	65	65

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

In model one in table 9.14, most of the sociodemographic variables are significantly associated with lower social, emotional and behavioural (SEB) scores. One exception is the birth order of the child. In comparison to being the first born, having older sibling(s) is significantly associated with better SEB outcomes. This is in direct contrast to each of the cognitive development variables, where not being the first born was significantly associated with lower scores. From this it would seem that having siblings is good for SEB development but not so good for cognitive development. A demographic variable that is insignificant at model one is the age of the mother at first birth. Being from a young or an older mother has no statistically significant association with children's SEB development.

As regards the family composition variable, the statistical significance of the negative coefficient associated with a ‘couple who separated’ disappears at model two when financial vulnerability is added to the model: only the ‘separations and re-partnerings’ category is now significant. What is statistically associated with lower SEB outcomes is how financially vulnerable families are. Both the debt and financial stress factors are highly significantly associated with lower SEB development.

When longitudinal income poverty and material deprivation are entered into the model (model 3), the two financial vulnerability variables retain their significance. The debt factor reduces to being significant at the 5% level ($p < 0.05$) but the factor of financial stress retains its significance at the 0.1% level ($p < 0.001$). This shows that in addition to longitudinal income poverty and material deprivation, which are also highly significant, financial vulnerabilities have a separate, additional association with children's SEB outcomes. As this is an additive model, when added together, financial vulnerabilities account for 0.19 of a standard deviation decrease in SEB development. When this is added to the coefficient for living in income quintile one, persistent low income and material deprivation, the combined coefficient becomes -0.90 of a standard deviation. This is a large addition to the coefficients and shows that low income, financial vulnerabilities and material deprivation are having a separate and combined adverse impact on children’s SEB development.

This evidence that a family experiencing financial vulnerability is significantly associated with lower SEB scores supports the findings in the qualitative literature that parents' financial vulnerabilities are associated with lower psychosocial wellbeing of children (Harris et al., 2009, Whitham, 2012). What is striking here is the young age of the children for whom this association is statistically visible. Interestingly, when longitudinal income poverty, material deprivation and financial vulnerability are entered into the model (model 3), the ethnicity of the child's mother is no longer significantly associated with lower SEB scores.

What this model tells us overall is that those sociodemographic variables widely assumed to be associated with lower SEB scores in young children actually are not statistically associated when financial vulnerabilities, income poverty and material deprivation are taken into consideration. As has been found in the qualitative literature, financial vulnerability has its own independent association with children's SEB development, irrespective of income poverty. This is showing that children as young and as four or five years of age have lower SEB outcomes if their family experiences either of the two financial vulnerability variables, debt and/or financial stress. This is separate, and in addition to, the negative impacts associated with longitudinal income inequality and material deprivation, both of which are also independently significantly associated with SEB development.

The primary finding of this chapter so far is the sensitivity of young children's SEB development to the financial vulnerabilities experienced by their mothers. SEB is being strongly affected by the economic disadvantage variables in chapter seven, by social assets in chapter eight and by financial vulnerabilities in this chapter, which I will come back to in the following conclusions chapter.

From the qualitative evidence, the social assets available to families had a strong attenuating effect on their financial vulnerability. In a study of mortgage arrears (McCallum and McCaig, 2002), a key factor on families' ability to recover from imminent home repossession was their number and closeness of relationships and the support they provided, including financial support. In the study by Barnardos (Harris

et al., 2009), the effect of families' financial vulnerability on children's wellbeing was eased by the involvement of family and friends. The support provided included financial support and could be direct to the children, such as covering the costs of children's school uniforms, out-of-school activities, school trips, offering pocket money, and celebratory presents, or indirect, such as the financial support provided to children's parents. Social assets, therefore, are hypothesised to be associated with lower financial vulnerabilities. To test this hypothesis, the independent variables for this chapter, the financial vulnerability factors, will be used in the following analysis as dependent variables, with social assets from the previous chapter used as an independent variable to test their relationship to each other. Interaction effects between social assets and income quintiles are calculated to establish whether any relationship found changes across the income inequality spectrum. The CSEB outcome variables are not used in this next section.

9.7 The impact of social assets on financial vulnerabilities

Table 9.15 Financial stress factor tested with SA factors (income reversed)

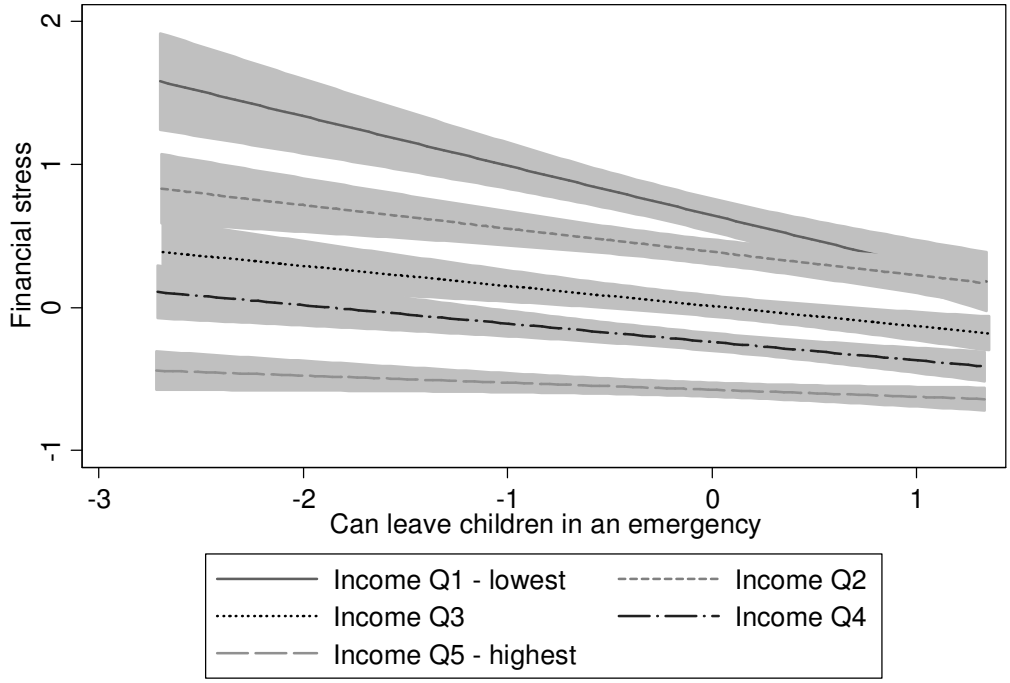
Financial stress	model 1	model 2	model 3	model 4
Social assets:				
Leave child with friends and/or family	-0.107***			-0.0871***
	(0.018)			(0.019)
Closeness and support		-0.0939***		-0.0613*
		(0.024)		(0.026)
Visiting/being visited by friends with children			-0.0643***	-0.0435*
			(0.018)	(0.018)
Permanent income quintiles (ref: Q1 – lowest)				
Quintile 2	-0.0522	-0.0351	-0.0451	-0.0512
	(0.092)	(0.092)	(0.090)	(0.092)
Quintile 3	-0.254*	-0.236*	-0.250*	-0.245*
	(0.098)	(0.097)	(0.099)	(0.098)
Quintile 4	-0.496***	-0.467***	-0.480***	-0.476***
	(0.097)	(0.096)	(0.098)	(0.098)
Quintile 5	-0.760***	-0.705***	-0.738***	-0.730***
	(0.104)	(0.105)	(0.104)	(0.105)
Materially deprived	0.684***	0.692***	0.714***	0.654***
	(0.072)	(0.072)	(0.069)	(0.071)
Birth order (ref: first born)	-0.00739	0.00811	0.0129	-0.00207
	(0.039)	(0.038)	(0.040)	(0.039)
Sex of child (ref: female)	0.0428	0.0503	0.0511	0.0424
	(0.037)	(0.037)	(0.037)	(0.036)
Ethnicity of mother (ref: white)	-0.234	-0.251*	-0.234*	-0.261*
	(0.118)	(0.121)	(0.115)	(0.121)
Longitudinal family composition (ref: stable couple family)				
Stable lone parent family	0.0916	0.138	0.110	0.107
	(0.102)	(0.105)	(0.102)	(0.107)
Lone parent who repartnered	0.227*	0.246**	0.224*	0.244**
	(0.090)	(0.090)	(0.092)	(0.089)
Couple who separated	0.279**	0.282**	0.271**	0.275**
	(0.086)	(0.085)	(0.086)	(0.085)
Separations and repartnerings	0.0501	0.0670	0.0641	0.0607
	(0.121)	(0.120)	(0.120)	(0.121)
Maternal age at first birth (ref: 40 or over)				
30 to 39	-0.0590	-0.0586	-0.0798	-0.0310
	(0.115)	(0.119)	(0.116)	(0.117)
20 to 29	0.0542	0.0555	0.0257	0.0986
	(0.127)	(0.131)	(0.129)	(0.130)
Under 20	-0.0333	-0.0554	-0.0690	0.00759
	(0.185)	(0.187)	(0.185)	(0.185)
Constant	0.192	0.149	0.184	0.147
	(0.163)	(0.166)	(0.167)	(0.168)
r^2	0.273	0.271	0.266	0.279
N	2604	2604	2604	2604
df_r	65	65	65	65

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

Table 9.15 shows that each of the three social assets factors - *leave child*, *closeness/support*, and *visiting* - are statistically significantly associated with lower financial stress. The factor with the strongest impact is factor one *leave child*. In the previous chapter, it was factor two - *closeness/support* - that had the largest and most significant impact on children's CSEB development. This is the first time that factor one has come to prominence. This factor may be associated with lower financial stress for the very practical reason that those who can leave their child at short notice for a decent length of time will be able to look for more work to assuage the financial stress of the family. It may be that the very action of leaving the child reduces the stress inherent in the financial stress variable, allowing the mother some time to herself. This second option is considered less likely given that the factor measures financial stress, rather than emotional stress, although the two would be expected to correlate.

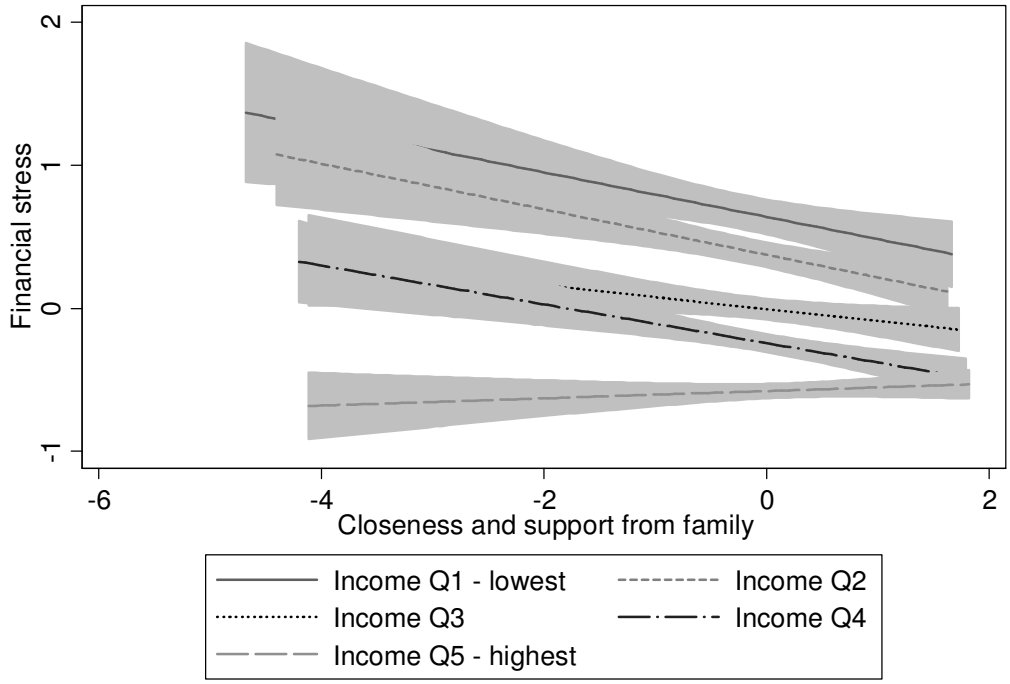
The regression table in appendix H at the back of the thesis includes the interaction terms between social assets and income quintiles tested against the financial stress factor. This shows that social assets factors one and two - *leave child*, *closeness/support* - (but not three - *visiting*) have a statistically significant impact across the income spectrum on financial stress. This relationship is best displayed pictorially; Figure 9.3 and Figure 9.4 present graphs of the interactions between social assets factors one and two across the income inequality quintiles.

Figure 9.3 Financial stress and social assets 'leave child' factor



Data source: GUS, sweeps 1 - 5

Figure 9.4 Financial stress and social assets 'closeness' factor



Data source: GUS, sweeps 1 - 5

The pattern in each of the graphs at Figure 9.3 and Figure 9.4 for the two social assets factors is very similar. For income quintiles 1-5 interacted with factor 1, being able to leave your child has a reducing impact on financial stress. The association between *leave child* and income is strongest with those in the lowest income quintile, a relationship which reflects the ones found in the previous chapter. In Figure 9.4, for factor 2, *closeness/support*, the relationship is the same for quintiles one through four, with a steeper slope for quintiles one, two and four. Curiously, quintile five shows a gentle incline in the relationship, suggesting that being close to friends and family for people on higher incomes increases financial stress. This is an unexpected and anomalous result. One suggested reason for this pattern emerging may be that those on higher incomes feel pressure to pay for the social activities associated with being close to and supported by family and friends. Alternatively, those on a higher income may be the ones providing support, including financial support, to family and friends. However, this is a supposition and there is no evidence to support this.

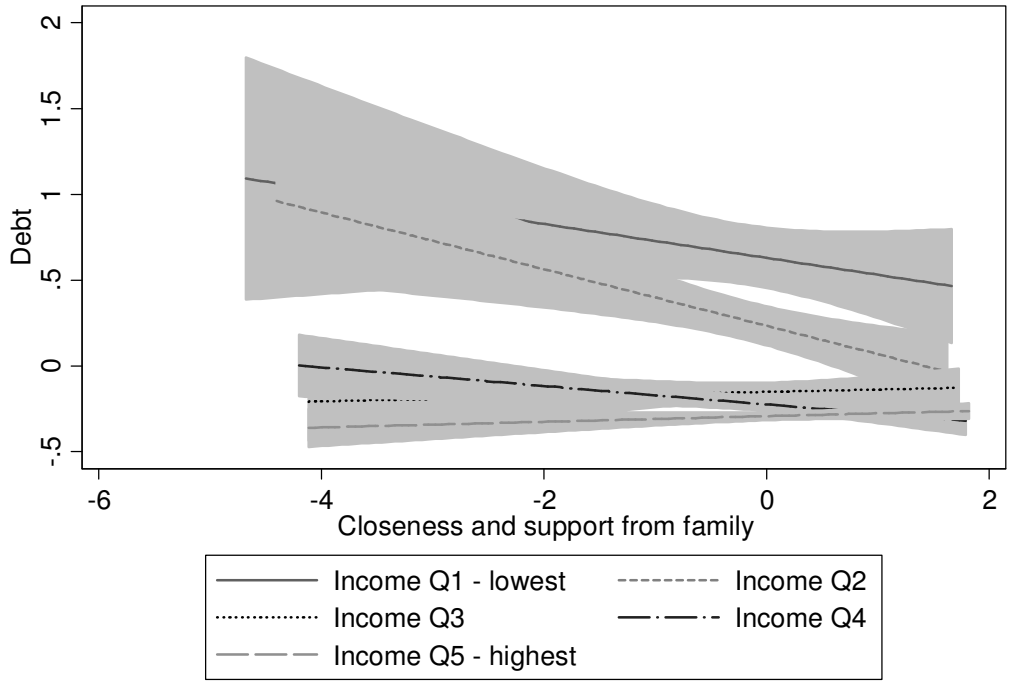
Table 9.16 Debt factor tested with SA factors (income reversed)

	model 1	model 2	model 3	model 4
Social assets				
Leave child with friends and/or family	-0.0474			-0.0318
	(0.025)			(0.027)
closeness and support		-0.0665*		-0.0593
		(0.028)		(0.032)
Visiting/being visited by friends with children			-0.0119	0.00403
			(0.023)	(0.025)
Permanent income quintiles (ref: Q1 – lowest)				
Quintile 2	-0.176	-0.167	-0.171	-0.171
	(0.127)	(0.124)	(0.124)	(0.126)
Quintile 3	-0.440***	-0.428***	-0.438***	-0.431***
	(0.107)	(0.106)	(0.107)	(0.106)
Quintile 4	-0.461***	-0.443***	-0.456***	-0.447***
	(0.118)	(0.117)	(0.118)	(0.120)
Quintile 5	-0.478***	-0.443***	-0.469***	-0.452***
	(0.120)	(0.118)	(0.118)	(0.122)
Material deprivation score of 4 or more	0.579***	0.572***	0.598***	0.562***
	(0.089)	(0.089)	(0.089)	(0.089)
Birth order (ref: first born)	0.0204	0.0269	0.0282	0.0220
	(0.046)	(0.045)	(0.046)	(0.046)
Sex of child (ref: female)	0.0738	0.0765	0.0778	0.0739
	(0.045)	(0.045)	(0.046)	(0.045)
Ethnicity of mother (ref: white)	-0.0928	-0.109	-0.0891	-0.110
	(0.161)	(0.159)	(0.157)	(0.159)
Longitudinal family composition (ref: stable couple family)				
Stable lone parent family	0.167	0.193	0.176	0.185
	(0.144)	(0.143)	(0.143)	(0.147)
Lone parent who repartnered	0.103	0.118	0.101	0.118
	(0.120)	(0.123)	(0.122)	(0.122)
Couple who separated	0.191	0.193	0.191	0.193
	(0.126)	(0.125)	(0.126)	(0.125)
Separations and repartnerings	0.0982	0.108	0.103	0.104
	(0.164)	(0.163)	(0.163)	(0.163)
Maternal age at first birth (ref: 40 or over)				
30 to 39	-0.0642	-0.0541	-0.0774	-0.0471
	(0.091)	(0.092)	(0.090)	(0.092)
20 to 29	0.110	0.125	0.0903	0.136
	(0.090)	(0.092)	(0.089)	(0.092)
Under 20	0.153	0.156	0.128	0.171
	(0.163)	(0.165)	(0.169)	(0.163)
Constant	0.149	0.116	0.150	0.118
	(0.148)	(0.151)	(0.150)	(0.152)
r^2	0.167	0.169	0.165	0.170
N	2603	2603	2603	2603
df_r	65	65	65	65

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied
Dependent variables as described from page 95
Multidimensional measures of poverty as described from page 101

Table 9.16 shows that, unlike financial stress, only the *closeness/support* factor is significant with the debt factor, and only at the 5% level with small coefficients. This relationship attenuates with the introduction of the interaction terms, as shown in the table in appendix I at the back of the thesis. The relationship is displayed visually at Figure 9.5.

Figure 9.5 Impact of closeness/support factor on Debt

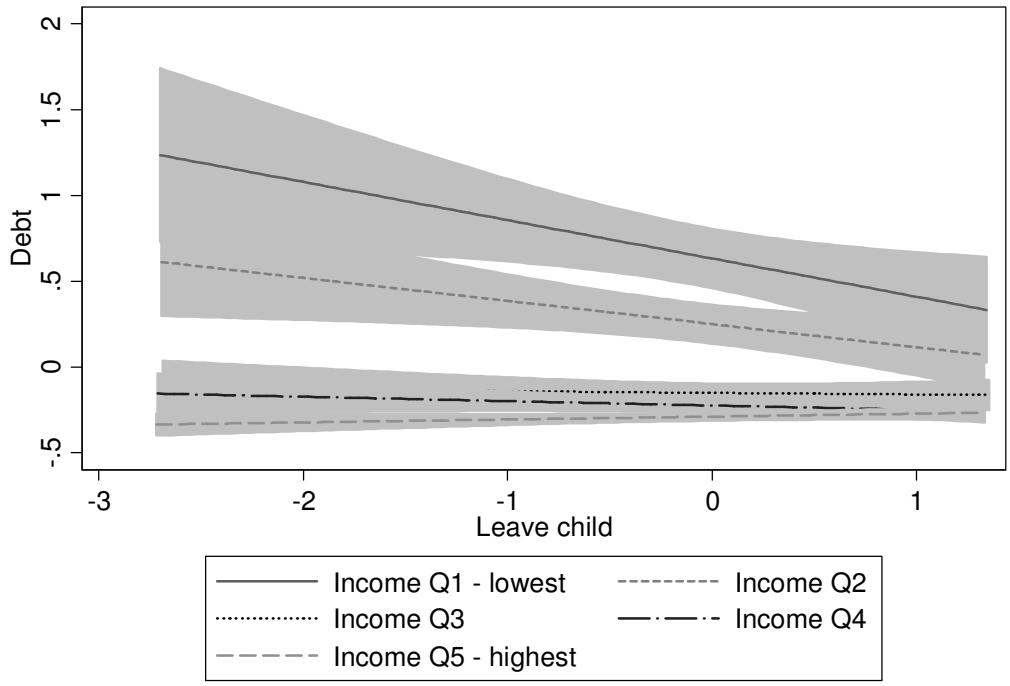


Data source: GUS, sweeps 1 - 5

The positive coefficients of the interaction effects somewhat cancel out the negative coefficient of the main effect, leading to less of an impact on the higher income quintiles as can be seen from Figure 9.5. This graph shows there are descending levels of debt associated with increasing levels of *closeness/support* for those living in persistent low income (income quintiles one and two).

In the regression table with the interaction effects in appendix I, the addition of the interaction effects means that social assets factor one – *leave child* - is now statistically significantly associated with lower levels of debt for the lower income quintiles and significantly associated with higher levels of debt for the higher income quintiles, as can be seen in Figure 9.6.

Figure 9.6 **Impact of leave child factor on Debt**



Data source: GUS, sweeps 1 - 5

As before with financial stress, the causal pathway is not clear from this research; however, a selection of suppositions is as follows: (1) those with high incomes and high social assets may be supporting friends and family with lower incomes; (2) those with higher social assets and higher incomes may spend more money on their social ties. Bourdieu's theory of social capital does stipulate that substantial resources are required to maintain social relationships which is why those with higher resources have higher social capital (assets); or (3) the economic downturn may have led people on higher (but possible decreasing) incomes to attempt to sustain the same level of activities that relate to social assets, resulting in increasing levels of debt and financial stress. Whatever the reason(s), which cannot be ascertained from this research but would benefit from further qualitative research, there is an unexpected and curious relationship for those on higher incomes.

What all this analysis shows is that social assets and financial vulnerabilities are interacting, with the former having an impact on the latter, which allows hypotheses three- higher levels of social assets are associated with lower levels of financial

vulnerabilities; and four - social assets have a different impact on financial assets for different income quintiles – to be accepted. It was theorised that high social assets would reduce financial vulnerabilities, an interaction explored in the SLA qualitatively too. What is surprising, however, is that high social assets appear be detrimental to financial vulnerabilities for those on the higher end of the income spectrum. This adds weight to the idea explored in chapter two that having an asset in one domain can be(come) a vulnerability in another domain. It was unexpected that it would be confirmed by this particular facet of the analysis however.

9.8 Discussion

The SLA posits that financial vulnerabilities have a negative effect on families and on their ability to sustain a livelihood. In previous studies by (Whelan and Maitre, 2008, Whelan and Maitre, 2010), as discussed in chapter two, the concept of financial vulnerabilities has been operationalised and used with European cross national data, showing that they operate along traditional social class lines with lower socioeconomic status groups experiencing higher levels of financial vulnerabilities. In Swedish adults, the presence of financial vulnerabilities, as conceptualised as financial stress, is associated with high levels of stress, anxiety and depression.

There is little quantitative evidence on the effects of financial vulnerabilities on adults' wellbeing and even less in relation to children. There is a greater level of qualitative research in this area, usually undertaken by NGOs, with the intention of highlighting the plights of families experiencing poverty and financial vulnerability (Harris et al., 2009, Whitham, 2012). Recent qualitative research has emphasised the strength of the negative effect of financial vulnerabilities, not just on adults' ability to sustain a livelihood and on adult psychosocial wellbeing, but also on the socio-emotional wellbeing of their children as discussed in chapter four.

Despite the caveat that the children in this study may be too young to show any negative impact of family financial vulnerabilities on their CSEB outcomes, the results show that a family being financially vulnerable is associated with lower cognitive development on the naming vocabulary scale but not for the picture

similarities scale, and is highly statistically significantly associated with poorer SEB developmental outcomes. This supports Chambers' assertion that due consideration to vulnerability needs to be given when working with poverty and income inequality, and that debt may alleviate the strain of poverty, but simultaneously leads families to be more vulnerable.

The results for picture similarities in this chapter reflect those in chapter eight: neither family social assets nor financial vulnerabilities are having much of an impact, but income is having a strong and highly significant impact. Income is equally important for naming vocabulary, although family social and financial assets are significantly, albeit weakly, associated with it. Despite the significant associations with social assets and financial vulnerabilities, income is still the primary explanatory variable as regards child cognitive development on both measures.

Social, emotional and behavioural (SEB) outcomes are highly significant with a variety of family characteristics drawn from the extant literature. Child's birth order, sex of the child, ethnicity of the mother, social class, and family composition (but not the age of the mother) are all significantly associated with child SEB development. It is interesting and perhaps surprising that the evidence shows that being from a younger mother, even a teenage mother, has no negative association with children's SEB development, even in the control variable only model. This is different to the impact of maternal age with cognitive development where it is significantly associated with lower scores until longitudinal income poverty is introduced to the model whereupon it becomes insignificant.

As regards SEB development too, once financial vulnerabilities are entered into the model, the negative association with the family composition categories 'stable lone parent' and 'couple who separated' becomes insignificant. This suggests that the prior significance of the negative impact of these two lone parent categories on children's SEB development was related to the financial vulnerability of the family rather than its composition. In the next step of the analysis, when income inequality

is entered into the model, financial stress and debt remain highly significantly associated with lower SEB scores. This shows that for children's SEB outcomes, mothers' financial vulnerabilities are associated with lower scores, in addition to and independent of, the negative association with income inequality and persistent low income.

When longitudinal income inequality and material deprivation are entered into the model, we find that the negative association with lower SEB outcomes usually attributed to maternal ethnicity disappears. This means that when all measures of economic inequality and financial vulnerabilities are taken into consideration, a mother being of a non-white ethnicity is no more associated with lower SEB development than their white counterparts. This means that longitudinal income poverty, material deprivation, financial stress and debt are separately and additively associated with lower SEB outcomes in young children that may be more pertinent to those of a non-white ethnicity; however, this supposition is not tested in this thesis.

The SLA postulates that individual domains of assets interact to reinforce the strengths and weaknesses of other domains. This hypothesis was tested using social assets from the previous chapter for their association with financial vulnerabilities across the income spectrum. What the analysis of social assets and financial vulnerabilities shows in this chapter is that social assets are associated with lower financial vulnerabilities to a great extent for those on the lowest income quintiles but that, contrary to expectation, high social assets are associated with higher levels of financial vulnerabilities for those in the highest income quintile, especially in relation to social assets factor two, *closeness/support* from friends and family. Although theories are proffered in the previous section there is no evidence to suggest why this might be so.

Thus, the asset-based model of researching poverty, derived from the SLA, is providing a useful conceptual and analytical framework for addressing the lives of children living in poverty. What is worthy of note, and of future study when the children are older, is that the two types of assets/vulnerabilities addressed in these

chapters, which repeatedly arose in my previous qualitative experience, are significantly statistically associated with children's developmental outcomes, especially for SEB development but less so for cognitive development.

9.9 Conclusions

The first conclusion of this chapter is that financial vulnerabilities, where present, exist across all socioeconomic and demographic backgrounds in the population and are not limited to those on a low income. However, the analysis does show that lower levels of income are associated with greater levels of financial vulnerabilities. Thus, the core conclusion is that financial vulnerabilities are a supplementary concern for those living in persistent low income and that social policy must take it, and its negative associations with child development, in particular child SEB development, into consideration when working with, or legislating for, families living in income poverty and inequality.

The second conclusion is from a policy perspective also - children as young as 4/5 years old are adversely affected by their parents' financial vulnerabilities, especially in relation to their SEB wellbeing. Due to the tender age of the children, this impact is hypothesised not to be due to a direct causal pathway of children understanding and worrying about their parents' financial situations, such as is found in the qualitative literature with older children. Rather, it is postulated that this impact is indirect, mediated through the effect of financial vulnerabilities on parental characteristics such as stress or depression. However the impact occurs, it is of policy and practice relevance that financial vulnerabilities are associated with such an adverse impact.

The third conclusion is that, as was the case for social assets, the relationship between financial vulnerabilities and cognitive development is much weaker than its relationship with SEB development. In fact, there was no association between financial vulnerabilities and picture similarities cognitive development at all. It would seem, therefore, that income per se is the primary independent variable for

cognitive development. This corresponds to the existing evidence on poverty and cognitive development. Also corresponding to the literature, is the length of time spent living in low income. For all of the outcome variables, longer spells of living in poverty is statistically significantly associated with poorer development on all three of the CSEB outcomes, showing that longitudinal analysis is key to understanding the dynamics of a family's income poverty.

Family and peer relationships have been identified by Ridge (Ridge, 2002a) as protective factors for children living in poverty. The children of this study are perhaps too young to have established a peer group, but what is shown by these results is that family assets, in the form of maternal social relationships and financial vulnerabilities, are having a statistically significant impact on their children's CSEB development.

The fourth conclusion is that many of the sociodemographic variables associated with low SEB are not statistically significant when income inequality, material deprivation and financial vulnerabilities are taken into account. As regards the family composition variable, there is no statistically significant association between a 'stable lone parent family' a 'lone parent who has re-partnered' or a 'couple who separated', compared to a 'stable couple family' (the reference category) when the measures of economic deprivation are entered into the model. What is statistically associated with lower SEB outcomes is how financially vulnerable they are. Both the debt and financial stress factors are highly significantly associated with lower SEB development. As for family composition, only the 'separations and re-partnerings' category retains its significance after financial vulnerability is entered into the model.

The fifth conclusion is that for those living in persistent low income, the *closeness/support* provided by friends and family is highly statistically significantly associated with decreasing financial vulnerabilities on both financial stress and levels of debt. However, there is a converse relationship for those with higher incomes which is unexpected, intriguing but ultimately poses questions that this research is not able to answer.

10 Conclusions

10.1 Introduction

This research was inspired by longitudinal, qualitative research with families living in poverty that I conducted as part of a team with Barnardos children's charity. The principal findings that emerged from this qualitative research were (Harris et al., 2009): the importance of families' social assets; the extent of their financial vulnerabilities; and the impacts of these, not only on the adults themselves, but also on their children's wellbeing and children's worries about their parents' wellbeing. These results correspond to other studies of children living in poverty, especially those that research the experiences of children living in poverty and their peer and family relationships (Ridge, 2002a). What this thesis set out to do, using the concept of assets and vulnerabilities derived from the theoretical framework of the Sustainable Livelihoods Approach (SLA), was to quantify social assets and financial vulnerabilities and test their impacts on children's cognitive, social, emotional and behavioural (CSEB) developmental outcomes for children living in multiple dimensions of income poverty and income inequality in Scotland.

In this thesis, cognitive development comprised two variables, naming vocabulary and picture similarities, which are conceptually distinct and so were analysed separately. Social, emotional and behavioural development was gauged using the Strengths and Difficulties Questionnaire (SDQ) and was analysed separately to the two cognitive development variables. To achieve its aim, this research utilised sociodemographic variables, derived from the review of the literature in chapter 4 and widely considered to be important to children's development and wellbeing, as control variables in the models. This allowed the impact attributable to social assets and financial vulnerabilities to be isolated and the statistical importance of the sociodemographic variables themselves on children's CSEB developmental outcomes to be ascertained. Additionally, the sociodemographic profile of those with high and low social assets and financial vulnerabilities was able to be explored.

This chapter is divided into nine sections. Sections 10.2 to 10.4 summarise each of the three findings chapters respectively. Section 10.5 summarises the findings in relation to the sociodemographic control variables and whether they are still significant once multidimensional measures of economic disadvantage, social assets and financial vulnerabilities are taken into consideration. Section 10.6 discusses the implications of the findings of the whole thesis in relation to researching poverty. Section 10.7 discusses the implications of the findings of the whole thesis in relation to the policy context set out in chapter three. Section 10.8 discusses the implications of the findings of the whole thesis in relation to practice. Section 10.9 discusses the limitations of the research and makes suggestions for future research in this field. Section 10.10 concludes the thesis and gives some final thoughts on the research. The respondents in the study are mothers and so the summary of the findings chapters use this term; however, the implications for theory, policy and practice are framed in terms of parent(s) or families generally.

10.2 Do different dimensions of poverty have differential impacts on children's CSEB developmental outcomes?

Chapter seven set out to answer research question one: *what impacts do multiple dimensions of economic disadvantage, as measured by longitudinal income poverty, material deprivation and longitudinal income inequality, have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes in Scotland?* To do so it utilised the following measures of economic disadvantage: longitudinal income poverty, material deprivation, longitudinal income inequality and income/material deprivation combined, and tested their associations with children's CSEB outcomes, to establish whether there are different impacts according to the dimension of poverty used, and to see whether the substantive story changes or if more information is revealed according to the measure(s) used.

10.2.1 Longitudinal income poverty

Longitudinal income poverty is a measure that uses 60% median equivalised income, divided into four poverty typologies, persistent poverty, recurrent poverty, transient poverty and no poverty, to capture its dynamic aspects. In using this measure it is

revealed that the length of time spent living in poverty is associated with lower scores on all three CSEB measures. Those who have never lived in poverty have scores that are above the mean for all children; those who have experienced a single episode of poverty (transient poverty) have scores on all three CSEB outcomes that are close to the mean for all children; whereas those who experience recurrent or persistent poverty have significantly lower than mean scores. There is little variation between those living in recurrent poverty and those living in persistent poverty due to the nature of the construction of the longitudinal income poverty variable, whereby due to missing data, some respondents are categorised as living in recurrent poverty when they are likely actually to be living in persistent poverty, as discussed in chapter five.

In turning to the three CSEB outcomes separately: the relationship between longitudinal income poverty and naming vocabulary shows that the longer a child has lived in poverty the more detrimental the association with his/her naming vocabulary. There is an incremental increase in the absolute size of naming vocabulary's negative coefficients with length of time spent living in poverty. Moreover, the categories of longitudinal income poverty are statistically different from each other, showing that length of time spent living in poverty matters for naming vocabulary. Children living in persistent poverty have naming vocabulary that is approximately 0.65 of a standard deviation lower than those who have never lived in poverty. As regards picture similarities and longitudinal income poverty, there seems to be a dichotomous divide between those in recurrent/persistent poverty and those in transient/no poverty, indicating that the length of time spent living in poverty is important but not incrementally so. Rather, there is a difference between those with little or no experience of poverty and those with longer term experiences of poverty.

In relation to SEB outcomes, the impacts of living in longitudinal income poverty over time are as strong and as incrementally detrimental as they are for naming vocabulary. For children, longer lengths of time spent living in poverty is associated with increasingly poor SEB developmental outcomes. Children living in persistent

poverty have SEB development that is 0.65 of a standard deviation lower than those who have never lived in poverty.

10.2.2 Longitudinal income inequality

Longitudinal income inequality is constructed using median equivalised income summed across the five years of the study data and then divided into five equal categories (quintiles). Using longitudinal income inequality means that the entire range of income is used, as opposed to the longitudinal income poverty variable, which combines five binary poverty measures. Longitudinal income inequality shows that a child living in income quintile one, i.e. persistent low income, across a five-year period has exceptionally low mean scores on CSEB outcomes, lower even than those for persistent poverty on the longitudinal income poverty variable, indicating that longitudinal income inequality is allowing greater detail to emerge.

In relation to the three CSEB outcomes in turn: the relationship between longitudinal income inequality and naming vocabulary shows not only that there is an incremental increase in scores corresponding to the increasing income quintiles of the income inequality spectrum, but also that children living in persistently low income, i.e. the lowest 20% of income across five years, have significantly different naming vocabulary scores than children in all the other income quintiles. This indicates that differences in naming vocabulary lie at the lower end of the income inequality spectrum rather than the higher end: i.e. there is something particular about the characteristics of experiences of those in the lowest income quintile that is associated with lower naming vocabulary scores.

For picture similarities and longitudinal income inequality, the dichotomous relationship indicated by the longitudinal income poverty variable is further illuminated. While the picture similarities scores are below the mean for the bottom two income quintiles they are not statistically significantly different from each other, indicating that low income, and not increasing depth of low income, is important, as is found with the longitudinal income poverty variable. However, the category that is statistically significantly different from all the others, and which has a much higher

coefficient size, is income quintile five, persistently high income, suggesting that the differences in picture similarities scores appears to be happening at the *higher* end of the income spectrum. This suggests that those living in persistently high income are different in some way to those in the rest of the income spectrum. One suggestion for this difference lies with the *family investment model* (Bradley and Corwyn, 2002, Yeung et al., 2002, Conger et al., 2010), discussed in chapter four, which asserts that wealthier parents can afford access to higher levels of education, income, cultural and social capital, resources and services to maximise their children's developmental potential. This may help to explain why this cognitive development variable is impervious to many of the control variables associated with socioeconomic disadvantage.

For SEB, there is an incremental increase in scores corresponding to the increasing income quintiles of the income inequality spectrum showing that increasing levels of SEB development occur from the lower to the higher ends of the income inequality spectrum. This pattern of incremental increases in SEB reflected that found for longitudinal income poverty and for naming vocabulary.

10.2.3 Material deprivation

For naming vocabulary and picture similarities, there is no additional impact from material deprivation beyond that which is attributable to income alone. This confirms that cognitive development is highly associated with income. However, it should be noted that the 21 indicators of material deprivation do not include any items, such as books, that may advance cognitive development or educational attainment. It is possible that a different measure of material deprivation, e.g. an education-resource deprivation index, similar to the Home Learning Environment index (Melhuish et al., 2008, Melhuish, 2010) (see section 7.5 for discussion), would have a more significant association with cognitive development; however, both could be argued to have an inherent middle class bias.

For SEB development, in contrast, material deprivation has a very strong, separate, additive impact to the negative association with income; i.e. there is an additional,

detrimental impact on children's SEB for those children living in families who experience poverty or low income *and* material deprivation. Previous qualitative research with older children suggests that material deprivation is the facet of poverty that is associated with detrimental impacts on older children, as discussed in chapter four. Lack of access to essential items impairs peer relationships and integration. The concerns that older children express for their families' impecunious and materially deprived condition have detrimental impacts on their wellbeing and precludes their full participation in the activities of school and friendship groups. Older children even show self-imposed exile from these activities so as not to burden further the family purse. The fact that this research shows an association between material deprivation and younger children's SEB is unexpected and paints a stark picture of children aged 4/5 years old being doubly affected by the twin conditions of income poverty and material deprivation. The coefficients for material deprivation/income and SEB are double the size of those for income and SEB alone, showing that income and material deprivation are very strongly associated with SEB development both individually and combined. The sensitivity of children's SEB outcomes in this thesis is particularly noteworthy and will be of particular relevance to policy and practice in sections 10.7 and 10.8.

10.2.4 Poverty versus income inequality

Using longitudinal income inequality as opposed to longitudinal income poverty allows greater levels of detail and differentiation in the data to be revealed. Longitudinal income poverty, being constructed from five binary poverty/no poverty variables, has already had much of the variation and information contained in the continuous income measure removed. It does not provide a nuanced picture of what, other than low income, may be having an impact on the CSEB development of children. Longitudinal income inequality, by contrast, captures the variations of the full income range which makes it a more informative variable. It is through using observations of persistent high income, a constituent of longitudinal income inequality that the idea that the higher-order cognitive development variable, picture similarities, is a function of high rather than low income, is able to emerge. This is a novel finding that is revealed by the use of the full income spectrum inherent in the

longitudinal income inequality variable rather than the longitudinal income poverty variable.

10.3 Do maternal social assets augment children's CSEB developmental outcomes?

Chapter eight sets out to answer research question two: *what impacts do the social assets of families living in Scotland have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes*? *Do families' social assets reduce or augment the impacts of poverty on children's early CSEB outcomes? How does this differ by income inequality?* To do so it used exploratory factor analysis to create a latent construct measuring social assets which resulted in three factors, *leave child*, *closeness/support* and *visiting*. On all three factors, those with low incomes had lower social assets and those with high incomes had higher social assets. These three factors were examined for their associations with children's CSEB developmental outcomes. Initial analysis showed that factors one and three - *leave child* and *visiting* - were not statistically significant with any of the three CSEB variables and were therefore not used in the remainder of chapter eight.

10.3.1 Social assets factor two - *closeness/support*

Factor two, *closeness/support* provided by extended family and friends, was statistically significantly associated with certain of the children's developmental outcomes. The level of *closeness/support* increased as income increased, with those living in income quintile five having scores that were much higher than those for any other income quintile. For naming vocabulary, there was a positive association with *closeness/support* that was stronger for those living on the lowest incomes; however, the relationship was not strong and the coefficients were not particularly large. For picture similarities, there was no association with *closeness/support* at all. It may be that *closeness/support* was, albeit weakly, associated with higher levels of naming vocabulary and not with picture similarities due to the nature of these two cognitive development variables. As naming vocabulary measures children's language development, it is possible that having a mother who has closeness and support from extended family and friends may provide opportunities for the child to interact with

interested adults other than his/her own mother, which may in turn help develop naming vocabulary.

The *closeness/support* provided by extended family and friends had a strong association with higher SEB scores in children. Furthermore, there was a statistically significant interaction term with income, as can be observed in Figure 8.3 and Figure 8.4 in chapter eight. This indicated that those with persistently low income and high social assets have children with higher SEB development, and those with low social assets and persistently low income have children with lower SEB development. This suggests that high levels of closeness and support from extended family and friends can have a positive impact on children's SEB outcomes. That the SEB of children so young is statistically associated with the *closeness/support* afforded their mothers is the key finding of this chapter.

Social assets in general and, *closeness/support* in particular, are socially patterned; however, it is wrong to assume that those with lower socioeconomic status do not have social assets at all. This thesis shows that those living in the lowest level of poverty have networks and connections, as measured by *closeness/ support* of extended family and friends, which have a positive impact on their children's development, SEB in particular, and which attenuate the negative impacts of persistent low income.

10.4 Do maternal financial vulnerabilities diminish children's CSEB developmental outcomes?

Chapter nine set out to answer research question three: *what impacts do the financial vulnerabilities of families living in Scotland have on children's early cognitive, social, emotional and behavioural (CSEB) outcomes? Do families' financial vulnerabilities reduce or augment the impacts of poverty on children's early CSEB outcomes? How does this differ by income inequality?* To do so two latent constructs measuring financial vulnerabilities were derived using exploratory factor analysis on two sets of variables: *debt* and *financial stress*. The *debt* factor used variables that measured whether people were *behind* with paying household bills and not on their

borrowings per se. *Financial stress* measured how much people struggled financially and whether they were experiencing financial pressures. The literature showed that financial vulnerabilities affect mental wellbeing in adults and older children, who show awareness of, and concern by, the financial vulnerabilities of their families, as discussed in chapter four. This chapter set out to examine the associations between maternal financial vulnerabilities and children's CSEB developmental outcomes.

Of those who experienced financial vulnerabilities there was a wide sociodemographic profile. There were few categories of people who displayed no statistically significant financial vulnerability. Those who experienced the highest levels of financial vulnerability were: stable lone parent families, couples that have recently separated, and those aged less than 20 years old. Those who experienced the lowest levels of financial vulnerability were: those aged 30 and over, those who are white and those in a stable couple family.

For naming vocabulary, financial vulnerabilities were significantly associated with lower scores but the impact was not an important one. For picture similarities, there was no statistically significant relationship at all. What emerged strongly from the research is that income is the most important variable in relation to cognitive development and that assets/vulnerabilities affect naming vocabulary a little and picture similarities not at all.

Financial vulnerabilities were strongly associated with lower SEB developmental outcomes in children. This association between SEB and financial vulnerabilities was separate and additional to the negative association with longitudinal income inequality and material deprivation, both of which were also independently significantly associated with SEB development. This supports the suggestion in the qualitative literature, discussed in chapter four, that financial vulnerability has an impact on children's SEB development, in addition to income poverty. This means that the impacts of financial stress, debt, low income and material deprivation are additive and are associated with increasingly low levels of SEB in children aged 4/5

years old. Once again, the key finding of this chapter is the sensitivity children's SEB developmental outcomes show to factors affecting their mothers.

10.4.1 The impact of social assets on financial vulnerabilities

The conceptual framework used with assets and vulnerabilities in this study, the SLA, asserts that assets/vulnerabilities in different domains can interact and that an asset in one domain can be a vulnerability in another. The final part of the analysis to answer research question three tested whether the social assets available to families as explored in chapter 8 had an association with the financial vulnerabilities of families as explored in chapter 9: that is, did social assets have an association with attenuated financial stress and reduced debt?

Let us first consider *financial stress*. Each of the three social assets factors - *leave child, closeness/support*, and *visiting* - were statistically significantly associated with lower financial stress. The factor with the strongest impact was *leave child*. It was hypothesised that this factor may be associated with lower financial stress for the very practical reason that those who can leave their child at short notice can either look for more work, or work more, to alleviate the financial stress of the family, although this was not tested in this research.

When longitudinal income inequality was interacted with *leave child,* it was statistically significant with lower financial stress for those in the lowest income quintile, which meant that those living in persistently low income benefit most, as regards reduced financial stress, from being able to leave their child. Factor two, *closeness/support*, interacted with longitudinal income inequality and also had an association with lower financial stress for income quintiles one to four. For income quintile five, however, there was an *increase* in financial stress for those who were close to friends and family. This was an unexpected result. There are several reasons, suggested in chapter nine, why this may be so: (1) those on higher incomes may feel pressure to pay for group social activities; (2) those on higher incomes may provide financial support to others; (3) those on higher incomes may spend more money on their social ties; or (4) perhaps post-economic downturn, people on higher (but

possible decreasing) incomes are attempting to sustain the same level of activities that relate to social assets, resulting in increasing levels of debt and financial stress. However, these are all suppositions: there is no evidence in this thesis to support them and it would require further research to evaluate them.

For the second financial vulnerabilities factor, *debt*, the relationship with *leave child* became significant with the addition of the interaction effects. This meant that *leave child* was statistically significantly associated with lower levels of *debt* only for the lower income quintiles. Whatever the causal pathways, it was clear that social assets were having an impact on financial vulnerabilities. In relation to social assets factor two, *closeness/support* from friends and family, for those on low incomes the association was a positive one, for those on high incomes the association was a negative one. This lends credence to the idea that having an asset in one domain can be(come) a vulnerability in another domain.

10.5 Control variables

Many of the sociodemographic control variables generated from the literature review, and generally regarded as being associated with low CSEB developmental outcomes, became insignificant once economic disadvantage, low social assets and/or high financial vulnerabilities were entered into the models. The impacts associated with family composition in particular disappeared when families' economic circumstances were taken into consideration. For SEB development, once financial vulnerabilities were entered into the model, the negative association with the family composition categories 'stable lone parent' and 'couple who separated' became insignificant. This suggests that the prior significance of the negative impact of these two lone parent categories on children's SEB development is related to the financial vulnerability of the family rather than the family's composition.

As regards children's SEB development, the negative association with a 'couple who separated' disappeared when *closeness/support* is considered. Additionally, the negative associations with younger mothers and low CSEB development were found to be a function of poverty and income inequality rather than their age per se. As

regards the negative relationship between maternal ethnicity and low SEB development, when longitudinal income poverty, material deprivation and financial vulnerability were taken into consideration, the ethnicity of the child's mother was no longer significantly associated with lower SEB scores.

10.6 Implications for theory and researching poverty

For theory, using income poverty, income inequality and material deprivation together shows that the concept of relative deprivation is cogent; it reinforces the argument for measuring poverty indirectly through income and directly through living standards, and provides authority and power to the official child poverty measure currently in use and under threat from the Coalition. The official measure of child poverty owes its definition to the theory of relative deprivation and this research shows that it is of continued value. Almost fifty years after it was conceived the concept of relative deprivation continues to capture the multidimensionality of poverty. Some of the associations made between children's wellbeing and poverty in the literature can actually be attributed to material deprivation caused by low income rather than low income per se. The findings in this thesis show a cumulative, additive impact of material deprivation and income poverty on children's SEB development and, this association is very strong given the young age of the children in this study. This provides evidence that measuring more than one dimensional poverty, in particularly a direct and indirect measure, as debated by Townsend (1979), Ringen (1988), Callan et al (1993), Berthoud (2004), and Piachaud (1981), as discussed in chapter two, does capture the multidimensional aspects of poverty and shows its value in its association with children's CSEB outcomes, in particular SEB outcomes.

Operationalising the concept of assets and vulnerabilities in the SLA was not straightforward as the measures available in GUS were not devised for this purpose and so are limited. Despite this caveat, my study shows the potential of an asset-based model of researching poverty and suggests that it can provide a useful analytical framework. Social assets were able to be quantified, with limitations, and did show an association with children's CSEB developmental outcomes. Interaction effects between social assets and income inequality suggest that the impact is greater

for those living on a low income, which indicates that the concept of social assets is especially pertinent to those living in the lowest incomes. From the perspective of the SLA, this study gives tentative confirmation to the qualitative findings of Oxfam that the SLA can be adapted for use with poverty studies in the UK. It shows too that this aspect of the SLA, social assets, usually applied qualitatively can be applied to a quantitative study of poverty.

This thesis demonstrates that the concept of financial vulnerabilities in the SLA can be measured and effectively applied quantitatively. It shows that financial vulnerabilities are important to the study of poverty, having as they do a separate, additive, negative impact on children's SEB developmental outcomes. This indicates that financial vulnerabilities capture a different concept than do income and material deprivation. This lends credence to the utility of the concept of financial vulnerabilities, to its use in the SLA and provides strength to the idea of applying it to poverty studies in the UK. This supports Chambers' (2006) assertion that due consideration to vulnerability needs to be given when working with poverty and income inequality, and that debt may alleviate the strain of poverty, but simultaneously leads families to be more vulnerable.

Social capital as espoused by Bourdieu suggests that that high socioeconomic status will result in high social capital, which will result in the reproduction of advantage, and low socioeconomic status will result in low social capital, which will confer disadvantage. This thesis shows that social assets, while socially patterned, occur across the income inequality spectrum and that families living in persistent low income also have social assets that they can utilise. Chapter eight shows how the social assets of those living in persistent low income are associated with children's high SEB and chapter nine shows how they are associated with lower levels of financial vulnerability in the same families. This is important to note as it displays the application of individual and family agency of those living in persistent low income and implies that they employ strategies to use their social assets to sustain a livelihood.

10.7 Implications of the study for policy

In considering policy, these results highlight several issues. Firstly, the current measure of child poverty, under threat by the incumbent Coalition in the UK (DfE, 2012a), is conceptually sound and stands up to methodological testing. The combined income and material deprivation measure is shown to have a strong, individual and accumulative negative impact on children's SEB development. Furthermore, the addition of income and material deprivation to the analytical models makes many of the sociodemographic variables usually associated with lower SEB development insignificant. Cognitive development is strongly associated with income alone, which also renders many of the sociodemographic variables usually associated with lower development insignificant. This means that it is a family's access to economic resources that are strongly associated with lower CSEB outcomes and not their characteristics or behaviour. The Coalition recently consulted on a new measure of child poverty, to include such sociodemographic measures as family 'breakdown', to replace the current theoretically and evidence-based income/material deprivation measure (DfE, 2012a). The evidence in this thesis shows that sociodemographic circumstances, such as lone parenthood, only have a statistically significant negative association with children's CSEB development until income poverty, inequality or material deprivation are taken into consideration, whereupon they are shown to have no statistical significance. This suggests that any measure of child poverty based on sociodemographic factors implemented by the Coalition would risk confounding the causes and consequences of poverty and would not distinguish those living in poverty from everyone else in the population.

Secondly, from a policy perspective, the arguably arbitrary poverty threshold of 60% median equivalised income, although useful in its cross and intra-national comparability, definitiveness, ease and usefulness of measure, nonetheless vitiates the richness of the information provided by the full spectrum of income. From a longitudinal perspective, calculating the longitudinal measure of poverty using five binary poverty measures is crude and precludes analysis both of severe poverty (e.g. less than 40% or 50% median equivalised income) and of high income. Using income inequality gives a more nuanced substantive understanding of the impacts of

persistent low and high income on children's CSEB developmental outcomes than does longitudinal income poverty.

Recommendations for policymakers, and the current government who reject the current 60% median equivalised income threshold as arbitrary, would be to implement a second measure of poverty based on income, longitudinal income inequality, measured by income divided into percentiles, quintiles in this thesis, although an argument could be made for deciles given the differences in income at the high end of the income spectrum, to allow a nuanced understanding of income in its entirety rather than the abridged binary poverty threshold. An analogy of the difference between using the binary poverty threshold and the full income continuum to measure the impact of income is that it is like trying to reflect a rainbow of colours through a prism to create white light but only using a few of the colours to do so. It prevents the variations, gradations and the effects of the full spectrum from being observed.

Thirdly, from a policy perspective, people living in poverty do have social assets, close ties to family/friends that are shown to have a small association with increased naming vocabulary, but a large and strong association with increased SEB developmental outcomes. This is of relevance to local and national policymakers on two fronts: (1) it suggests that geographical proximity is a key component of being close to and supported by extended family and friends; (2) it suggests that children's SEB development is pliable and can be improved by closeness/support from others. This first point, geographical proximity, suggests that those who most benefit from this closeness/support should be enabled to stay close to extended family and friends. However, there are currently changes to social security in the UK that came into effect on 1 April 2013 that may require people to move away from friends and family as discussed in full in the policy chapter, section 3.5.

Media reports are emerging on those who require public housing in expensive areas such as London being moved to cities much further away such as Birmingham (Ramesh, 2013, Gentleman, 2013). There is a risk that these policies will have a

negative impact on the most vulnerable populations, removing them from the closeness/support of extended family and friends, and removing a beneficial resource to the children's SEB development. These policies may, partially through their potential detrimental impact on social assets, which may in turn have a detrimental impact on families' financial vulnerabilities, threaten the SEB development of children and cause problems for these families and children in the future. Any future problems would incur an economic cost to society in addition to the social and emotional cost to families and children right now. I would like to emphasise how responsive children's SEB developmental outcomes in this study are to the social assets and financial vulnerabilities of their mothers. The fact that children of such a young age are displaying lower SEB development when maternal social assets are low or their financial vulnerabilities are high, is a central finding of this entire thesis, which raises three points: (1) children's SEB development is highly sensitive to their mothers socioeconomic status and their assets/vulnerabilities; (2) this implies that SEB is a malleable, rather than a fixed trait, and may respond well to direct or indirect interventions; and (3) this ought to of central relevance to policymakers and practitioners.

Fourthly, from a policy perspective, the beneficial impact of social assets on children's SEB developmental outcomes, hypothesised to operate through the beneficial impact on parent(s), should be recognised, measured and harnessed. It is possible that these beneficial effects of social assets prevent problems and that their privation may incur future problems. Policies that support the development and maintenance of relationships may be of benefit to families. The Coalition is to spend money on supporting people's relationships (DfE, 2012c); unfortunately these only extend to intimate relationships. This thesis would emphasise that supporting intra-familial relationships, between adult parents and adult children and between adult siblings, may be of benefit too.

The implications for policy of this chapter on financial vulnerabilities are manifold. Firstly, it is important to note that the demographic profile of those who experience financial vulnerabilities is wide. Only those in the highest SES groups have low

levels of financial vulnerabilities. This indicates that financial vulnerabilities are experienced across the middle and lower social strata of the population to a greater or lesser degree. In relation to policy, people living in poverty or experiencing financial vulnerabilities should have access to affordable credit and emergency funds. From 1st April 2013, the social security changes implemented by the Coalition have meant that the Social Fund, which includes *Community Care Grants* and *Crisis Loans,* has been abolished and local authorities in England, the Welsh Assembly and the Scottish government have taken over this provision. This means that the discretion in decision-making and the administration of the Social Fund is now based at the level of the local authority in England but at the national level in Wales and Scotland (DWP, 2013). Furthermore, in England the responsibility has been further devolved to the voluntary and private sectors. This will result in access to emergency crisis funds in the UK differing by postcode, particularly for those in England. The Social Fund attracted much valid criticism, as highlighted in chapter three; however, its current insecure status is a far greater concern than its earlier imperfections. This thesis suggests that a centralised fund with ring-fenced monies, that is responsive to individual needs, should be (re)instated to support families living with financial vulnerabilities before they reach crisis point.

This thesis also shows that a pertinent aspect of financial vulnerabilities is the problem of debt, which is a condition of families experiencing financial vulnerability that the Coalition wishes to incorporate as part of the new measure of child poverty. My previous qualitative research with Barnardos emphasised that '*families quickly amass debt that has to be serviced from their benefits payments on a weekly basis. The net result is that families are left trying to survive on even less than their benefit income...*' (Harris et al., 2009: 11). Additionally, this research showed that families are unable to access mainstream credit, leaving them '*no other option than to subsidise the benefits shortfall by resorting to the home credit market and doorstep lenders with very high interest rates'* (Harris et al., 2009: 11). The Barnardos research shows the extent and impact of debt for families living in poverty. This thesis shows that family debt is associated with lower levels of children's SEB developmental outcomes. It also shows that family social assets have a positive

association with family debt and financial stress, especially for those living on persistent low incomes. From a policy perspective, the study would highlight the need to fund debt advice agencies and create access to mainstream financial services and affordable credit for all people across the income spectrum.

Within this complicated triple-tiered policy field, Scotland is bound by policies that it neither influences nor designs in relation to employment law, most taxes and benefits; however, it has autonomy over other key areas such as education, childcare and social welfare. Scotland's autonomy in these matters predates devolution and Scotland has a long history of policies for children that have their social welfare at their core. The implications for policy that this thesis raises are relevant across the UK but, crucially, are all within the remit of the Scottish government. The principal poverty policy document of the Scottish government, *Achieving Our Potential*, highlights the need to harness community assets; however, this thesis would emphasise that Scottish policy should focus equally on family assets, especially social and financial assets/vulnerabilities. Of particular note in this thesis is the sensitivity of children's SEB developmental outcomes to maternal social assets and financial vulnerabilities for children living in Scotland. It would seem that children's SEB developmental outcomes act as a barometer to maternal, and likely by extension to parental or familial, pressure. That children's SEB is malleable implies that it may be responsive to direct and/or indirect interventions. This is an area that the Scottish government can influence.

The future for children in the UK living in poverty is uncertain under the current administration; however, the future of Scotland's children soon may or may not continue to be tied to the UK. The Scottish government has announced that a referendum on Scottish independence will be held on 18 September 2014. The future for Scotland's children then is difficult to predict.

10.8 Implications of the study for practice

From the perspective of practice, although this may be of value to policymakers too, there are two points to note from the analysis of income and material deprivation.

The first is the fact that income and material deprivation are having a separate, additive, impact on children's SEB development for children as young as 4/5 years old. The presence of material deprivation in a child's life doubles the size of the negative coefficient associated with income poverty for children's SEB development. This indicates that such children are particularly vulnerable. It may indicate that their parent(s) are particularly vulnerable too. It is hypothesised that children of this young age are negatively affected by material deprivation indirectly due to its impacts on their parent(s), possibly through attachment, parenting, stress, depression or other wellbeing measures, although this research does not explore whether or how parent(s) are affected. Thus, those in practice could be mindful of the material deprivation of the parent(s) and child, perhaps even using a checklist of the 21 material deprivation indicators used in the child poverty measure and in this thesis.

The second point of note for practice, and the education of practitioners, concerns the difference between the causes and consequences of poverty, and an understanding of its impacts, especially in relation to the sociodemographic characteristics that they are trained to observe as risk factors to children, e.g. lone parenthood and teenage parenthood. An understanding that much of the association between these characteristics and negative child CSEB outcomes may occur due to the economic disadvantage of such families would be a useful addition to the training of practitioners. Additionally, workers in front-line practice could observe and measure these factors and either intervene directly, or, signpost to a statutory or voluntary organisation that could help with the multiple possible issues behind the association between income poverty, material deprivation, parental wellbeing and children's SEB outcomes. Such intervention or signposting could include: benefits advice; referral to furniture initiatives or other organisations that can help provide material necessities; support with access to employment, education, training and skills; and help with access to nursery places for children.

As regards social assets and practice, there are four points of note: (1) parent(s) on a low income but who have high closeness/support from extended family and friends have children with higher SEB developmental outcomes; (2) parent(s) on a low

income with low closeness/support from extended family and friends have children with lower SEB developmental outcomes; (3) the closeness and support from extended family and friends available to parent(s) has a strong statistically significant association with better children's SEB developmental outcomes; and (4) it is hypothesised but not substantiated by this research that *closeness/support* may be beneficially associated with adult wellbeing and outcomes too, e.g., parenting, stress, depression, mental health, warmth of parent-child relationship, and attachment, amongst others. This thesis shows that parent(s) living in persistent low income with low levels of *closeness/support* from friends and family have children with the lowest SEB outcomes, a combination that may render children living in persistent low income particularly vulnerable. As such those working in practice could (1) support or signpost those with low *closeness/support* from extended family and friends to organisations that will encourage the development of social assets; (2) support or signpost them to organisations that can help to support/maintain family relationships, (3) support or signpost children to undertake activities that will develop their own social assets outwith those of their parent(s); (4) support or signpost children to maintain contact with extended family and friends if other family relationships break down.

The existence of financial stress and debt is likely to be well-known to many frontline practitioners. It is therefore important not to state the obvious and tell practitioners what they already know; however, there are still key points of note to practitioners from the analysis of financial vulnerabilities in this thesis. Firstly, this research is the first that quantifies financial vulnerabilities and demonstrates their impact on the SEB of young children. While it has been established in the extant body of research that financial vulnerabilities have negative associations with adult psychosocial wellbeing, and have a strong negative impact on the wellbeing of adolescents, this study shows that they are also associated with lower SEB developmental outcomes in young children. What this study does not untangle, is whether the impacts of financial vulnerabilities on young children are indirect, mediated through parental characteristics such as parenting, attachment, stress and depression, or direct on children. From a practice perspective, therefore, a measure of

financial vulnerabilities could be devised and used in assessments to ascertain potentially raised vulnerability in families. This would not be difficult to do using some key variables and summing them to give a total financial vulnerabilities score, and would enable practitioners to devise direct interventions with the parent(s) experiencing these financial vulnerabilities. This would be relatively low in cost and relatively high in impact. Such direct intervention could comprise signposting: (1) to agencies that offer debt advice/support; (2) to credit unions with accessible and cheaper credit; and (3) to statutory sources of income and emergency funds. For practice, therefore, providing information on what people are entitled to, and either providing support to apply for funds or signposting to organisations that could provide such support would be useful.

So far, the implications for practice have focused on families and yet this is a study of children. There is initial practice-related focus on parent(s) because it is hypothesised that many of the impacts associated with the children in the study are thought to operate indirectly through the impacts on the parent(s). However, there are practice implications that pertain directly to the child too. This thesis would suggest the provision of, or signposting to, services for children that would support the development of CSEB outcomes, would reduce and reverse the negative impacts on CSEB outcomes already present, especially for SEB development, and enable children to develop their own social assets.

10.9 Limitations of the study and future research

There are several aspects that would have improved the analysis and results of this thesis. The limitations of this study are:

(1) The first limitation regards the latent construct social assets. In order to operationalise such a concept, it needs to be tightly defined and measured using dedicated indicators that have been piloted for reliability and validity. The weakness of the construct in this study is the reliance on existing variables in GUS that are not collected specifically to measure this concept.

This means that there was a limited range of variables and thus I was limited in the coverage and range of social assets available;

(2) The second aspect that would improve this thesis would be a better measure of income, such as the one collected in the Family Resources Study (FRS), but it is acknowledged that this is not possible outwith a government study dedicated to income and expenditure, and it is acknowledged that the measure of income in GUS, although imperfect, is in keeping with other studies of this type;

(3) Financial vulnerabilities could be measured more effectively using dedicated, reliable and validated indicators rather than the study having to rely upon the variables available in the GUS study; and

(4) The CSEB outcome measures, although stringently validated, nevertheless contain inherent weaknesses. The first measure of cognitive development, naming vocabulary, is a language-based measure which is unsuitable for children of non-White ethnicities and arguably contains a middle class bias. The measure of social, emotional and behavioural (SEB) contains questions asked of the adult respondents, predominantly mothers in this study, which may raise questions of maternal perception of their children's SEB developmental outcomes. However, each of the three dependent variables used in this thesis are identical to those used in other surveys of children and so are comparable with the existing body of evidence.

There are many potential future research projects that arise from this thesis. A selection of which are as follows:

(1) Material deprivation does not have an independent association with children's cognitive development; however, this is postulated to be due to the lack of educational resource type of items in the material deprivation index. Thus, future research may create an index of educational resource deprivation to test whether this type of material deprivation has an impact on children's cognitive development;

(2) The difference in picture similarities, which measures higher-order problem solving abilities, occurs at the upper end of the income spectrum, suggesting that there is a difference in characteristics or experience that is distinctive for those of higher socioeconomic status. As this is a novel finding of this research, corroboration using further research could provide support for or repudiate these results;

(3) The social assets factor closeness/support has a large, statistically significant association with children's SEB developmental outcomes, a relationship which is hypothesised to gather strength as the children grow older, which could be tested in future research;

(4) The impact of closeness/support may be mediated from parent(s) to child through an unobserved variable such as distress. This is an area for future research with this social assets factor.

(5) The focus was to operationalise the concept of social assets and test its impacts on those living in income inequality; however, the potential direct and indirect impacts of closeness/support on parent(s) themselves could be analysed in a future study;

(6) This analysis of social assets on children's CSEB outcomes could be repeated when the children are older and when there are measures of educational attainment;

(7) Future research could use financial vulnerabilities and its constituent components, financial stress and debt, to examine the impacts of financial vulnerabilities on parent(s)' characteristics, e.g. stress, depression and parenting. Additionally, future research could examine whether the associations with financial vulnerabilities and SEB developmental outcomes are indirect through their impact on parental characteristics; and

(8) Future research could be undertaken with future sweeps of GUS to see if there is a continued impact of financial vulnerabilities and child CSEB outcomes. It may be that financial vulnerabilities will exert no future effect on children; however, it may be that the children in this thesis are too young for the full impact of financial vulnerabilities to be detected.

10.10 Final words

In conclusion, this research has demonstrated that Townsend's concept of relative deprivation is still relevant to poverty research and that multiple dimensions of poverty, using an indirect measure such as income, and a direct measure such as material deprivation, capture different dimensions of poverty. Using income and material deprivation is more robust than using income alone and together they are shown to have separate and additive associations with children's SEB developmental outcomes. Using various combinations of these multiple dimensions of poverty shows the pre-eminence of income to children's cognitive development.

Using a measure of longitudinal income inequality in place of longitudinal income poverty allowed the full spectrum of income to be used and permitted analysis on those at the top and bottom of the income range. This measure revealed the idea, suggested by the analysis in chapter seven, that it is low income that is relevant to naming vocabulary but high income that is relevant to picture similarities.

This research also used the theoretical framework of the SLA, adapted for use in qualitative UK studies, to examine whether it could be shown to be useful quantitatively to the study of families living in poverty - not only to the adults in such families, but also on the children's CSEB developmental outcomes. Using two of the five SLA domains, due to limitations of the GUS data, this study concludes that the concepts of social assets and financial vulnerabilities have been quantifiable, useful and illuminating. These latent constructs had little or no impact on cognitive development, lending credence to the idea that income is the dominant factor in this developmental outcome, but they have had a strong, large statistically significant association with children's SEB developmental outcomes.

Both the social assets and financial vulnerabilities of parent(s) had a strong separate additive impact on children's SEB development, showing the children respond to, and are affected by, a wide range of circumstances that may create or relieve stress in parent(s). This research cannot tell if such impacts on young children operate directly or indirectly through parental wellbeing or characteristics. It would seem that

children are like barometers, reflecting either their own, or their parent(s)', pressure, which is detectable in their own early SEB developmental outcomes. This thesis has set out a multitude of policy and practice recommendations in relation to the findings on multiple dimensions of poverty and income inequality, social assets, financial vulnerabilities and their combined associations with children's CSEB developmental outcomes and has set out suggestions for future research.

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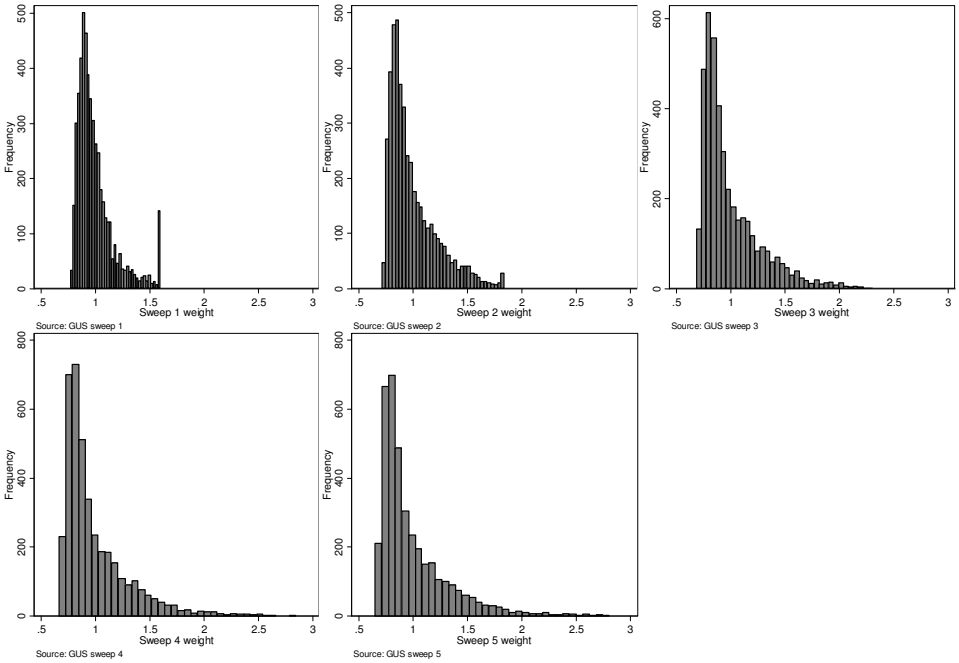
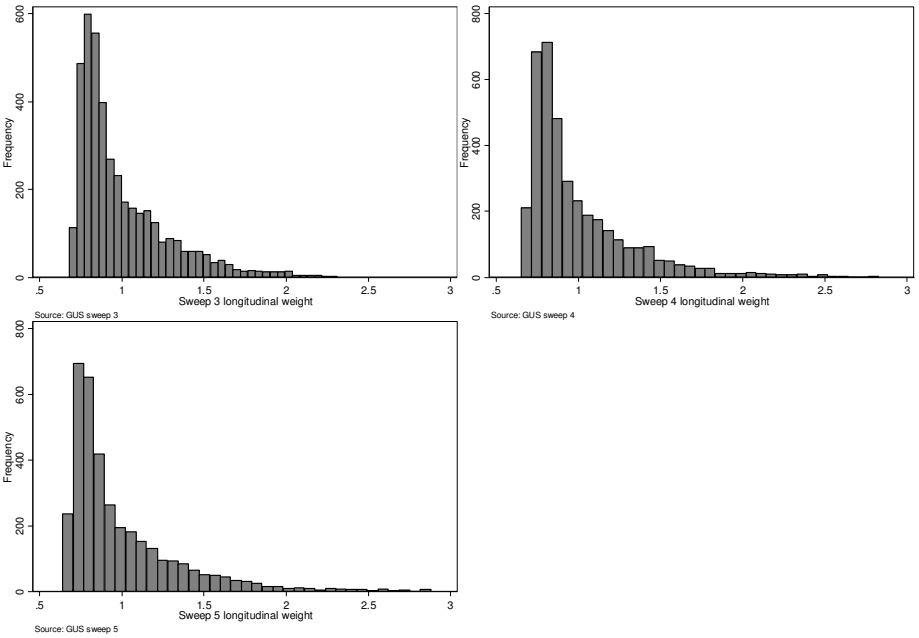
Appendix A Weighting

Cross-sectional weights



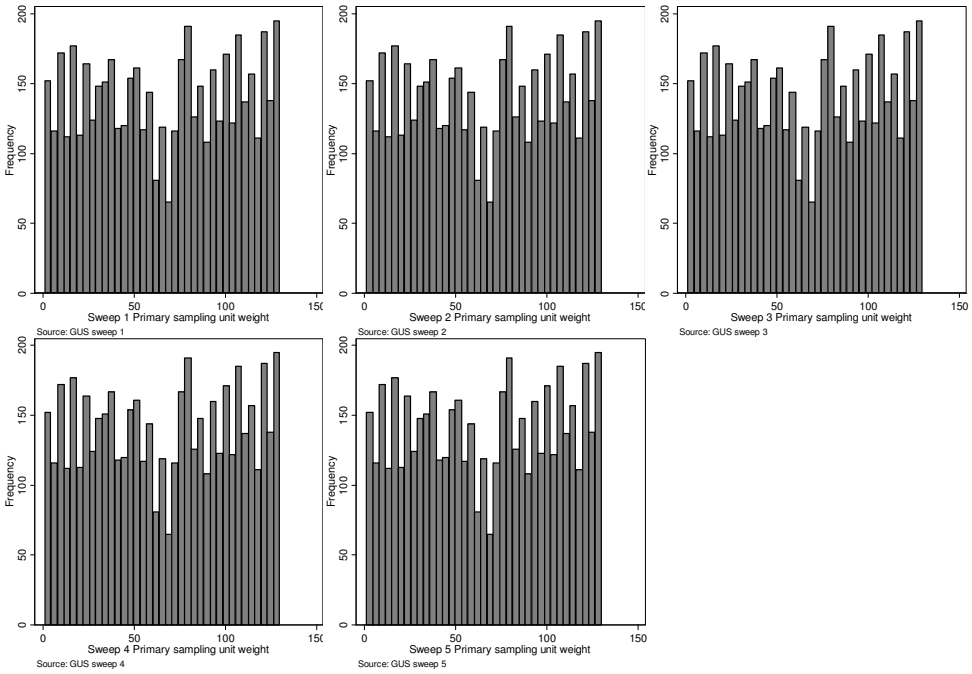
Source: GUS sweeps 1 to 5

Longitudinal weights



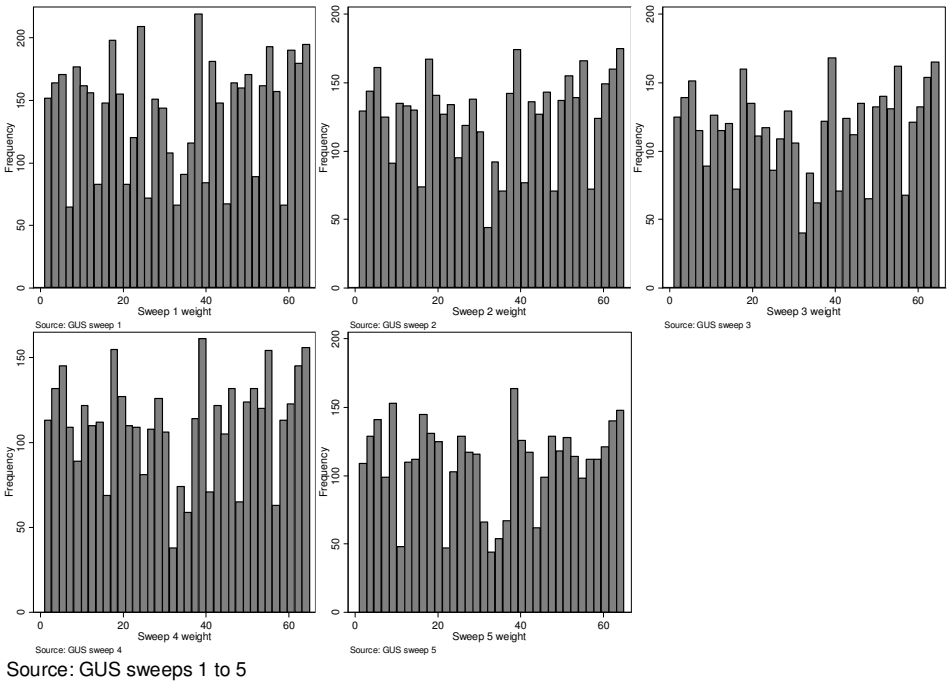
Source: GUS sweeps 3 to 5

Primary sampling unit (PSU) weights



Source: GUS sweeps 1 to 5

Strata weights



Source: GUS sweeps 1 to 5

Appendix B Examples of the social assets ordinal variables

At short notice/in an emergency how easy would it be for you to - leave child for a short time?	count	percentage
1, Very difficult	326	6.28
2, Fairly difficult	564	10.87
3, Neither easy nor difficult	256	4.94
4, Fairly easy	1730	33.34
5, Very easy	2313	44.57
Total	5188	100

Source: GUS sweep 2
Counts and percentages based on weighted data
Sweep 2 weight used

At short notice/in an emergency how easy would it be for you to - leave child for a whole day?	count	percentage
1, Very difficult	731	14.27
2, Fairly difficult	742	14.49
3. Neither easy nor difficult	393	7.67
4, Fairly easy	1628	31.80
5, Very easy	1627	31.76
Total	5121	100

Source: GUS sweep 2
Counts and percentages based on weighted data
Sweep 2 weight used

At short notice/in an emergency how easy would it be for you to - leave child overnight?	count	percentage
1, Very difficult	858	17.63
2, Fairly difficult	578	11.89
3, Neither easy nor difficult	393	8.09
4, Fairly easy	1616	33.22
5, Very easy	1419	29.17
Total	4864	100

Source: GUS sweep 2
Counts and percentages based on weighted data
Sweep 2 weight used

Mb - Frequency visited friends with kids	count	percentage
0, Never	295	6.69
1, Once a year or less often	23	0.51
2, Once every 6 months	55	1.26
3, Once every 3 or 4 months	106	2.42
4, Once every 1 or 2 months	376	8.54
5, Once a fortnight	572	13.00
6, Once or twice a week	2107	47.85
7, Every day or most days	869	19.74
Total	4403	100

Source: GUS sweep 2
Counts and percentages based on weighted data
Sweep 2 weight used

Mb - Frequency visited by friends with kids	count	percentages
0, Never	440	10.05
1, Once a year or less often	46	1.05
2, Once every 6 months	79	1.80
3, Once every 3 or 4 months	178	4.06
4, Once every 1 or 2 months	579	13.22
5, Once a fortnight	764	17.45
6, Once or twice a week	1745	39.87
7, Every day or most days	547	12.50
Total	4378	100

Source: GUS sweep 2
Counts and percentages based on weighted data
Sweep 2 weight used

Mb - How many people respondent close to	count	percentages
0, I don’t have any close relationships	83	1.85
1, I have close relationships with 1 or 2 people	880	19.66
2, I have close relationships with some people	2078	46.43
3, I have close relationships with lots of people	1434	32.05
Total	4474	100

Source: GUS sweep 2
Counts and percentages based on weighted data
Sweep 2 weight used

Mb - Respondent close to most of family	count	percentages
0, I don’t have any family	18	0.40
1, Disagree strongly	88	1.96
2, Disagree	251	5.60
3, Neither Agree or Disagree	377	8.42
4, Agree	1755	39.23
5, Agree strongly	1985	44.38
Total	4473	100

Source: GUS sweep 2
Counts and percentages based on weighted data
Sweep 2 weight used

Mb – Respondent’s friends take notice of opinion	count	percentage
0, I don’t have any friends	57	1.28
1, Disagree strongly	11	0.24
2, Disagree	60	1.34
3, Neither Agree or Disagree	614	13.74
4, Agree	2773	62.02
5, Agree strongly	956	21.38
Total	4471	100

Source: GUS sweep 2
Counts and percentages based on weighted data
Sweep 2 weight used

Respondent support from family/friends	count	percentages
0, I don't need any help	186	4.16
1, I don't get any help	266	5.95
2, I don't get enough help	696	15.57
3, I get enough help	3322	74.33
Total	4470	100

Appendix C Material deprivation paper

Published in Quality & Quantity in February 2013

Deprived or not deprived? Comparing the measured extent of material deprivation using the UK government's and the Poverty and Social Exclusion surveys' method of calculating material deprivation

Introduction

The 2010 UK Child Poverty Act, which obtained Royal Assent on 25 March 2010, places a legal duty on the current and future UK governments, on the devolved administrations and on local governments and their partners to tackle child poverty. It sets out targets that bind current and future governments to reduce four dimensions of child poverty by 2020: relative low income (<10%); absolute low income (<5%); material deprivation and low income combined (<5%); and persistent poverty (target to be set by 2015) for children living in poverty.

There is currently much focus on the child poverty targets, in particular on the chances under the current Conservative-led coalition government of (almost) eradicating child poverty by 2020. Many have noted the failure to meet the interim target of halving child poverty by 2010. The measure of child poverty set out in the child poverty act comprises absolute and relative measures of income and material deprivation.

However, depending on how material deprivation is calculated greatly affects its extent and depth in the population. This paper is part of a wider study on the impact of family assets on children's cognitive, social, emotional and behavioural outcomes for families living in poverty, for which an index of multiple deprivation is to be calculated. The dataset used is the Growing up in Scotland (GUS) study, a birth and child cohort study of over 8000 children in Scotland (this study uses the birth cohort only, n = 5217). The 21 indicators of material deprivation from which an index is calculated are the same as those used in the Poverty and Social Exclusion (PSE)

survey and the UK government's Family Resources Survey (FRS). The paper compares two methods of calculating multiple deprivation: the FRS method used by UK government and the one used by researchers in the PSE study at Bristol University.

Theoretical framework

The concepts in this paper originate with Townsend's theory of relative deprivation, which distinguishes between 'poverty' and 'material deprivation': the former pertaining to income and resources available (1987b: 140) and the latter referring to 'conditions or activities experienced' (1987b: 127). Using Townsend's concept, people can be said to be in poverty if they lack the resources to live a life free from deprivation (Townsend, 1979).

The concept of relative deprivation is centred on the tenet that human beings have social as well as physical needs (Lister, 2004). It is this focus on the conditions of life rather than the distribution of resources that distinguishes Townsend's concept of relative deprivation from the narrower concept of poverty (Alcock, 2006: 116, Lister, 2004).

The way in which Townsend operationalised his theory of relative deprivation was criticised, most notably by Piachaud (1981), because the items of deprivation to be used in the study were defined by Townsend and his research team, drawing accusations that the concept of deprivation was being imposed by 'elite observers'. Taking this criticism into account, Townsend's methodology was advanced by the researchers on the 1983 *Living in Britain* survey, who conceived the 'consensual' or 'perceived deprivation' approach to measuring poverty. To construct a deprivation index, 'needs' were defined consensually by asking survey respondents about *their* views on what constitutes 'necessities' (Mack and Lansley, 1985: 45). This method is still used in the Poverty and Social Exclusion surveys and continues to be reviewed and updated (Gordon and Pantazis, 1997, Pantazis et al., 2006).

Measuring poverty using material deprivation

Material deprivation has become an influential measure of poverty but it is not without flaws. Using the omnibus survey of the Office for National Statistics (ONS) and the Poverty and Social Exclusion (PSE) data, both from 1999, McKay argues that the evidence that there is consensus on which items are essential is relatively weak (McKay, 2004: 203). Furthermore, his analysis reveals that those who lack 2 or more socially perceived necessities own other items that were not deemed essential, leading him to argue that ownership of items was a result of personal preference: '*It is therefore their particular choice of consumption profile that makes them appear poor, not their resources'* (McKay, 2004). However, the fact that people owned items that were not earlier categorised as necessary owes more to his first argument that consensus may not be sufficiently strong, more than his argument that spending behaviour is making people appear poor.

In addition to the personal preferences of those who cannot afford items considered essential while affording those that are considered inessential, there is a further criticism of material deprivation based on choice. Living in material deprivation is not necessarily caused by poverty as people may *choose* not to have the goods or participate in the events that indicate material deprivation even though they can afford to should they wish. This element of choice means that the study of poverty cannot rely on material deprivation as its sole measure, thus it is only when it is imposed by insufficient command of resources that it can be conceived as a dimension of poverty (inter alia Pantazis et al., 2006). Poverty can thus be considered a '*state of general deprivation which is characterised by both a low standard of consumption and a low level of income'* (Ringen, 1988: 36).

Trying to identify the poor using either income or material deprivation separately results in different groups of people being identified as living in poverty; there is no great overlap between the two measures (Bradshaw and Finch, 2003). There are several reasons why this may be so; false consciousness, intra-familial transfer, low aspirations or expectations, measurement error and the lagged effect of income poverty on living standards (Bradshaw and Finch, 2003). A decline in living

standards anticipated from a loss of income can be held in abeyance due to existing wealth (e.g. savings), access to financial support from family and friends, and access to credit, while a recent escape from poverty will take time to result in increased consumption and the acquisition of goods.

Studies that explore low income and material deprivation in combination show that it produces a more robust measure than income poverty alone, that it reduces the measurement error incurred when relying solely on income and that it more effectively identifies those living in poverty (Townsend, 1979, Callan et al., 1993, Gordon and Pantazis, 1997, Bradshaw and Finch, 2003, Whelan et al., 2004, Pantazis et al., 2006). Across the years research has continued apace to reduce the limitations associated with the measure of material deprivation and the indicators continue to be updated and reviewed, most recently for the 2011 PSE survey. Thus, in spite of the criticisms, the consensus remains that measuring income poverty and material deprivation together gives the most robust measure of living in poverty.

Research Design

In GUS, data on material deprivation is collected at wave 4 only (2008-2009) using the affordability of 21 individual indicators, consensually agreed to be necessary in today's society (Bradshaw et al., 2009). There are two methods to combine these items into an index of multiple deprivation: the UK government method of prevalence weighting with a threshold of 25 to indicate material deprivation as used in the Family Resources Survey (FRS); and the PSE surveys' method of a direct count with statistical analyses to determine the optimum threshold.

The research design follows each method of deriving an index of material deprivation in turn and examines the impact of each on the measured extent of material deprivation among families with young children in Scotland.

Variables

Material deprivation variables

For material deprivation, the individual indicators are:

12. keep your home adequately warm
13. two pairs of all weather shoes for each adult
14. enough money to keep your home in a decent state of repair
15. a holiday away from home for one week a year, not staying with relatives
16. replace any worn out furniture
17. a small amount of money to spend each week on yourself, not on your family
18. regular savings (of £10 a month) for rainy days or retirement
19. insurance of contents of dwelling
20. have friends or family for a drink or a meal at least once a month
21. a hobby or a leisure activity
22. replace or repair broken to let cool goods such as refrigerator or washing machine
23. a holiday away from home at least one week a year with his or her family
24. swimming at least once a month
25. a hobby or a leisure activity
26. friends round for tea on a snack once a fortnight
27. enough bedrooms for every child over 10 of different sex to have his or her own bedroom
28. leisure equipment (for example, sports equipment on a bicycle)
29. celebrations on special occasions such as birthdays, Christmas or other religious festivals
30. playgroup/ nursery/toddler group at least once a week for children of preschool age
31. going on a school trip at least once a term for school-aged children.
32. Access to safe outdoor space nearby.

(Scotcen, 2008: 35, Pantazis et al., 2006: 13)

Given the young age of the children at this sweep in GUS (4 years old, children start school aged 5 in Scotland), item number 20, going on a school trip, was omitted.

Income poverty variable

For income poverty, the measure used is the same as the current measure of income poverty in the UK and the European Union, 60% of median equivalised income, using the modified OECD equivalence scale. The modified OECD equivalence scale gives the weight of 1.0 for the first adult in a household, 0.5 for an additional person aged 15 years or over, and 0.3 for any children aged 0- 14 years (Chanfreau and Burchardt, 2008). Equivalence scales are arbitrary, and one criticism noted by Chanfreau and Burchardt (2008) is that they take no account of the additional resources required by families living with a disability. Despite these valid reservations, however, equivalisation allows for '*a clear and easily accessible poverty line, which does involve a relative definition which can be compared over time and across different populations*' (Alcock, 2006: 84).

Table 17 – extent of income poverty in GUS sweep 4 (2008-2009)

Sweep 4 poverty	count	percentage (%)
No poverty	2736	72.27
Poverty	1050	27.73
Total	3786	100

Counts and percentages based on weighted data
Sweep 4 cross sectional weight and survey weights used
Source: GUS sweep 4
Poverty based on 60% median equivalised income (OECD modified)

Using the modified OECD equivalisation scale and applying weights to take account of the survey and sampling design, the extent of income poverty in Scotland in sweep 4 (2008-2009) using GUS data is almost 3 in every 10 families (table 1). This compares to the official before housing costs (BHC) child poverty rate of 21% and the after housing costs (AHC) child poverty rate of 26% in Scotland at this time (Government, 2010). The higher incidence of poverty in the GUS data compared to the official measure of child poverty can possibly be attributed to the fact that being a family with young children is in itself a risk factor for poverty (Smith and Middleton, 2007, Harris et al., 2009).

It should be noted that a weakness of the income data used is that the GUS survey is not dedicated to measuring income, wealth and poverty, like the FRS and PSE surveys are; instead the income data is collected using respondent recall, usually the mother's. This has been known to result in underestimates of family income (Barnes et al., 2010: 12).

Analysis

The UK government method of calculating material deprivation (FRS)

The UK government in their Family and Resources Survey (FRS) use a method to calculate the index of material deprivation known as prevalence weighting. Desai and Shah posit that using prevalence weighting, or weighting by 'modal frequency' of an item of deprivation according to the proportion of respondents in the population having that item, provides a more robust index of material deprivation than Townsend's method of equal weighting (1988). Their justification for prevalence weighting is that each item of deprivation has an unequal expenditure implication and a different priority for each household (1988: 511). Their method of prevalence weighting, they argued, would '*do justice to the inter-personal variation without losing the social dimension of deprivation'* (Desai and Shah, 1988: 511).

The FRS's method of prevalence weighting is to weight items according to the proportion of the population owning that item, whereby more common items are more highly weighted than less common items. A summation of the weighted items is divided by the sum of the weights to create a continuous index of material deprivation. The standard cut off point to identify those who are materially deprived is 25, a threshold that appears to be arbitrary – certainly the researcher could locate no government research that provides calculations to defend it - and which has not changed in the years since the index was first generated. To determine whether the threshold of 25 is a sensible level in GUS, analysis of different thresholds was undertaken to determine the effect this would have on the extent of material deprivation in this study.

Table 18 the extent of material deprivation using the FRS method

Material deprivation using FRS method	Percent deprived (%)	Percent change (%)
Threshold of 25	12.40	
Threshold of 20	16.40	32.25
Threshold of 15	21.10	70.16

Counts and percentages based on weighted data
Sweep 4 cross sectional weight and survey weights used
Source: GUS sweep 4

Table 2 above shows that using the FRS threshold of 25, 12.40% are materially deprived in the GUS data. When the threshold is changed from 25 to 20, a third more people move into the materially deprived category; the weighted percent rises from 12.40% to 16.40%. When the cut-off point is moved to 15, almost three quarters more people become materially deprived; the weighted percent moves from 12.40% to 21.10%. This is a stable increase and raises questions about both the arbitrary nature of the threshold - there does not seem to be any clear reason for using 25 over 20 or even 15 – and over the applicability of the FRS threshold to the GUS data per se.

As well as the question of the arbitrary threshold, questions can be raised over the necessity and applicability of prevalence weighting itself. There has been much research in psychological studies on the nature of prevalence weighting and whether it adds anything beyond the straight count method. Kline (2005) best summarises the argument against prevalence weighting:

> *'While much effort goes into discussing and determining differential item weights, Ghiselli, Campbell, and Zedek (1981) are persuasive in arguing that differential item weighting has virtually no effect on the reliability and validity of the overall total scores. Specifically, they say that "empirical evidence indicates that reliability and validity are usually not increased when nominal differential weights are used" (p. 438). The reason for this is that differential weighting has its greatest impact when there (a) is a wide variation in the weighting values, (b) is little intercorrelation between the*

items, and (c) are only a few items. All three are usually the opposite of what is likely to occur in test development. That is, if the test is developed to assess a single construct, then if the developer has done the job properly, items will be intercorrelated. As a result, the weights assigned to one item over another are likely to be relatively small. In addition, tests are often 15 or more items in length, thus rendering the effects of differential weighting to be minimized. Finally, the correlation between weighted and unit-weighted test scores is almost 1.0. Thus, the take-home message is pretty simple—don't bother to differentially weight items. It is not worth the effort' (Kline, 2005: 105).

As the 21 items of material deprivation in GUS adhere to the three conditions noted in Kline, it can be argued that there is no value to be added in propensity weighting. This will be tested by a doing correlation of the FRS prevalence weighted method of constructing the index with the PSE method, explored in the section that follows.

As regards the threshold used by the UK government, the most recent Family Resources Survey (FRS) adds four new material deprivation indicators to the existing list of 21 indicators, making an old material deprivation index of 21 items (the same ones used in GUS for this paper) and a new material deprivation index of 21 items, with 17 common items ((HBAI), 2012). Comparison between the two shows that the new material deprivation index resulted in a lower proportion of people living in material deprivation using the threshold of 25 than the old material deprivation index. The conclusion of the FRS team was to reduce the threshold to 22 for the new index so that it would show the same proportion living in multiple deprivation as measured by the old index ((HBAI), 2012). This reduction in the depth and extent of material deprivation due to the new index, and the shifting of the threshold to accommodate it, provides further evidence of the arbitrariness of the threshold of 25, or indeed the new threshold of 22. This raises questions as to the validity and reliability of the UK and Scottish governments' measure of material deprivation.

The PSE method of calculating material deprivation

The PSE method comprises a straightforward count of the 21 deprivation items respondents are unable to afford, followed by ANOVA and binary logistic regression models to obtain robust statistical confirmation of the optimum cut-off point that will identify the poor on number of items deprived (Pantazis et al., 2006: 66). This analysis is replicated with GUS data to create a summary measure of material deprivation using the PSE method.

Table 19 ANOVA results with varying deprivation thresholds

Number of items	R squared	F Statistic for Deprivation Group
Deprivation score of 1 or more	0.2057	820
Deprivation score of 2 or more	0.2114	850
Deprivation score of 3 or more	0.1875	750
Deprivation score of 4 or more	0.1675	633
Deprivation score of 5 or more	0.1383	511
Deprivation score of 6 or more	0.1144	404
Deprivation score of 7 or more	0.0929	309

Source: GUS sweep 4

The ANOVA models with GUS data show that the deprivation score that maximises the between group differences and minimises the within group differences (sums of squares) was 2 or more items, as shown in table 3 above. This would indicate that there is a significant change between equivalised income and the deprivation score of two or more, suggesting that this is one level where material deprivation occurs.

Table 20 Summary of logistic regression results

Number of items	Model Chi-square	Cox & Snell R Square	Nagelkerke R Square
Deprivation score of 1 or more	720	0.187	0.250
Deprivation score of 2 or more	774	0.200	0.278
Deprivation score of 3 or more	724	0.188	0.283
Deprivation score of 4 or more	649	0.171	0.284
Deprivation score of 5 or more	558	0.148	0.281
Deprivation score of 6 or more	465	0.125	0.274
Deprivation score of 7 or more	379	0.104	0.231

Sweep 4 cross sectional weight and survey weights used
Source: GUS sweep 4

To confirm and compare the results from the ANOVA, the PSE method uses binary logistic regression models, with the dependent variable the deprivation group and the independent variable the equivalised household income. Table 4 above gives the chi square, Cox and Snell's pseudo R^2 and Nagelkerke's pseudo R^2 statistics from these logistic regressions. The chi square and Cox and Snell's pseudo R^2 verify the findings of the ANOVA models, indicating that the optimum model is the one with a deprivation score of 2 or more. However, using Nagelkerke's pseudo R^2, the optimum deprivation cut-off point is 4+ items. Nagelkerke's pseudo R^2 is considered a more robust measure than Cox and Snell, as it can achieve a score between 0 and 1, whereas Cox and Snell's pseudo R^2 cannot reach a score of 1. This analysis indicates that there are two relevant thresholds for material deprivation in the income distribution and the PSE survey reported similar results (Pantazis et al., 2006). To inform the decision on which threshold to use for this thesis, descriptive statistics show the percentages of families living in material deprivation based on each threshold.

Table 21 The extent of material deprivation using the PSE method

Material deprivation using PSE method	All (%)	Adults (%)	Children (%)
2 or more indicators	37.00	33.00	7.80
3 or more indicators	27.00	22.70	2.70
4 or more indicators	20.12	15.97	0.99

Counts and percentages base on weighted data
Sweep 4 cross sectional weight and survey weights used
Source: GUS sweep 4

Table 5 shows that almost twice as many people are categorised as living in material deprivation on 2 or more indicators as compared to 4 or more indicators. The table also shows that children are far less deprived than their parents, which supports the evidence that parents (predominantly mothers in GUS) forfeit their own material wellbeing to guarantee that of their children.

When faced with a similar choice of thresholds in the 1999 PSE data, Bradshaw and Finch decided to use, not the method of 2+ indicators as used by the PSE team, but a threshold of 4+ indicators as this gave a percentage living in deprivation that corresponded to the contemporary proportion of the population living in income poverty (2003).

Applying their logic, in Scotland at the time the official before housing costs (BHC) child poverty rate was 21%, the after housing costs (AHC) child poverty rate was 26% and the combined low income and material deprivation rate BHC for children was 16% (2010). Using the 4+ indicators described in table 5, 20.12% of families are living in material deprivation in GUS, which corresponds to the 21% BHC proportion of the population in Scotland at the time. The threshold of 4+ indicators thus gives a material deprivation score that is more conservative than the 2+ indicators, is statistically robust and is comparable to the contemporary proportion of children living in income poverty.

Comparing the FRS and the PSE method

Kline (2005) noted that weighting the items in an index would have a minimal effect on the overall construct of the index, which could be tested by doing a correlation on the weighted and unweighted index. The Pearson product moment correlation between the FRS and PSE method is 0.9923 and the Spearman's rho is 0.9772. This proves that the two measures are virtually identical in what they are measuring; only the thresholds differ and so there is no advantage in performing prevalence weighting in order to construct the index of material deprivation. The principal point of comparison between the two measures, therefore, lies in the thresholds chosen.

The PSE method of calculating the threshold to determine when an individual or family is living in material deprivation gives a measure that is justifiable and statistically robust, whereas the threshold of 25 (now 22 for the updated index) used by the UK government is arbitrary and without explicit justification. There is no question, therefore, that the PSE method for calculating a defining threshold is superior.

Conclusions

This paper analysed the two main methods used to construct an index of material deprivation from the same 21 items of deprivation, the method advocated by the UK and Scottish government using the Family Resources Survey (FRS) and the one used for the Poverty and Social Exclusion (PSE) surveys at Bristol University.

Using the PSE threshold, 20.12% of families in Scotland are living in material deprivation in Scotland, compared to the FRS threshold, which resulted in 12.40% of families living in material deprivation. The FRS threshold has been used since the 1990s, is arbitrary and has no statistical analysis to make it valid or reliable. The PSE threshold(s) by comparison, are statistically robust, valid, reliable and result in a proportion of families in Scotland materially deprived that is virtually identical to the proportion living in income poverty using contemporary government data.

The most recent analysis of FRS data, using 4 updated items of material deprivation, have resulted in an index that gives a lower proportion of families materially

deprived than the old index ((HBAI), 2012). While the FRS team have adjusted the threshold to 22 to make the two proportions comparable, they have missed an opportunity to carry out robust analysis on the threshold per se.

While the GUS dataset is not the one used to calculate UK or Scottish government poverty rates, being as it is a survey of families with young children, the analysis of the two methods gives very different pictures of the extent of families living in material deprivation in Scotland. The UK and Scottish governments' method results in almost 40% *fewer* families being identified as living in material deprivation. If we extrapolate this method to the data on the wider population used by the governments to measure material deprivation, then we can assert that the arbitrary nature of their threshold is *underestimating* the extent of material deprivation, not only in Scotland but across the UK.

This has serious implications for the statutory requirement of the Child Poverty Act (2010) to eradicate child poverty by 2020. Given that one of the 4 targets of Act is to reduce income poverty and material deprivation combined to less than 5% incidence in the population, it is more important than ever that the correct calculations are made. Failing to adequately identify those in the population affected by low income and material deprivation combined, would mean that no matter what progress is made towards the target under the current measure, material deprivation would still exist and persist, despite the best efforts of the UK and Scottish governments (and other devolved administrations). Not only would this be demotivating and demoralising for everyone involved, if the correct identifying structures are not recognised, and the weakness of the current threshold not addressed, then UK governments and administrations will be left scratching their heads at the inevitable failure of their laudable efforts, and may erroneously conclude that it is impossible to eradicate child poverty and material deprivation.

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Appendix D Polychoric correlations of the 26 social asset variables (A to Z)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
A	1																									
B	0.91	1																								
C	0.76	0.85	1																							
D	0.62	0.62	0.55	1																						
E	0.60	0.64	0.58	0.92	1																					
F	0.54	0.58	0.64	0.76	0.84	1																				
G	0.08	0.06	0.05	0.09	0.05	0.06	1																			
H	0.11	0.08	0.03	0.10	0.06	0.05	0.72	1																		
I	0.20	0.20	0.20	0.22	0.21	0.22	0.27	0.25	1																	
J	0.19	0.19	0.23	0.23	0.23	0.27	0.13	0.14	0.50	1																
K	0.11	0.12	0.13	0.16	0.15	0.14	0.16	0.17	0.41	0.43	1															
L	0.33	0.34	0.37	0.42	0.45	0.46	0.09	0.11	0.32	0.48	0.25	1														
M	0.57	0.55	0.50	0.66	0.64	0.57	0.11	0.13	0.23	0.25	0.16	0.36	1													
N	0.56	0.58	0.55	0.64	0.66	0.61	0.07	0.10	0.22	0.24	0.14	0.36	0.92	1												
O	0.49	0.54	0.59	0.57	0.61	0.66	0.06	0.07	0.23	0.26	0.15	0.39	0.78	0.85	1											
P	0.07	0.04	0.03	0.10	0.07	0.05	0.58	0.51	0.22	0.13	0.11	0.07	0.13	0.10	0.08	1										
Q	0.07	0.05	0.03	0.11	0.07	0.06	0.48	0.60	0.23	0.16	0.15	0.09	0.13	0.11	0.10	0.76	1									
R	0.53	0.50	0.45	0.61	0.60	0.54	0.11	0.12	0.22	0.24	0.16	0.36	0.67	0.64	0.58	0.15	0.11	1								
S	0.52	0.55	0.50	0.62	0.64	0.60	0.08	0.09	0.22	0.25	0.15	0.38	0.65	0.69	0.65	0.10	0.09	0.92	1							
T	0.46	0.50	0.55	0.55	0.58	0.64	0.07	0.07	0.21	0.26	0.16	0.40	0.58	0.62	0.70	0.11	0.10	0.76	0.83	1						
U	0.09	0.06	0.05	0.09	0.06	0.07	0.53	0.46	0.23	0.12	0.13	0.11	0.12	0.09	0.08	0.60	0.52	0.14	0.09	0.10	1					
V	0.11	0.07	0.04	0.10	0.07	0.07	0.46	0.50	0.22	0.12	0.13	0.13	0.14	0.12	0.10	0.52	0.60	0.14	0.11	0.11	0.76	1				
W	0.19	0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.60	0.38	0.37	0.30	0.21	0.21	0.22	0.21	0.21	0.25	0.25	0.25	0.24	0.24	1			
X	0.20	0.21	0.23	0.24	0.26	0.26	0.13	0.15	0.39	0.72	0.34	0.43	0.26	0.25	0.27	0.15	0.16	0.30	0.30	0.30	0.15	0.15	0.47	1		
Y	0.09	0.11	0.12	0.11	0.13	0.14	0.11	0.15	0.33	0.33	0.55	0.20	0.15	0.14	0.15	0.13	0.15	0.20	0.18	0.19	0.15	0.15	0.45	0.44	1	
Z	0.32	0.33	0.32	0.40	0.41	0.40	0.09	0.10	0.32	0.39	0.22	0.60	0.37	0.39	0.40	0.09	0.09	0.44	0.46	0.45	0.13	0.12	0.38	0.46	0.31	1

Appendix E Income, closeness/support with interaction effects

	SEB	SEB	SEB
Longitudinal income inequality (ref: quintile 5)			
Permanent income quintile 1	-0.834***	-0.709***	-1.224***
	(0.088)	(0.094)	(0.212)
Permanent income quintile 2	-0.519***	-0.430***	-0.507**
	(0.059)	(0.066)	(0.153)
Permanent income quintile 3	-0.265***	-0.196***	-0.479**
	(0.052)	(0.054)	(0.166)
Permanent income quintile 4	-0.217***	-0.180***	-0.398**
	(0.048)	(0.052)	(0.138)
Birth order (ref: first born)	0.180***	0.156***	0.153***
	(0.041)	(0.042)	(0.042)
Sex of child (ref: female)	-0.274***	-0.279***	-0.280***
	(0.036)	(0.041)	(0.039)
Ethnicity of mother	-0.229	-0.150	-0.165
	(0.139)	(0.191)	(0.190)
Stable lone parent family	0.0389	0.0298	0.0102
	(0.102)	(0.103)	(0.103)
Lone parent who repartnered	-0.0459	-0.128	-0.150
	(0.112)	(0.121)	(0.122)
Couple who separated	-0.134*	-0.117	-0.116
	(0.065)	(0.078)	(0.075)
Separations and repartnerings	-0.505***	-0.493***	-0.498***
	(0.088)	(0.097)	(0.096)
30 to 39	0.0323	-0.00848	-0.00159
	(0.085)	(0.089)	(0.088)
20 to 29	-0.0525	-0.0806	-0.0684
	(0.083)	(0.091)	(0.089)
Under 20	-0.0732	-0.147	-0.130
	(0.140)	(0.156)	(0.160)
Closeness/support (ref: low closeness/support):			
Medium closeness/support		0.354***	0.0783
		(0.065)	(0.115)
High closeness/support		0.551***	0.326**
		(0.072)	(0.118)
Interaction terms:			
Income quintile 4 x High closeness/support			0.0241
			(0.176)
Income quintile 3 x High closeness/support			0.200
			(0.217)
Income quintile 2 x High closeness/support			0.0759
			(0.176)
Income quintile 1 x High closeness/support			0.770***
			(0.211)
Income quintile 4 x Medium closeness/support			0.283*
			(0.140)
Income quintile 3 x Medium closeness/support			0.340
			(0.174)
Income quintile 2 x Medium closeness/support			0.0774
			(0.162)
Income quintile 1 x Medium closeness/support			0.593**
			(0.204)
Constant	0.396***	0.0774	0.312*
	(0.083)	(0.109)	(0.133)
r^2	0.133	0.145	0.153
N	3518	2804	2804

df_r	65	65	65

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied

Appendix F Polychoric correlations of debt variables

Polychoric correlations between remaining debt variables

	Electricity	Gas	Council tax	Telephone	TV rental	HP payments	Rent/ mortgage	Credit card	Loan repayment
Electricity	1								
Gas	0.876	1							
Council tax	0.614	0.487	1						
Telephone	0.462	0.313	0.496	1					
TV rental	0.438	0.374	0.817	0.648	1				
HP payments	0.448	0.460	0.555	0.519	0.465	1			
Rent/ mortgage	0.544	0.455	0.711	0.551	0.415	0.469	1		
Credit card	0.504	0.395	0.523	0.393	0.463	0.511	0.473	1	
Loan repayment	0.488	0.379	0.515	0.388	0.462	0.479	0.485	0.662	1

Source: GUS sweep 5
N = 3823

Appendix G Kruskal-Wallis

The descriptive statistics for the two measures of financial vulnerability are presented as a table of their mean ranks, where higher ranks indicate higher financial vulnerability, against the control variables used in this study: birth order of child, ethnicity of the mother, sex of the child, age of the mother at first birth, longitudinal measure of family composition.

Table 0.22 Difference in mean ranks of financial vulnerabilities factors

	Financial stress (mean rank)			Debt factor (mean rank)		
Control variables - comparisons	1st col	2nd col	p <	1st col	2nd col	p ≤
Birth order:						
First born/Not first born child	1575	1677	0.0089	421	498	0.0450
Maternal Ethnicity:						
White/ Other ethnicity	1624	1766	0.2706	459	517	0.6179
Sex:						
Female/ Male	1597	1655	0.1677	459	462	0.8948
Age of mother at first birth:						
under 20/20 to 29	2194	1734	0.0001	1021	502	0.0001
under 20/30 to 39	2194	1275	0.0001	1021	213	0.0001
under 20/40 or over	2194	1381	0.0001	1021	218	0.0001
20 to 29/30 to 39	1734	1275	0.0001	502	213	0.0001
20 to 29/40 or over	1734	1381	0.0340	502	218	0.0689
30 to 39/40 or over	1275	1381	0.4494	213	218	0.9738
Family transitions:						
Stable couple/Stable lone parent	1434	2355	0.0001	283	1141	0.0000
Stable couple/ Lone parent who repartnered	1434	2197	0.0001	283	1034	0.0001
Stable couple/ Couple who separated	1434	2399	0.0001	283	1106	0.0001
Stable couple/ Separations and repartnerings	1434	2237	0.0001	283	1045	0.0001
Stable lone parent/ Lone parent who repartnered	2355	2197	0.1260	1141	1034	0.4947
Stable lone parent/ Couple who separated	2355	2399	0.8322	1141	1106	0.1260
Stable lone parent/ Separations and repartnerings	2355	2237	0.1268	1141	1045	0.5254
Lone parent who repartnered/ Couple who separated	2197	2399	0.1086	1034	1106	0.1268
Lone parent who repartnered/ Separations and repartnerings	2197	2237	0.9030	1034	1045	0.9891
Couple who separated/ Separations and repartnerings	2399	2237	0.0984	1106	1045	0.7591

Source: GUS sweeps 1 to 5
N = 3823

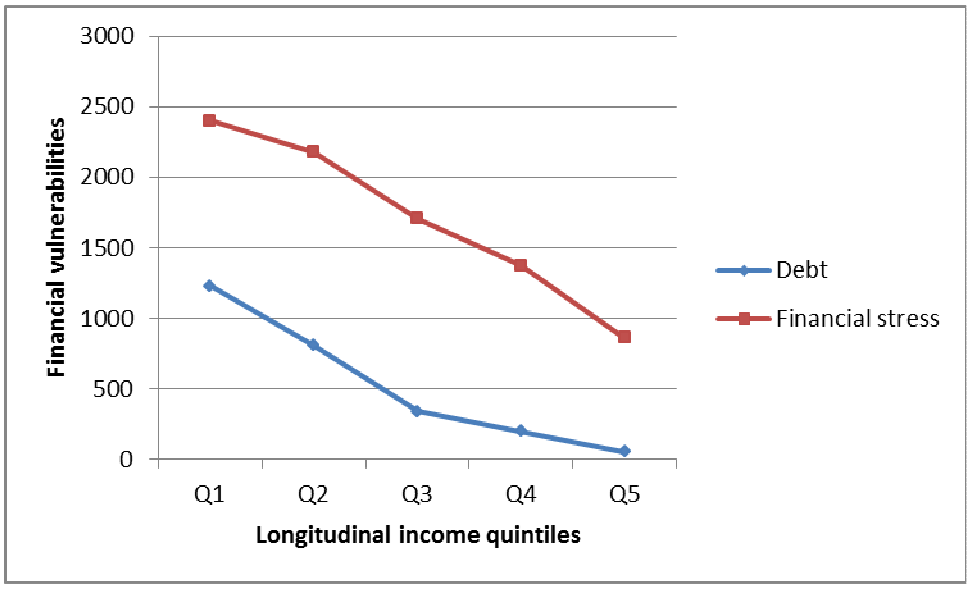
Table 0.22 is presented in three partial sections. Section 1 lists the control variables. Section 2 divides into three columns: the first column gives the mean rank of the *financial stress* factor for the first category of the control variable (e.g. aged under 20); the second column gives the mean rank of the *financial stress* factor for the comparison category of the control variable (e.g. aged 20-29); and the third column gives the p-value which indicates whether the mean ranks of the pair of categories are significantly different from each other. Section 3 also divides into three columns: the first column gives the mean rank of the *debt* factor for the first category of the control variable (e.g. aged under 20); the second column gives the mean rank of the *debt* factor for the comparison category of the control variable (e.g. aged 20-29); and the third column gives the p-value which indicates whether the mean ranks of the pair of categories are significantly different from each other. What is immediately noticeable is that it is the same categories of people who are vulnerable on both measures.

Those who have higher levels of financial vulnerability on both measures are: those whose child is not the first born, those who are aged under 30 years old (but especially those aged under 20 years), and all family compositions compared to a stable couple family but not compared to each other. Those who experienced the highest levels of financial vulnerability are: couples that have recently separated, stable lone parent families, and being aged less than 20 years old. What is striking about this table is just how widespread financial vulnerability is. It is easier to describe those who are less vulnerable - those aged 30 and over and those in a stable couple family - than it is to list those experiencing some level of financial vulnerability.

What the mean ranks of the two financial vulnerability measures also show is the incremental nature of financial vulnerability for the various groups; e.g. those aged <20 years at the birth of their first child have increasingly higher levels of financial stress than those aged 20 - 29 years at the birth of first child. For family composition, those who score more highly than

average on the two measures of financial vulnerability have similar levels of vulnerability; the most vulnerable in this category is a couple who have separated, followed by a stable lone parent family.

Figure 0.1 Plot of mean ranks of financial vulnerability factors



Mean of financial vulnerability factors = 0
Means ranks based on unweighted data
Source: GUS sweeps 1 to 5

The means plot in Figure 0.1 visually displays the mean ranks of each of the financial vulnerabilities factors with longitudinal income inequality. It shows that debt and financial stress decrease as income increases, showing that higher levels of debt correspond to lower levels of income. The pattern for each factor is very similar. Income quintiles one and two, the two lowest income quintiles, have the highest levels of debt and financial stress. Those in income quintiles three, four and five, have much lower levels of debt and financial stress. These findings will now be tested using Kruskal Wallis tests, nonparametric analyses of variance, with post hoc Mann Whitney U tests, which allows investigation of whether families' levels of debt and financial vulnerability differs significantly between the different categories of longitudinal income poverty.

As the debt and financial stress factors are not normally distributed, a non-parametric test that makes no assumptions about the distribution of the data are used to compare the means of the two factors across the income quintiles. The Kruskal-Wallis test is used when one has an independent variable with two or more levels and an ordinal dependent variable as discussed in chapter six.

Table 0.23 Kruskal-Wallis equality-of-populations rank test for the Debt factor

Perminc5	Count	Rank Sum	Mean Rank
Q1	550	1.28E+06	1228
Q2	725	1.52E+06	808
Q3	804	1.48E+06	338
Q4	872	1.54E+06	200
Q5	855	1.44E+06	54

Source: GUS sweeps 1 to 5

The Kruskal-Wallis test reveals that there is a significant impact of longitudinal income inequality on levels of debt (chi-squared with ties (4) = 443.842, $p < .0001$). Table 0.23 gives the mean ranks for each income quintile, which shows that those living in income quintile one have the highest level of debt, and that levels of debt decrease incrementally across the income quintiles.

Table 0.24 Kruskal-Wallis equality-of-populations rank test for the financial stress factor

Perminc5	Count	Rank Sum	Mean Rank
Q1	551	1.41E+06	2401
Q2	726	1.71E+06	2178
Q3	804	1.57E+06	1705
Q4	872	1.47E+06	1374
Q5	855	1.09E+06	860

Source: GUS sweeps 1 to 5

In Table 0.24 the Kruskal-Wallis test reveals that there is a significant impact of longitudinal income inequality on financial stress (chi-squared

with ties (4) = 655.776, $p < .0001$). As before, the levels of financial stress are incrementally higher for increasing income quintiles. However, this test does not indicate whether each of the income quintiles is different from the others. In order to ascertain whether or not there is a significant difference between the income quintiles a series of post hoc Mann-Whitney unmatched pairs tests is carried out using the Bonferroni adjustment. This is an adjustment that makes the critical value of the significance test more stringent from the standard $p<0.05$, as explained in chapter six. For these tests there are 5 categories of permanent income and 10 possible comparisons among these categories, which, applying Bonferroni's adjustment, means that the critical significance value for these tests is 0.05/10 (0.005) for the first comparison, 0.05/9 (0.0056) for the second, 0.05/8 (0.00625) for the third and so on.

Table 0.25 Mann-Whitney U tests

Comparison	Mean rank 1st col	2nd col	p <
Debt factor:			
Permanent income quintiles			
Q1 - Q2	1228	808	0.0000
Q1 - Q3	1228	338	0.0000
Q1 - Q4	1228	200	0.0000
Q1 - Q5	1228	54	0.0000
Q2 - Q3	808	338	0.0000
Q2 - Q4	808	200	0.0000
Q2 - Q5	808	54	0.0000
Q3 - Q4	338	200	0.0000
Q3 - Q5	338	54	0.0000
Q4 - Q5	200	54	0.0000
Financial stress factor:			
Permanent income quintiles			
Q1 - Q2	2401	2178	0.0000
Q1 - Q3	2401	1705	0.0000
Q1 - Q4	2401	1374	0.0000
Q1 - Q5	2401	860	0.0000
Q2 - Q3	2178	1705	0.0000
Q2 - Q4	2178	1374	0.0000
Q2 - Q5	2178	860	0.0000
Q3 - Q4	1705	1374	0.0000
Q3 - Q5	1705	860	0.0000
Q4 - Q5	1374	860	0.0000

Source: GUS sweeps 1 to 5

The results in Table 0.25 suggest that there is a statistically significant difference between the underlying distributions of the debt and financial factor scores of each of the permanent income quintiles, which can be determined by the very small p values, much smaller than the restricted significance criterion post-Bonferroni adjustment. The mean ranks presents the differences between these means on each of the income quintiles, for example, the difference between the rank means of income quintile one and income quintile five on the two financial vulnerability factors is large and statistically significant, showing that those on persistent low incomes have higher levels of debt and financial stress. The differences in the mean ranks are incremental across the income quintiles, e.g. the difference between income quintiles four and five is still statistically significant. This shows

that there are financial vulnerabilities across all the income quintiles; it is just the degree of financial vulnerability that changes.

Appendix H Regression: Financial stress factor tested with SA factors and interactions

	model 1		model 2		model 3	
Social assets:						
SA 1 Leave child with friends and/or family	-0.343***	(0.051)				
Interaction Q2 and SA 1	0.197*	(0.077)				
Interaction Q3 and SA 1	0.188**	(0.067)				
Interaction Q4 and SA 1	0.187**	(0.060)				
Interaction Q5 and SA 1	0.291***	(0.055)				
SA 2 Closeness and support			-0.191**	(0.063)		
Interaction Q2 and SA 2			0.0689	(0.075)		
Interaction Q3 and SA 2			0.0409	(0.072)		
Interaction Q4 and SA 2			0.201**	(0.073)		
Interaction Q5 and SA 2			0.0689	(0.075)		
SA 3 Visiting/being visited by friends with children					-0.0755	(0.053)
Interaction Q2 and SA 3					-0.0206	(0.064)
Interaction Q3 and SA 3					-0.0168	(0.068)
Interaction Q4 and SA 3					0.0579	(0.073)
Interaction Q5 and SA 3					0.00473	(0.072)
Permanent income quintiles (ref: Q1 – lowest)						
Quintile 2	-0.238**	(0.087)	-0.217*	(0.091)	-0.252**	(0.090)
Quintile 3	-0.559***	(0.091)	-0.539***	(0.095)	-0.587***	(0.095)
Quintile 4	-0.802***	(0.092)	-0.760***	(0.098)	-0.816***	(0.100)
Quintile 5	-1.124***	(0.093)	-1.077***	(0.102)	-1.128***	(0.100)
Birth order (ref: first born)	-0.0276	(0.039)	0.00497	(0.038)	0.00951	(0.039)
Sex of child (ref: female)	0.0311	(0.037)	0.0395	(0.037)	0.0361	(0.037)
Ethnicity of mother (ref: white)	-0.255*	(0.106)	-0.272*	(0.109)	-0.267*	(0.106)
Longitudinal family composition (ref: stable couple family)						
Stable lone parent family	0.0706	(0.097)	0.157	(0.102)	0.108	(0.097)
Lone parent who repartnered	0.212*	(0.100)	0.239*	(0.098)	0.195	(0.100)
Couple who separated	0.400***	(0.077)	0.405***	(0.073)	0.408***	(0.076)
Separations and repartnerings	0.129	(0.117)	0.172	(0.112)	0.177	(0.113)

Maternal age at first birth (ref: 40 or over)						
30 to 39	-0.0634	(0.111)	-0.0645	(0.112)	-0.0743	(0.112)
20 to 29	0.0532	(0.126)	0.0593	(0.127)	0.0336	(0.127)
Under 20	0.00755	(0.178)	-0.0424	(0.187)	-0.0464	(0.185)
Constant	0.579***	(0.158)	0.514**	(0.158)	0.582***	(0.160)
r^2	0.237		0.226		0.213	
N	2827		2827		2827	
df_r	65		65		65	

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied

Appendix I Regression: Debt factor tested with SA factors and interactions

	model 1		model 2		model 3	
Social assets:						
SA 1 Leave child with friends and/or family	-0.245**	(0.089)				
Interaction Q2 and SA 1	0.112	(0.115)				
Interaction Q3 and SA 1	0.218*	(0.100)				
Interaction Q4 and SA 1	0.203*	(0.094)				
Interaction Q5 and SA 1	0.255**	(0.091)				
SA 2 Closeness and support			-0.134	(0.075)		
Interaction Q2 and SA 2			-0.0668	(0.099)		
Interaction Q3 and SA 2			0.129	(0.080)		
Interaction Q4 and SA 2			0.0466	(0.096)		
Interaction Q5 and SA 2			0.145	(0.076)		
SA 3 Visiting/being visited by friends with children					0.0528	(0.072)
Interaction Q2 and SA 3					-0.142	(0.093)
Interaction Q3 and SA 3					-0.0665	(0.074)
Interaction Q4 and SA 3					-0.0243	(0.086)
Interaction Q5 and SA 3					-0.0651	(0.079)
Longitudinal income inequality (ref: quintile 1)						
Quintile 2	-0.288*	(0.126)	-0.281*	(0.125)	-0.307*	(0.121)
Quintile 3	-0.636***	(0.102)	-0.609***	(0.107)	-0.656***	(0.105)
Quintile 4	-0.669***	(0.108)	-0.633***	(0.114)	-0.690***	(0.110)
Quintile 5	-0.710***	(0.110)	-0.674***	(0.115)	-0.726***	(0.113)
Birth order (ref: first born)	0.0220	(0.047)	0.0398	(0.045)	0.0382	(0.045)
Sex of child (ref: female)	0.0717	(0.048)	0.0734	(0.048)	0.0744	(0.048)
Ethnicity of mother (ref: white)	-0.161	(0.158)	-0.171	(0.155)	-0.157	(0.154)
Longitudinal family composition (ref: stable couple family)						
Stable lone parent family	0.182	(0.137)	0.245	(0.129)	0.216	(0.133)
Lone parent who repartnered	0.155	(0.129)	0.190	(0.131)	0.143	(0.130)
Couple who separated	0.324**	(0.111)	0.322**	(0.106)	0.332**	(0.110)
Separations and repartnerings	0.193	(0.158)	0.217	(0.156)	0.219	(0.161)

Maternal age at first birth (ref: 40 or over)						
30 to 39	-0.0537	(0.094)	-0.0502	(0.091)	-0.0490	(0.092)
20 to 29	0.134	(0.093)	0.149	(0.092)	0.132	(0.094)
Under 20	0.253	(0.166)	0.227	(0.171)	0.202	(0.178)
Constant	0.376*	(0.147)	0.323*	(0.154)	0.381*	(0.152)
r^2	0.142		0.143		0.133	
N	2826		2826		2826	
df_r	65		65		65	

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: GUS sweeps 1 to 5
Sweep 5 longitudinal weight and survey weights applied