

**The London School of Economics and
Political Science**

Poverty and Parenting in the UK

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Abstract

By the time children in the UK start school there is already an achievement gap between those from low income households and their better-off classmates. One explanation for this is differences in parenting. This has increasingly been the focus of policy interventions under successive governments, where the emphasis has shifted towards parenting *rather than* poverty as explaining poorer children's worse outcomes.

In this context this thesis examines how the two factors, poverty and parenting are related and what mechanisms explain these relationships, specifically testing the Family Stress Model. Using the Millennium Cohort Study a range of different experiences of economic hardship are analysed in relation to different parenting behaviours when children are aged five.

The findings show that it is not straightforwardly the case that low income parents parent worse, and there are some positive (as well as negative) differences in parenting between mothers with low and median incomes.

For some of the negative differences in parenting these are part of a broader income-parenting gradient that extends all the way up the distribution. When other experiences of hardship are examined (such as debt, deprivation and feeling poor) they are more strongly and negatively related to parenting behaviours, compared to income. It is found that mothers' mental health and relationship quality are mechanisms for most parenting behaviours and are particularly important for how close the mother feels to the child, play activities and discipline. Experiencing a worsening of material deprivation is associated with a worsening of a number of parenting behaviours and changes in experiences of hardship are also related to changes in mothers' mental health and life satisfaction. These findings highlight the importance of financial resources for parenting and suggest that any policies aimed at improving parenting in order to improve the outcomes of poor children need to address families' economic situation, as well as mothers' mental health and relationship quality.

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Chapter 1

Introduction

1.1 Background and Motivation

By the time children in the UK start school there is already a gap in language and reading skills, social and behavioural development and physical health, between children from less advantaged backgrounds and their better-off peers (Bradbury et al, 2015: 69-75). Recent evidence has shown that although the attainment gap has started to decrease since 2010, the reduction has been small and there is still a 17 percentage point gap in school readiness at age five between children who are eligible for free school meals and all other children (Social Mobility Commission, 2017: 21). These unequal outcomes persist throughout the life course translating into lower educational attainment, lower incomes in adulthood (Gregg et al, 1999), and worse mental and physical health (BMA, 2017). The relationship between low income and disadvantage has long been of concern, but at the time of writing earlier progress in reducing child poverty has been undone as austerity measures have taken effect (Social Mobility Commission, 2017: 3) and child poverty has increased and is forecasted to increase further still (DWP, 2017; Brown and Hood, 2016).

Whilst schools and other state institutions undoubtedly have an important role to play in reducing inequalities in children's outcomes, that these inequalities are already prevalent in the first years of a child's life highlights the importance of the family and home environment. One clear explanation of how low income can influence children's home environment is that having low financial resources restricts what parents are able to buy leaving many unable to afford some of the goods and services that contribute to healthy physical, social and cognitive development of children. For example, families with low income are more likely to have poorer diets (Dowler, 2008), poor quality housing (Shelter, 2006), and have

less money to spend on educational resources and activities for their children (Magnuson & Duncan, 2002: 9).

As well as the physical home environment, another possible explanation for these early childhood inequalities is differences in parenting. Parenting has been described by the (then) Social Mobility and Child Poverty Commission as “the single biggest influence on children’s futures” (Milburn et al, 2013: 19). In recent years there has been an increasing interest in the importance of parenting from politicians and an increasing acceptance of state intervention (Lewis, 2011). UK government reports have highlighted the negative impact of poor parenting on children’s outcomes, and the need for government resources to be directed towards encouraging positive parenting, with an emphasis on early intervention (Field, 2010; Allen, 2011).

Despite evidence for the importance of both, the impact of financial resources and parenting are often described in political rhetoric as *competing* explanations for poorer children’s worse outcomes (Dermott, 2012), with little recognition of how the former may influence the latter. Emphasis has often been placed on the role of parenting as the more important factor in explaining poorer children’s outcomes, rather than economic hardship itself (Clarke, 2006: 710) and the role of financial resources in affecting children’s outcomes has been questioned. For example, in the Welfare Reform and Work Act 2016 the Conservative Government has amended the Child Poverty Act 2010, shifting the focus from the four previous child poverty measures (all based on some measure of income poverty and/or material deprivation), to measures of worklessness and educational attainment which are now required to be published by the Secretary of State annually¹. In a similar vein, in his *Life Chances Speech*, the then Prime Minister David Cameron highlighted the

¹ A later amendment has meant that the original four measures still have to be published annually but there is no longer a requirement to report them to parliament.

importance of parenting in determining children's life chances, describing families as "the best anti-poverty measure ever invented" and drawing on neuroscience to argue that "mums and dads literally build babies' brains", before announcing a plan to significantly expand parenting support with a view to making it "normal – even aspirational, to attend parenting classes" (Cameron, 11th January 2016).

More recently under the Prime Minister Theresa May the focus has shifted to worklessness and relationship conflict (again rather than poverty) as the driving force behind children's outcomes, though the role of parenting is still implicated as one of the mechanisms (Department for Work and Pensions, April 2017). Yet we have strong causal evidence that income itself *is* important for children's outcomes (Cooper and Stewart, 2013; 2017).

Furthermore, a study by Schoon et al (2012) finds that much of the association between worklessness and children's outcomes is explained by related risk factors workless families face, rather than worklessness itself (p47).

It is in this context of a political preoccupation with parenting as the explanatory factor for poorer children's worse outcomes and a downplaying of the role of income, that this research explores the relationship *between* economic hardship and parenting in the UK.

This is an important topic for a number of reasons. Firstly, it has important implications for social mobility (Reeves et al. 2013); if financial difficulties restrict parent's capacities in parenting and thereby contribute to the worse outcomes of their children, their children are already disadvantaged in terms of future life chances. It may be that in order to increase social mobility we need to focus on the impact of economic hardship on parenting behaviours. Secondly, in providing a better understanding of the mechanisms and processes through which financial resources may affect parenting behaviours in the UK, this will help inform policy solutions aimed at improving parenting, for instance by providing evidence related

to whether direct interventions in the form of parenting classes or indirect interventions, such as increasing families' financial resources, would be most beneficial for children's outcomes. Rather than fully prescribe one or the other, the evidence is likely to help inform both policies that aim to improve parenting behaviours as an end in itself and those that seek to improve disadvantaged children's outcomes. Finally, whilst much of the policy discourse around this topic is orientated around children's outcomes, this topic is important because it also relates to parents' wellbeing; understanding more about how economic hardship can impact parents' wellbeing and parenting is an important aim in its own right.

1.2 Overview of the Thesis

This thesis is structured so that each chapter builds on the previous, with the first four chapters laying the groundwork for the thesis as a whole in terms of policy context, relevant evidence and concepts as well as an introduction to the and data used. The empirical chapters that follow on from this then include more specific discussions of existing literature and the methods used within each empirical chapter.

Chapter 2 consists of a literature review which has four sections. It opens with a discussion of the recent policy context, the increased focus on parenting by successive governments and how this has been reflected in specific policies. Given that parenting is the outcome of interest in this research, the second section briefly summarises the evidence that parenting is important for children's outcomes (which is revisited in more detail in chapter 3). The third and fourth sections examine the quantitative and qualitative evidence on the relationship between financial resources and parenting.

Chapter 3 provides the conceptual framework for the thesis, in two parts. The first part discusses conceptualisations of parenting, theories of why parenting is important and approaches to measuring parenting in empirical research, concluding with developing my own framework for conceptualising and measuring parenting across different domains. The second part outlines the conceptual framework for potential mechanisms that explain the relationship between economic hardship and parenting behaviours, with a justification for the mechanisms focussed on in this research, namely those of the Family Stress Model (FSM). The FSM is a well-evidenced theory from the US which suggests economic hardship negatively affects children's outcomes via the impact it has on parents' mental health and relationship quality which in turn has a knock on effect on their parenting behaviours. Finally the contributions of the research are summarised before outlining the research questions.

In chapter 4 a description of the data is given (the Millennium Cohort Study), followed by a discussion of the strengths and limitations of the data. Finally, the issue of missing data – specifically item non-response – is discussed in relation to how this might affect the findings.

Chapters 5 to 8 make up the four empirical chapters, with each chapter exploring one of the four research questions and related sub-questions. The first of these, chapter 5, examines the extent to which low income parents differ in their parenting behaviours in comparison to median income parents, as well as looking at parenting behaviours across the full income distribution. The chapter has two parts, the first part analyses raw differences in parenting by income group. The 38 individual parenting measures are analysed separately and categorised into binary variables highlighting 'ideal' and 'poor' parenting. In the second part these individual parenting measures are combined into indices that map onto my conceptual framework of parenting across different domains. Additionally other potential explanatory factors are taken into account in an adjusted model, including mothers' education, work status and whether there are one or two parents in the household. This chapter differs in its approach from existing research in that it examines parenting across the full income distribution and compares low income parents to median income parents specifically (where most existing research focuses on parents in income poverty in comparison to *all* other parents). It also extends existing research in examining multiple parenting measures across different domains. These differences have resulted in new empirical evidence: it is found that it is not straightforwardly the case that low income parents are parenting worse than other parents; there are in fact some positive differences in parenting. Where there are negative differences these are often part of an income gradient that extends all the way up the income distribution. Only in relation to discipline, are low income parents uniquely different to other parents although these results are in the opposite direction to that expected and raise questions about whether the discipline measures in the MCS are

capturing style of discipline, or frequency of discipline/naughtiness of the child. Finally, it is clear that although there are differences in parenting across income groups, on the whole, most parents regardless of their income are reporting parenting in ways we would describe as good. The negative differences seem to be driven by a minority of parents within the low income group, for which there may be other factors at play that are relevant.

Leading on from these findings, in chapter 6 different experiences of hardship are examined, both in relation to how much they overlap with low income and with each other and also how they are related to different parenting behaviours. Specifically, debt, deprivation and feeling poor are examined as well as measures of housing quality (damp and overcrowding) and measures of the local area, including subjective measures from the mother, interviewer observations and rankings on the Index of Multiple Deprivation. It is found that the low income measure used in the previous chapter was only capturing around 50% of people experiencing any of these hardships. In contrast to the findings on income and parenting, experiencing hardship was more strongly and negatively associated with most of the parenting measures. The results in relation to discipline were the opposite to the low income results – experiencing hardship was associated with more frequent discipline of both kinds, harsh and permissive as well as authoritative (firm but fair).

In order to understand more about these relationships between experiences of hardship and parenting, in chapter 7 potential mechanisms are explored. Specifically pathways operationalising the Family Stress Model (FSM) are tested using structural equation modelling. Hardship is measured as a latent construct based on people's experiences of debt, deprivation and feeling poor. The analysis in this chapter extends the existing evidence base in two ways. Firstly, examining different types of parenting enables testing whether the FSM is more or less relevant for different types of parenting.

Secondly, this is the first UK evidence to my knowledge which incorporates the role of relationship quality as a mechanism between hardship and parenting, for mothers in a relationship. The findings from this chapter provide evidence that the FSM is relevant to the UK, although the extent of its explanatory power depends on the parenting behaviours in question. Mothers' mental health and life satisfaction *fully* explain the relationship between hardship and parenting behaviours that are arguably more emotionally-driven: how close the mother feels to the child, play activities and discipline. For routine meal and bedtimes, educational activities and meeting the child's physical needs the FSM mechanisms explain some of the relationship with hardship although more than half of the relationship are still unexplained by the model. Mothers' mental health and life satisfaction had no explanatory power for two of the parenting measures: trips outside of the home and hours of TV and computer games. These are also two of the parenting behaviours for which an income gradient is found in the first empirical chapter, which, in line with these results suggests that other mechanisms perhaps related to the Investment Model (parents' abilities to invest in goods and resources) are more relevant for these behaviours. For mothers in a relationship, relationship quality is found to be a significant mechanism between hardship and most parenting behaviours and particularly important for educational activities and meeting the child's physical needs, for which relationship quality is the only significant mediator.

In the final empirical chapter (8) changes in hardship and changes in mothers' mental health and parenting is examined, between when the child is five and seven years. In-line with other UK and US evidence changes in hardship are found to be significantly related to changes in mothers' mental health and life satisfaction. A worsening of debt, deprivation and feeling poor are each associated with a worsening in mothers' mental health and life satisfaction. Decreases in hardship are associated with improvements in mothers' mental health and life satisfaction. Importantly,

changes in income are not found to be significantly associated with changes in mothers' mental health, underlining the significance of including alternative measures of hardship in this research. Additionally, this is the first UK research to my knowledge that examines changes in hardship and changes in parenting. I find that a worsening of material deprivation is associated with a worsening in parenting in terms of meeting the child's physical needs, trips outside of the home, educational activities and play activities. On the whole changes in income, debt and feeling poor are not significantly related to changes in parenting. Given that changes in hardship are associated with changes in mothers' mental health, and mothers' mental health is known to be important for parenting, the lack of significant results for changes in income, debt and feeling poor, may be due to a delay between changes in hardship being translated into changes in parenting. As changes in deprivation are likely to be capturing more long term (as well as perhaps more severe) changes in economic hardship, these findings are compatible with this interpretation. The findings from this chapter give more confidence to the cross-sectional analysis in the preceding chapters; they show that mothers' mental health and life satisfaction (and in the case of changes in deprivation, a number of parenting behaviours) are amenable to change, rather than the relationship with hardship being driven by some static characteristics of disadvantaged parents, such as cultural differences.

In the final chapter the overall findings and contributions of the research are summarised. The policy implications of the findings are then discussed; it is argued that these findings underline the importance of taking into account the economic context in which parenting takes place, which means protecting family incomes as well as addressing problems of debt, housing quality and resources in deprived areas. Limitations of the research are then outlined before suggesting directions for future research.

Chapter 2

Literature Review

2.1 Parenting Policy in the UK

The 'Responsibilisation' of Parents and Rise of Parenting Policy

Over the past 15 years there has been a dramatic expansion of social policy focused on parenting behaviour and child-rearing competence (Daly, 2015). Daly (2015) describes how a rather central component of this expansion, 'parenting support', itself covers a complex and diverse range of policies, programmes and services, that cross different policy domains (health, education and children's services) and often have multiple goals, sometimes in tension with each other (Daly, 2015; Daly and Bray 2015). I use the term 'parenting policy' here to include not only parenting support, which Daly and Bray describe as a diverse set of services designed to "support' and 'educate' parents in their child-rearing role' (2015: 634), but also cash benefits specific to parents and other relevant policy changes, such as maternity leave, childcare and early education.

Whilst there has been a long history of *some* state intervention in the parenting behaviours of particular groups, namely low income families (see for example Lewis (1980) on the education of working class mothers to reduce infant mortality in the early 1900's), this expansion of parenting policy is a more explicit shift away from previous notions of the family as part of a private rather than public realm, that should not be interfered with by the state (Lewis, 2006; Gillies, 2012a). These shifting boundaries of state intervention have taken place alongside an increasing responsibility attributed to parents for their children's outcomes, and a professionalization of parenting, which has now come to be widely viewed as an important and difficult job that requires skills and training (Lee et al, 2014). Drawing on neuroscience, the consequences of parenting inadequately (according to these increasingly prescriptive criteria), have

been presented as altering brain development in babies, lending support for early intervention (Lee et al, 2014; Macvarish et al, 2015). Children have moved up the policy agenda and become more 'precious' partly from a 'futurist' concern about their outcomes as adults (Lewis, 2006), and the family has thereby come to be framed as both the cause of and solution to social ills (Gillies, 2012a). Hence it is now deemed acceptable and even necessary for the state to interfere more explicitly in parents' childrearing behaviours, although as will be discussed not all parents have been seen as equally deficient and subject to state interference.

Whilst these have been the higher level trends in parenting policy and how parenting has come to be conceived of more widely, there have been clear differences in the specific policy approaches taken by different governments, as outlined below. These different approaches have different implications in terms of how much responsibility is attributed to parents themselves for their parenting and children's outcomes, and how far structural factors that may also play a part are taken into consideration.

Parenting Policy under Labour (1997-2010)

The start of the rise of parenting policy (in its wider meaning) can be dated to the New Labour administration under which an unprecedented number of policy initiatives aimed at families and parents were introduced, and children 'moved from the margins to the heart of social policy' (Lister, 2006). This was borne out of New Labour's concern with reducing child poverty and social exclusion (Haux, 2012), and involved a raft of support for parents that included increased cash support, as well as investment in services for children and families (Haux, 2012; Lister, 2006). In terms of cash support, child benefit was increased (for the first child); a new tax credits system was introduced to support low income parents in and out of work; a Baby Tax Credit was created as well as an extension of child benefit to women in the final stages of pregnancy and a Sure Start Maternity Grant (conditional on going to health checks); the Child Trust Fund was

developed (aimed at enabling all families to build up assets for their children) (Stewart, 2013; Lister, 2006). There were also improvements to paid maternity leave and the introduction of paid paternity leave as well as considerable investment in services, particularly education, early years and childcare (with free early years places) (Lister, 2006; Haux, 2012; Stewart, 2013).

As well as the increase in cash support Labour's commitment to addressing child poverty was made clear through the ambitious Child Poverty Act 2010; this enshrined in law a commitment to eradicate child poverty by 2020 according to four measures, as well as requiring the UK Government to publish a regular UK child poverty strategy and annual progress reports, and placed new duties on local authorities to work together to reduce child poverty (Kennedy, 2014).

Support more specific to the act of parenting itself was rolled out universally in the form of information available through support lines (e.g. Parentline Plus) and websites, as well as book start (providing free books to parents), and considerable funding was directed to the voluntary sector to deliver universal support to parents (Haux 2012). The National Family and Parenting Institute charity was set up to provide expertise on parenting and influence both government and business to adopt family friendly policies and the Parenting Fund was created, which was used for hundreds of projects related to parenting, alongside the Parent Know How fund which aimed to reach particular groups of parents such as parents of disabled children and provide information and advice (Ibid). Local authorities were asked to develop a parenting support strategy and appoint parenting experts, as well as provide structured parenting programmes with a clear evidence-base (Lewis, 2006; Churchill and Clarke, 2009).

One of Labour's most high profile initiatives was the introduction of Sure Start Local Programmes (later to become Children's Centres) targeted at parents with young children, set up initially in the most deprived areas,

before being rolled out more widely (Haux, 2012). They were delivered locally and so there was some variation across centres, but had core aims of providing 'outreach and home visiting; parenting support; play and learning; healthcare; and advice and support for parents and children with special needs' (Stewart, 2013). As well as providing parenting support they also sought to alter parenting behaviours for example through 'the promotion of breast feeding, cessation of smoking in pregnancy, and encouraging parents to relate to their children in particular ways – reading to them, playing and adopting specific disciplinary strategies' (Churchill and Clarke, 2009: 43).

Overall then there was a whole host of universal parenting policies in the form of both cash support and services for parents. However, as part of an early intervention agenda that sought to break 'cycles of deprivation', parenting support became increasingly targeted (and interventionist) on 'deeply excluded' families (Churchill and Clark, 2009). For example, Family Nurse Partnerships were set up (imported from the US), for vulnerable young parents with the aim of improving the health and attachment of the baby through home visits from the time of pregnancy to when the child is age two (Haux, 2012). Family Intervention Programmes were introduced as part of the Respect Action Plan and focused intensive support on disadvantaged families at risk of antisocial behaviour, delivered often in the home by a key worker who 'uses a combination of support and sanctions to 'motivate' the family to engage with the project and change their behaviour' (Churchill and Clarke, 2009).

Perhaps the most striking example of increased targeting of 'parenting support' (and of the increased responsabilisation of parents) is that of Parenting Orders introduced under the 1998 Crime and Disorder Act; parents could now be *required* to attend parenting classes because of their child's anti-social or criminal behaviour and could be fined or even sent to prison if they did not attend or comply with other conditions of the order,

(such as ensuring their child was no longer truant from school) (Lister, 2006). The powers of ordering a Parenting Order were extended to social landlords and local authorities as well as schools and could be requested on the basis of mere suspicion of anti-social behaviour (Lucas, 2011; Haux, 2012). This highlights what has been described as a second strand of parenting policy under New Labour: alongside a focus on early intervention in order to protect children 'at risk' of social exclusion, a focus on children who pose 'a risk' to society because of their behaviour, although it is argued that these two strands became increasingly conflated, with 'the problem of social exclusion ... equated with offending behaviour' (Churchill and Clark, 2009: 44). Lucas contrasts Parenting Orders with the more positive policies that 'aim to reduce the poverty and social exclusion which causes poor family functioning' and argues that the use of Parenting Orders are 'seen by many as a denial of social context and societal causes' and a return to 'pathologising the poor' (Lucas, 2011: 191). Describing the authoritarianism adopted 'to ensure parents (typically mothers) turn their children into responsible citizens', Lister argues that the ability of parents to control their children's behaviour is over-estimated and that this responsibility falls disproportionately on mothers not fathers; it is mothers who are impacted by home-school agreements, truancy fines and compulsory parenting classes (Lister, 2006: 326). It is worth noting however, that research into the use of Parenting Orders have found that they were not used as often as they could have been and there was great variation in their use across areas (Burney and Gelsthorpe, 2008).

There has been much criticism of the move towards more targeted and interventionist parenting support, as opposed to parenting support provided on a universal and voluntary basis, and the associated implicit stigmatisation and labelling of *some* (namely low income) parents as deficient in their childrearing practices. Labour have been accused of 'double-talk': 'On the one hand the need for supporting parents is emphasised while on the other hand additional measures to enforce 'good'

parenting are spelled out' (Goldson and Jamieson, 2002 in Haux, 2011). In constructing a 'parenting deficit', it is argued that other factors have been marginalised and parents have been "effectively criminalised" (Ibid).

Nevertheless, it is widely acknowledged that despite the trends of parenting policy towards the end of the Labour government, the increased cash support to parents and investment in universal services demonstrates a recognition of the importance of structural factors for parenting (Lewis, 2011: 109; Gillies, 2012a), alongside the increasing responsabilisation of parents themselves. This is made clearer given the contrast with what was to follow next under the Coalition and then Conservative Government, as discussed below. Lister describes Labour's childcare strategy as 'a breakthrough in British social policy in its recognition of public as well as private responsibility for the care of children' (Lister, 2006: 319). Despite being critical of parenting policy, Gillies acknowledges that under Labour, parenting interventions were coupled with 'practical measures to address family hardship and alleviate child poverty' (Gillies, 2012a). Indeed evidence shows that under Labour child poverty fell (though not as much as anticipated) and this was accompanied by some improvements in parenting (for example less harsh discipline) as well as some improvement in children's outcomes (Stewart, 2013).

Parenting Policy under the Coalition Government (2010-2015) and Conservative Government (2015-)

In summarising the Coalition Government's original goals, Hills describes the rhetorical shift in the use of the term 'fairness', which under the Coalition Government was sometimes used to associate deservingness with behaviour and highlight as unfair the benefits received by some out of work when others in work do not have access to, for example the same kind of housing (Hills, 2015: 11). Hills describes how the term 'social justice' was similarly used by the Coalition Government to emphasise 'individual behavioural factors , such as family breakdown or addiction, as

opposed to broader notions of inequality' (Ibid). In-line with this rhetoric, the Coalition Government's key aims included tackling the *root causes* of poverty and to encourage work and make work pay, as well as recognising 'the importance of family in providing the foundation of every child's life' (Hills, 2015: 11/12). It is on this basis that the Coalition Government justified cuts to cash services and an increasingly targeted and interventionist approach to parenting support; these changes were to help make parents more responsible, help families out of poverty and into work, and in working directly with 'troubled families', tackling what the Coalition would describe as causes of poverty.

Just days after the Coalition Government was formed David Cameron commissioned an independent review of poverty and life chances led by Labour MP Frank Field (Stewart, 2015). The Field Review emphasised the importance of early intervention and argued that government resources would be better spent on parenting interventions rather than increased income transfers to income-poor families, in order to improve the life chances of poor children:

It is family background, parental education, good parenting and the opportunities for learning and development in those crucial years that together matter more to children than money, in determining whether their potential is realised in adult life.

(Field, 2010: 5).

A second review by Labour MP Graham Allen took an even more 'futurist' emphasis on the importance of early intervention to reduce 'costly and damaging social problems' further down the line (Allen, 2010). Allen drew on neuroscience and attachment theory to make the case that children's early environment and parenting experiences are crucial for healthy brain development and thereby social and emotional development (Allen, 2010). Gillies describes both reports as 'tightly tying children's future outcomes to

the efforts and proficiency of their parents while downplaying the relevance of structural disadvantage and income poverty' and take 'concepts of parental determinism to even more reductive extremes' (Gillies, 2012a).

These influential reviews (along with other reviews into early education and childcare, the early years workforce and child protection) did provide a persuasive case for greater investment in services for families with children (Stewart, 2015). However, whilst the Coalition Government aimed to place a stronger emphasis on services for families with children, (directing resources away from household income), in reality cuts in funding for children's centres as well as childcare and early education mean 'families with young children have been asked to carry perhaps the heaviest burden of austerity measures', and among all families with children it was those with a baby who have been hit the hardest (Stewart, 2015: 51).

Cash benefits were reduced, and some benefits to pregnant women and families with young children were abolished altogether, along with the Child Trust Fund (Stewart, 2015). Child Benefit and Child Tax Credit were frozen in cash terms and the eligibility of the former was more tightly restricted (Stewart, 2015).

Both the Prime Minister and Deputy Prime Minister made explicit that it is 'warmth' not 'wealth' (Cameron, 2010) and 'parenting not poverty' (The Telegraph, 2010) that is fundamental to children's life chances, demonstrating a clear shift towards individual behaviour as the policy focus rather than structural factors.

Alongside the withdrawal of cash support and cuts to services, parenting interventions became even more explicitly targeted and interventionist (Crossley, 2015; Gillies, 2012a). Whilst funding was cut for Sure Start Children's Centres (Stewart, 2015) the funding was increased for Family

Nurse Partnerships (targeted towards young mothers) (Haux, 2012). The high profile Troubled Families Programme was developed (though based on family intervention programmes introduced by Labour).

Crossley argues there was an important change in tone surrounding this programme after the English riots of 2011 (Crossley, 2015). Poor parenting was identified as one of the causes of the riots following an official report (Riots Communities and Victims Panel, 2012), but also during early speculation from the Prime Minister, as Cameron asserted that ‘the question being asked ‘over and over again last week was “where are the parents?”’ (Cameron in Crossley, 2015: 7).

Describing the discourse after the riots, Crossley argues that the language of ‘feral’ children and parents and ‘troubled families’ was used to gain consent to ‘punish the poor’ through neoliberal economic and social policies (Crossley, 2015: 12). Crossley highlights the contradictions in this neoliberal approach – which is laissez-faire at the top only; alongside the cutting back of services and state support there is a rolling out of highly interventionist programmes targeted at the most vulnerable (Crossley, 2015).

This trend continued under the Conservative Government elected in 2015: with the Troubled Family Programme being expanded, before evaluation evidence was available (Crossley, 2015b).² Even despite a reversal to some tax credits cuts, the introduction of universal credit and the benefits cap, as well as the continued freeze on benefits are expected to make conditions harder for some low income families (Browne, Hood and Joyce, 2016; Department for Work and Pensions, 2014; Browne and Hood, 2016). The once Child Poverty Commission, then Child Poverty and Social Mobility Commission, has been stripped of any association with poverty and renamed The Social Mobility Commission only (Gillies, 2012b), and the

² The evaluation since has found mixed results with limited progress against programme targets (Day et al, 2016).

measure of child poverty itself has been changed, to focus on worklessness and education completed as well as parental drug and alcohol abuse, rather than income (despite consultation results showing strong opposition to this), and the Child Poverty Act is being changed to remove responsibility for government to reduce child poverty (Stewart and Roberts, 2015). In 2016 the Child Poverty Unit was abolished³ and in 2017 the Government published a policy paper 'Improving lives: Helping workless families', describing worklessness as the source of many problems for families and negatively affecting children's outcomes (Department for Work and Pensions, 2017). Again the focus being on behavioural factors rather than structural constraints of poverty, and highlighting areas for action including tackling drug and alcohol dependency, reducing parental conflict and the next phase of the Troubled Families Programme (Ibid).

What Crossley describes as the 'official discourse' of troubled families and the focus on individual behaviour distracts from the structural problems and context of austerity (Crossley, 2015). The focus of the Coalition followed by Conservative government on first parenting *not* poverty (Dermott, 2012) and then (under Theresa May's leadership) worklessness not poverty, is clear in the policy decisions made as well as the language used. This marks a new era of parenting policy where the context in which parenting takes place is made more difficult by a withdrawal of state support in the form of both cash and services, and yet increasing responsibility is attributed to parents themselves for their children's outcomes. Gillies has described this as the 'personalisation of poverty', where 'Poverty and other social problems are directly attributed to family failings' (Gillies, 2012a), ignoring the context in which parenting takes place.

³ Written question – 59237 by Dan Jarvis MP responded to by Damian Hinds MP, available at <http://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2017-01-09/59237/>

Still, it is important to acknowledge that although both cash support and services were withdrawn and the Troubled Families programme demonstrated a shift towards a more interventionist and targeted approach (started under Labour), there was *some* continuation of universal parenting support. The CANparent pilot (from 2012 to 2014) offered all parents of children under five (in Middlesbrough, Camden and High Peak) vouchers worth £100 for parenting classes (Stewart and Obolenskaya, 2015: 19). However, many parents remained unaware of the scheme and the take up rate of parenting classes was very low (only around 4% of all eligible parents) (Ibid). An NHS Information Service for Parents was also launched in May 2012, which offered advice for expectant and new parents in the form of text messages and emails. However, the take up rate was again low (a Department of Health evaluation found only 11% of new parents subscribed to this) and although universal in principle, subscription to this service was highest for more advantaged groups and lowest for those in areas with a high proportion of social housing and benefit need (Stewart and Obolenskaya, 2015: 19). More recently in his 'life chances speech' the then Prime Minister David Cameron announced plans to promote universal parenting classes as 'normal' and even 'aspirational' for all parents, although this was alongside an announcement of further expansions to the Troubled Families Programme (Cameron, 11th January, 2016). There has since been a new Conservative Prime Minister; under Theresa May there has been a continued commitment to the Troubled Families Programme despite limited impact shown in the recent evaluation (Day et al 2016), and rather than parenting specifically, 'worklessness' has become the focus of intervention, again by reference of its importance to children's outcomes: 'We cannot afford not to act: the issues faced by children in workless families – of which there are 1.8 million across the UK – combine to impact upon their development and education, limiting their future employment prospects, and reducing their opportunities to succeed throughout their lives' (Department for Work and Pensions, 2017).

Critical Perspectives on Parenting Policy

As well as the denial of the importance of structural factors, such as poverty, to parenting, a number of additional criticisms have been made of the rise of parenting policy more generally. Some academics have contested the legitimacy of the increased focus on parenting as a whole and the overstating of its importance (e.g. Lee et al, 2014). Lister argues that despite children moving up the policy agenda in this policy trend towards early intervention, children are viewed as 'becomings' not beings – they are valued as future citizen-workers rather than children themselves (Lister, 2006). The focus on parenting to produce successful adults also eclipses parents' needs, not only falsely separating parental wellbeing from child wellbeing, but also overlooking parental wellbeing as a goal in its own right (Lister, 2006). Furthermore, parenting policy often reinforces gendered divisions of labour, as mothers are primarily held accountable for their children's behaviour and the target of interventions (Lister, 2006).

Summary

There has been a long history of state interest in the family; this section has focused on policies related to parenting in the last fifteen years. The higher level social policy trend has seen an increased responsabilisation of parents and an emphasis on the importance of early intervention for the good of children's development into successful adults as well as the good of society as a whole. Successive governments have taken different approaches to parenting support, with Labour increasing cash benefits and universal services for parents, alongside a shift towards more targeted and interventionist forms of parenting support. This approach recognised both the structural and individual factors that can influence parenting. The Coalition Government, and early Conservative Government declared a shift towards services rather than cash benefits, although in reality both were cut back. There has been some continuation of universal parenting support though this has not been popularly taken up, and the expansion of

the Troubled Families Programme and Family Nurse Partnerships marks the continuation of a more targeted and interventionist approach to parenting, which began under Labour. The political discourse has emphasised the importance of parents' behaviour (either by focusing on parenting itself or more recently focusing on worklessness, relationship conflict and drug and alcohol dependency), rather than structural factors in determining children's life chances. It is in this policy context that this research considers the importance of economic hardship in relation to parenting behaviours.

2.2 Evidence parenting is important

The previous section has provided an overview of the policy context which contributes to the motivation for researching the relationship between economic hardship and parenting. Given that this research focuses on parenting as the outcome of interest, this section briefly summarises the evidence that parenting is important for children's outcomes. This is revisited in more detail in the conceptual framework in chapter four as part of the discussion about measures of parenting.

There is a vast literature on the relationship between parenting and children's development, which spans across different disciplines. Causal evidence of the effects of parenting is of course difficult to establish, but from the many different approaches to measuring parenting and evaluating its importance there is consistent evidence that it matters for children what parents do across a range of different conceptualisations of 'parenting'.

There is much evidence that parenting style is important for child development, and that an authoritative parenting style in particular (firm but fair) is associated with more positive outcomes for children (Baumrind, 1967; 1991; Chan and Koo, 2011). There is also a large body of literature on the importance of 'attachment', the bond between the child and their primary caregivers, for children's mental and physical health as well as cognitive development (Bowlby, 1979; Moullin et al. 2014). There is a range of empirical work which demonstrates the importance of parenting behaviours that are cognitively stimulating, such as parents' interactions with children for language development (Topping et al, 2013) and frequency of reading for both cognitive (Burgess et al 2006) and behavioural development (Cprek et al, 2015). Evidence on parenting interventions that successfully improve children's outcomes provides further support that how parents behave with their children is important for their children's development (Axford et al, 2015). This evidence is discussed at greater length in chapter four.

2.3 Existing evidence on the relationship between financial resources and parenting

As discussed in the policy context above there has been an increased policy focus on parenting and particularly parenting of less economically advantaged parents; some have criticised this focus as overstating the importance of parenting itself at the expense of recognising the significance of material circumstances for children's wellbeing. Nevertheless, there is much evidence that parenting itself is important. We might still be critical of the direction of the policy focus however; whilst parenting may be important for children's outcomes, material circumstances may be important for parenting – this section reviews the evidence for this.

Quantitative Evidence that Financial Resources are Important for Parenting Behaviours

Evidence from the US

There are a handful of studies that have managed to test whether financial resources have an effect on parenting behaviours, and all of them are from the US. Cancian, Yang and Slack (2013) used a randomised controlled trial of a welfare programme in Wisconsin which allowed mothers in the treatment group to keep the full amount of child support payments received, whilst those in the control group were only allowed to keep the greater of \$50 or 41% of these payments. They found for families in the treatment group a significantly reduced risk of child abuse and neglect. These findings are complemented by a study by Brooks-Gunn, Schneider and Waldfogel (2013) which found more frequent spanking of children during the Great Recession when consumer confidence decreased.

Gennetian and Miller (2002) used a randomised controlled trial of welfare programmes, finding increased income reduced maternal depression but did not significantly affect maternal warmth, harsh parenting, extra-curricular activities or supervision. Akee et al (2010) made use of a natural

experiment and found that increased income improved parental supervision and positive mother-child interactions. Hamad and Rehkopf (2015) exploited differences in the amount of Earned Income Tax Credits (a tax rebate to low income families) received, and found that higher income was associated with a better home environment⁴ four years later, though no significant differences were found two years later. Two studies use longitudinal data to control for differences between families and isolate changes in income and parenting over time within households, using fixed effects: Votruba-Drzal (2003) found that income increases have a significant impact on cognitive stimulation and Dearing and Taylor (2007) found increases in income positively affect the psychosocial home environment. Three of these studies also found that the impact of increased income on parenting quality was greater for parents at the lower end of the income distribution (Akee et al, 2010; Dearing and Taylor, 2007; Votruba-Drzal, 2003). Overall then, there are few studies that have managed to test the causal effect of financial resources on parenting behaviours, but of these six studies the majority find if financial resources are increased, parenting behaviours improve.

Whilst these studies provide strong evidence that financial resources do impact parenting behaviours, the policy context of the US is very different and the findings from these studies may not apply to the UK; for instance financial resources may have a greater influence on parenting in the US where the welfare state is much smaller.

UK Evidence

Whilst there is no causal evidence from the UK there are a number of studies, often with a broader focus, that do shed light on the relationship between financial resources and parenting behaviours. These all focus on

⁴ This was measured with the Home Observation Measurement of the Environment inventory which is based on interviewer observations and self-report from the mother.

parenting as one of the pathways through which financial resources are related to children's outcomes.

Two studies used the Avon Longitudinal Study of Parents and Children (ALSPAC). Burgess et al. (2006) examined how child educational and behavioural outcomes at ages five and seven are influenced by measures of family background and other mediating factors such as parenting behaviours and childcare arrangements. Among other measures of family background they measured average net household income at 33 and 47 months and whether the family reported financial difficulties pre-birth. They included a range of parenting measures and measures of the home environment (see Appendix 1). They found that at age five parents' teaching and reading to children is the biggest influence on children's early learning but that differences in parental teaching only explain around 10% of the gap in educational outcomes between children whose parents are poorer/richer and with lower/higher levels of education. Similarly, the home environment in terms of books and toys is strongly related to income and explains around 10% of the attainment gap between less advantaged and more advantaged children. The authors found that parenting patterns are more important in driving the differences in behavioural outcomes between the most and least affluent children, than they are for early educational attainment. Parents' teaching and reading is associated with behavioural outcomes, and a lack of early bonding between the mother and child, talking to the child whilst doing other activities and the child watching more than six hours of television at age 18 months are also associated with worse behaviour.

Gutman and Feinstein (2007) also used ALSPAC, this time to analyse how parenting behaviours and their influence on child outcomes changes over time from when children are six months to three and a half years, as well as the moderating effects of socioeconomic characteristics. They found that at 18 months, mothers with more income and education provided more

interaction with their child, in the forms of singing with their child, showing picture books, cuddling, and playing with toys as well as physically playing. They also engaged in more outside activities with their child.

A further seven studies make use of the Millennium Cohort Study (MCS), each in different ways providing some insight into the relationship between financial resources and parenting in the UK. Ermisch (2008) analysed the relationship between income at age nine months and children's cognitive and behavioural outcomes at three years. He finds that parenting style and educational activities explain some of the relationship between income and children's development.

Kiernan and Huerta (2008) examine the extent to which economic deprivation, (measured as income poverty, financial difficulties and housing tenure when the child is 9 months), and mother's mental wellbeing are associated with children's cognitive development and internalising and externalising behaviours at age three. They measure three different types of parenting behaviour: reading activities, the mother-child relationship and discipline practices. They find that parenting explains over half of the association between economic deprivation and cognitive development and around 40% of the association between economic deprivation and behaviour problems. Therefore part of the relationship between economic deprivation and children's cognitive and behavioural outcomes takes place through parenting practices but also other mechanisms, not specified in the model. Also the strength of the relationship between economic deprivation and parenting depended on the parenting behaviour: there was a moderate relationship with reading activities, a weaker relationship with the parent-child relationship and no significant association with whether the mother uses harsh discipline. The authors also found that maternal mental health affected all three parenting behaviours.

Kelly et al (2011) analysed income inequalities in children's development at three and five years and tested whether the income gap widens between these two ages. They also assessed the relative contribution of the home learning environment, family routines and the psychosocial home environment to these inequalities in children's outcomes, finding that these factors explain more of the income gap in socioemotional difficulties than in cognitive test scores. In a similar vein Violato et al (2011) found that the three groups of mediators they examined, 'parental stress' (which included mothers' mental health, parenting practices, discipline and the parent-child relationship), 'parental investment' (characteristics of the house, neighbourhood, time parents spent with their child and intellectually stimulating activities) and 'other family-related pathways', explained more of the relationship between income and children's behavioural outcomes than income and cognitive outcomes, again at age five.

The final three MCS studies consider the duration of time in poverty. Kiernan and Mensah (2011) analysed the relationship between episodic and persistent poverty, as well as other family resources (measured as an index of income poverty, maternal education, family employment, housing tenure, local area and family structure) and children's achievement at school at age five. They tested the extent to which 'positive parenting' (measured as an index including observational measures at age three) mediates the relationship between poverty and educational attainment. They found that experiencing poverty is important for children's outcomes but persistent poverty even more so. Positive parenting is lower in families experiencing poverty and families with a lower score on the resources index. However, children in poor or low resources families who experienced positive parenting were more likely to be doing well in school. They also found that poverty was associated with every parenting measure, suggesting the impact of economic disadvantage is 'not specific to any particular parenting behaviour, but may impact negatively across many different aspects of parenting' (Ibid: 328). They found that around

half of the effect of poverty on children's achievement may be explained by parenting.

Holmes and Kiernan (2013) similarly analysed persistent and episodic poverty and children's outcomes at age five in order to establish contexts that may promote resilience. They included four groups of parenting behaviours: 1) promotion of reading and learning 2) parent-child relations 3) family organisation 4) negative discipline. They found there is not much difference in parenting behaviours between episodically poor and persistently poor mothers, apart from on observational measure where persistently poor mothers are less likely to show all six types of positive interaction. Also persistently poor children are more likely to have irregular bedtimes and mealtimes than those who experience poverty at one or two waves. Across all parenting measures persistently poor children had less favourable parenting experiences than never poor children. Most of the factors when included in the model reduced the strength of the association between poverty and children's outcomes, but by similar amounts for both episodic and persistent poverty – suggesting processes by which poverty affects children's outcomes is not strongly related to duration of poverty. Socio-demographic factors had the biggest impact as well as maternal depression and lack of maternal self-efficacy. In terms of parenting attitudes/behaviours all had some association but the most important was the quality of parent-child relations. The association between persistent poverty and children's cognitive and behavioural outcomes was reduced by around 40% where parent-child relations were similar to those of never poor parents.

Finally, Dickerson and Popli (2016) used the first four waves of the MCS to compare the relative importance of persistent poverty and parenting style and parental investment for children's cognitive development at ages three, five and seven. They found that both episodic and persistent poverty are negatively associated with children's outcomes but that episodic poverty

has a larger cumulative impact. As well as the direct relationship between poverty and children's cognitive development they also found significant indirect 'effects' through the negative relationship between poverty and parenting, finding three quarters of the relationship between poverty and cognitive development is explained by the indirect 'effects' via parenting and also the persistence of cognitive ability, although the latter explains the greater part of this relationship.

Taking these UK studies together there is strong evidence that poverty (usually measured as income poverty) is influential for parenting behaviours and that part of the negative relationship between poverty and children's cognitive and behavioural outcomes is explained by the indirect relationship via parenting. A number of studies find that parenting explains around 40-50% of the relationship between poverty and children's outcomes (Kiernan & Huerta, 2008; Kiernan & Mensah, 2011; Holmes and Kiernan, 2013).

On the whole the focus of these studies is on poverty and children's outcomes with parenting included as a potential mechanism. Just one study considered the potential mechanisms between poverty and parenting; Kiernan and Huerta (2008) examined the independent 'effects' of both economic deprivation and mothers' depression on children's outcomes, including parenting as potential mechanisms. They also allowed for indirect pathways from economic deprivation to children's outcomes via mothers' depression, as well as parenting. They found that parenting accounts for some of the relationship between mothers' depression and children's behavioural outcomes, particularly for externalising problems, for which 60 per cent of the total effect of maternal depression is explained by parenting behaviours. Given the consistent evidence that poverty is associated with parenting, understanding how or through which mechanisms poverty is influential for parenting is an important area for further research. The one study that does examine processes between

poverty and parenting includes mothers' mental health only, but there may be other processes that explain the link between poverty and parenting.

The majority of studies from both the UK and US have focused on income or income poverty (60% of median income)⁵, whilst economic hardship can take a number of different forms (for example debt, material deprivation, poor quality housing), and we might expect different dimensions of economic hardship to have different impacts. One way in which my own research can build on and extend this evidence is to examine other experiences of hardship beyond income poverty.

Finally, as well as a narrow conception of hardship, the available evidence from both the US and UK is heterogeneous in terms of how parenting is measured and conceptualised. The measures of parenting that are used often lack justification, and so it is unclear whether some types of parenting behaviours are more responsive to changes in financial resources than others. In my own research I will take a theoretically informed approach to conceptualising and measuring parenting.

Qualitative evidence that financial resources are important for parenting

Further insight into the relationship between hardship and parenting can be gleaned from qualitative research into people's experiences of living on a low income in the UK. Although most of the studies focus more broadly on general issues related to living with hardship, and parenting surfaces in many of these studies as just one of many subjects discussed about the

⁵ A couple of studies include other measures of hardship, though these are combined in one measure rather than analysed separately (e.g. Kiernan and Huerta, 2008) and in the case of one of these, income poverty, housing tenure and quality of the local area are combined in one index score which includes demographic factors such as maternal education, family employment, ethnicity, number of siblings and family structure (Kiernan and Mensah, 2011).

impact of low income, a number of themes emerge across these studies that reveal significant issues related to parenting with low resources.

Heterogeneity of experiences

One clear theme that is evident in the qualitative literature is the variety of different experiences that people have managing with low financial resources, and the importance of context. As well as highlighting that those living with hardship are not a homogenous group, the role of other difficulties that often coincide with experiences of economic hardship is found to be important. For example, parents' past experiences of trauma, such as maltreatment in their own childhood and domestic violence in adulthood are significant (Hooper et al., 2007). Also factors such as larger family size, caring for a child with a disability, being a single parent and poor adult health (Ghate & Hazel, 2002), are all found to often increase the pressures already related to managing with low resources.

Importance of social support

The importance of emotional as well as financial support from friends or family is often described as an essential contribution to parents' ability to cope with bringing up children with limited resources, (Gillies, 2007; Ghate & Hazel, 2002; Power, 2007; McKendrick et al. 2003), although social support also has negative aspects including feeling indebted and an intrusion into personal life (Attree, 2005; Ghate & Hazel, 2002).

Importance of environment

Problems with low quality housing, such as damp and problems with heating, as well as overcrowding have a significant impact on many parents' lives when raising children (Hooper et al. 2007; Attree, 2004). The local area is also found to have an important impact on families' lives and directly affect parenting behaviours: for example Power found that for parents living in disadvantaged and sometimes dangerous areas fear was often 'a dominant influence over how parents exercise control' and usually

resulted in parents restricting their children to staying indoors in order to protect them, whilst aware that guarding them in this way was in conflict with encouraging them to develop, socialise and gain confidence (Power, 2007: 101). Keeping children cooped up in this way could further agitate relationship problems as mentioned below (Hooper et al. 2007). Many parents in disadvantaged areas felt their authority was undermined by the local area where there were problems with young people who seemed beyond their parents' control, and worried about their own children being dragged into antisocial behaviour (Power, 2007; Hooper et al. 2007). Living on a low income in a more affluent area was associated with other difficulties, including not having access to affordable services and feeling more socially excluded and stigmatised (Hooper et al. 2007).

Resilience and resourcefulness

Much of the qualitative research illustrates that many parents manage very well despite their restricted finances. There is much evidence to show that parents are skilled at budgeting, organising finances to prioritise bills and essentials, with detailed knowledge of how much items cost, and juggling payments at different times to avoid running out of money (McKendrick et al. 2003; Kempson, 1996, Ridge, 2009; Ghate & Hazel, 2002). This skill at managing with low resources is often a source of achievement (Beresford & Green, 1999: 115). Parents also take pride in their parenting skills, enjoying spending time with their children and feeling happy when able to help them progress (Power, 2007: 114). For many being a parent is an important part of their identity and is something they want to do well at (Gillies, 2007; Hooper et al. 2007:39, 44).

Prioritising children's needs

Across multiple studies many parents described the worst thing about having low financial resources was not being able to provide their children with what they need. This was often described as a source of guilt and frustration and parents felt bad about not being able to give their children

treats as well as provide them with basic necessities, and often worried about them being socially excluded because they did not have the same things as friends (Daly & Kelly, 2015; Payne & Fisher, 2006; Beresford & Green, 1999; Lister & Strelitz, 2008; Ghate & Hazel, 2002). It is also common across studies for parents to describe going without items they needed in order to be able to buy things for their children (for example Daly & Kelly, 2015: 94 ; Beresford & Green, 1999; Lister & Strelitz, 2008; Ghate & Hazel, 2002; McKendrick et al. 2003).

Strain on relationships

Many parents have described how lacking financial resources can be destructive for relationships with both partners and children. The stress of having low resources can lead to arguments with partners (Kempson, 1996; Beresford & Green, 1999) and financial dependency can also put incredible strain on relationships: for example, in one of the studies a mother described how she had stopped receiving benefits when her partner moved in; this meant that her partner suddenly had to support a whole family on his low wage, and the difficulties this caused for their relationship led them to break up (Hooper et al. 2007: 40). Having low resources can also cause conflict between children and parents, when parents are unable to provide children with what they want (Hooper et al. 2007: 44/5; McKendrick et al. 2003). Other factors associated with low resources, such as overcrowding and children being unable to go out and play in the local area can also cause problems due to the amount of time spent together in confined space (Attree, 2004).

Mental health

Many of the difficulties associated with low resources, as well as some of the coping strategies parents employed, took their toll on parents' mental health. Managing to make ends meet was a constant source of stress and worry for many parents (Daly & Kelly, 2015; McKendrick et al. 2003), as well as hassle and stigmatisation for those receiving benefits (Davies, 2008;

Hooper et al. 2007). The anxiety caused by getting into debt was also a significant issue that surfaced across multiple studies (Ridge, 2009; Kempson, 1996; Hooper et al. 2007; McKendrick et al. 2003; Ghate & Hazel, 2002). Depression was described as a significant problem that some parents felt was caused or exacerbated by the difficulties of managing on low income (Beresford & Green, 1999).

Managing as hard work

Despite the resilience and coping skills of many parents, managing with low resources was described as hard work that took significant time and energy and left parents feeling depleted. The organisation and management required to constantly juggle finances, dealing with issues of substandard housing, and shopping in multiple shops to find the cheapest products, are just some examples of how managing with low resources can be hard work, and ordinary activities can take much longer (Ghate & Hazel, 2002; Hooper et al. 2007; Beresford & Green, 1999). As one mother put it: 'You're more tired. I mean just the thing that being poor is so much work, your whole life. You see people going into a shop they buy what they want and they leave. But you're there, you're having to calculate how much money you've got as you go 'round, you're having to look at one brand then another...' (Beresford & Green, 1999: 94). A couple of studies make an explicit connection between the hard work of managing on low resources and parenting behaviours, describing how the many difficulties associated with having low resources can leave parents feeling exhausted, thereby undermining their parenting capacities, affecting such factors as their ability to engage in activities that help develop satisfying relationships with their children (Hooper et al. 2007: 43), as well as draining parents of the emotional energy required to deal with a demanding child (Ghate & Hazel, 2002: 216).

Chapter 3

Conceptual framework

The conceptual framework has two parts; the first part outlines how parenting has been measured in existing research and how it is to be defined conceptually in this research. The second part discusses a conceptual framework for understanding the different mechanisms that explain the relationship between economic hardship and parenting.

3.1 Conceptualising and measuring parenting

What is meant by 'parenting'?

As outlined in the introduction, this thesis is concerned with parenting due to the impact that parenting can have on children's outcomes. Parenting is of interest as a potential mechanism that explains why children from lower income households tend to have worse outcomes than children from higher income households. Therefore in seeking to define and measure parenting I am interested in what parents do in order to promote their child's wellbeing.

The term 'parenting' as we would recognise it is relatively recent; raising children used to be seen as the collective responsibility of a broader group than just the children's parents, now the verb 'to parent' focuses on mothers' and fathers' behaviour specifically (Lee et al. 2014: 4, 7). Parenting has also come to be thought of as a more 'complex job'; alongside the many factors that have contributed to this shift, we have a better understanding of what babies and children need, from science and social science, and experts have reinforced this more demanding notion of parenting (Waldfogel, 2006). As well as being socially constructed, the concept of parenting is complicated and 'multifaceted'; often the term is used to refer to a broad range of behaviours as well as styles, values and parent-child

relationships (Dermott and Pomati, 2015:4; Katz et al, 2007: 8). In an attempt to more clearly define what is meant by different definitions of parenting Jansen et al (2012) usefully distinguish between parenting 'styles', 'dimensions' and 'practices'. The authors describe 'parenting styles' as 'relatively stable traits that are consistent across time and context, and provide the overarching emotional climate for parents' interactions with their child' (p968). This will be revisited in more detail later when considering theories of parenting, but for the purpose of Jansen et al.'s definition parenting styles refers to groups or typologies of parenting based on a combination of certain parenting dimensions (in the case of the dominant approach the dimensions of demandingness and responsiveness; different combinations of high/low levels of these two dimensions result in four different parenting styles). 'Parenting dimensions' then are the next level down and refer to 'relatively stable parenting practices that are unidimensional in nature' (p969). As well as demandingness and responsiveness the authors suggest that other examples of parenting dimensions include self-efficacy, irritability or hostility, and consistency (Ibid). Finally, 'parenting practices' are described as 'the context-specific behaviours or strategies parents use...which may vary over time, across situations and with different children' (Ibid). The parenting practices can be thought of as operationalising the parenting dimensions and styles (Ibid).

However, sometimes these distinct conceptual categories overlap – for example within the evidence on parenting discussed below, parenting styles are measured alongside parenting dimensions. Still, Jansen et al.'s (2012) proposed framework is useful in terms of thinking about the different levels at which parenting can be conceptualised.

As well as being conceptually unclear, what counts as *good* parenting is also a contested topic: professional parenting advice is constantly changing (Lareau, 2003) and critics have highlighted that traditionally white 'middle class' definitions have been favoured, presenting working class parenting, or

parenting from different ethnic groups as inferior (Taylor et al. 2000; Magnuson & Duncan, 2002: 104; Coll and Pachter in Bornstein, 2002). This white middle class bias not only overlooks the diversity of parenting behaviours among families living with financial difficulties, but also overlooks the importance of the context in which parenting takes place (Katz et al. 2007: 30; O'Connor & Scott, 2007). A further difficulty with defining good parenting is not only are parenting practices different across different cultures and contexts, but the same parenting practices have been found to have different associations for children with different cultural backgrounds; for example, Deater-Deckard et al. (1996) found that the use of physical discipline was associated with behavioural problems for White American boys but not Black American boys. Gutman and Feinstein (2010) find the relationship between parenting and children's outcomes differs according to a number of factors, including gender of the child, income and education level of the mother and whether the mother works.

It is likely therefore, that what can be described as good parenting depends on many factors including the characteristics of the child. Nevertheless there is a wealth of evidence which suggests certain parenting practices tend to have positive/negative influences on children's outcomes. However, unfortunately there is little consistency in the measures used and any discussion or justification of how parenting is conceptualised and measured is often missing, making it difficult to evaluate existing evidence and difficult to use existing approaches to inform my own measurement of parenting. In the absence of a standard measurement framework the aim of this section is to develop a comprehensive approach to conceptualising and measuring parenting. Firstly, the main theories that explain why and how parenting is important for children's outcomes are discussed. Secondly, the evidence on parenting and children's outcomes is briefly summarised, in order to search for any clear measurement frameworks already developed and/or commonly used. Finally, in order to provide a more comprehensive definition and measurement of parenting I suggest my own conceptual

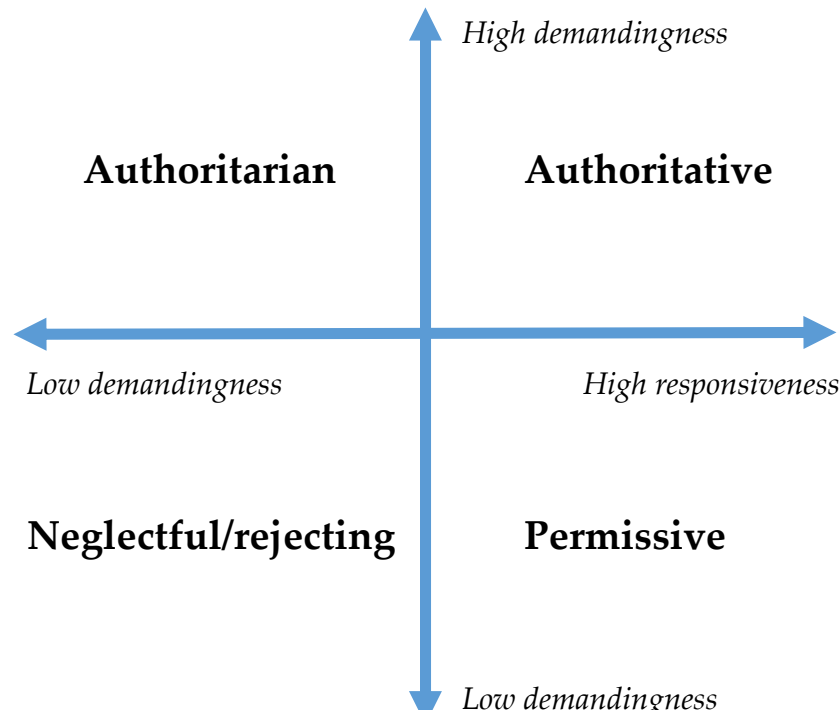
framework for understanding and measuring parenting, based on children's outcomes and the associated parenting goals and practices that relate to these outcomes. Given that my interest in parenting as an outcome is via its relationship with children's outcomes, and given the lack of agreement over an existing measurement framework, focusing on children's outcomes provides a useful starting point.

Theories of why parenting is important

There are three main theories that explain the relationship between parenting and children's outcomes (O'Connor & Scott, 2007: 5). The first is that of Parenting Style (see Figure 1). This theory suggests a typology of four main parenting styles based on two dimensions: levels of demandingness (behavioural control and monitoring) and responsiveness (warmth, support, and reasoned communication) (Baumrind, 2005). Authoritative parenting is characterised by both high demandingness and high responsiveness, a firm but fair approach, asserting authority consistently but providing reasons for rules, encouraging discussion and autonomy. Authoritarian style parenting is characterised by high demandingness and low responsiveness, with strict regulation of child behaviour, an expectation of obedience without explanation and punitive punishment. Permissive parents have high responsiveness but low demandingness, are lenient regarding their children's behaviour, but supportive. Rejecting-neglecting parents are low on both responsiveness and demandingness and are disengaged from their children, with little monitoring of their behaviour or support, either actively rejecting their children or simply neglecting their parental responsibilities (Baumrind, 1966; 1991). Studies that conceptualise and measure parenting in this way have consistently found that an authoritative parenting style is associated with better outcomes for children and adolescents compared with other parenting styles (e.g. Baumrind, 1967; 1991; Chan and Koo, 2011).

However, this typology has been found to translate less well to contexts other than white middle class families (Brooks-Gunn and Markman, 2005).

Figure 1 Typology of Parenting Styles



(Baumrind, 1966; 1991)

A second dominant theory is that of Attachment Theory. Attachment theory posits that the bond between children and their main caregiver is crucial for children's development and later outcomes; having a 'secure' or healthy attachment with the parent provides children with a 'secure base' from which children are able comfortably to leave to explore (Bowlby, 1979: 132). This secure attachment also forms a child's 'internal working model', providing a template for future relationships with others (Holmes, 1993: 77). In terms of parenting behaviours that foster this secure attachment, this theory emphasises the importance of sensitivity and responsiveness of parents (Holmes, 1993), for example holding and comforting a child when they cry, which enables the child to feel secure and also teaches them they can 'safely express negative emotion' and the parent will respond in a way

that makes them feel better (Moullin et al. 2014: 9). This theory suggests that it is the relationship with the parent during the early years (specifically six months to three years (Holmes, 1993)) that is important and affects future development of the child. Studies informed by Attachment Theory have found that children that have a secure bond with their main caregiver develop healthier psychological dispositions (such as trusting others, not being overly-dependent or overly self-reliant) (Bowlby, 1979) as well as better physical health, cognitive and language outcomes (Moullin et al. 2014). Whilst Attachment Theory does not explain all types of parenting behaviours, it does suggest that the behaviours that cultivate a good relationship between the parent and child, such as smiling, holding, talking and playing with the child (Moullin et al. 2014: 11), are important parenting behaviours that need to be included in any definition and measurement of parenting or 'good parenting'.

Finally, Social Learning Theory maintains that children learn through positive and negative reinforcement of their actions. When a child's actions have a positive effect, for example they are rewarded for their behaviour, this provides an incentive to repeat that behaviour in future, and when a child's actions have negative consequences for them or for example they are punished, they avoid repeating these actions again (Bandura, 1977: 17). In terms of children's early socialisation this means if children are not taught to respond to social stimuli the child will fail to develop social behaviours (Patterson, 1969: 343). Social learning theory principles have been highly influential in therapy for children with problem behaviours, previously with a focus on parental discipline, but also more recently incorporating positive types of parenting behaviour (O'Connor & Scott, 2007: 6). This theory highlights the important role parents play in teaching their children how to manage their emotions, resolve conflict and interact with others (O'Connor & Scott, 2007: 6). Because both negative and positive reinforcement are important to this theory, the parenting behaviours that are emphasised are again responsiveness, but also discipline.

Although the main parenting theories provide a clear framework (within their own schools of thought) for conceptualising and measuring parenting, and there is some overlap between them in terms of parenting dimensions, there are a couple of reasons why they do not provide an adequate solution for the measurement of parenting in this research. Firstly, they are too narrow in their focus as they do not include all aspects of parenting that evidence suggests is important. For example, none of the theories explicitly acknowledge the importance of the home learning environment, despite evidence it is important for children's development (Washbrook, 2010; Melhuish et al, 2008a; Burgess et al, 2006, Ermisch, 2008). Also we know that in terms of health outcomes, children's diet and the amount of physical activity they do is important (Benton, 2008; Janssen and LeBlanc, 2010). Both these parenting domains would be overlooked if one of these theoretical approaches was taken. Secondly, if focusing on just one theoretical approach I would continue to contribute to the problem of disjointed evidence from different perspectives (O'Connor and Scott, 2007), rather than attempt to bring different definitions and measurements of parenting together. A more comprehensive measurement framework is preferable for this reason.

Evidence parenting is important

Turning to empirical evidence on the relationship between parenting and children's outcomes, there is a vast body of research, from across different disciplines, which suggests that parenting behaviours are important for children's outcomes. For example, see reviews by Demo and Cox (2000) and O'Connor and Scott (2007).

Some of these studies demonstrate cross-sectional associations only (e.g. Ermisch et al, 2011), others go beyond this and look at changes in parenting and children's outcomes (e.g. Kelly et al 2013). There are a number of challenges to demonstrating *causal* evidence for the direct effect of parenting on children's outcomes (see O'Connor (2002) for a detailed

discussion of this). Nevertheless, O'Connor suggests some strands of evidence that do get closer to establishing causality between parenting and child development, for example, intervention studies where parents' behaviour has been successfully altered and following this there have been improvements in children's behavioural and emotional outcomes (2002, p560). Whilst the evidence (summarised in Appendix 2) is not causal, combined with other evidence it strongly supports the conclusion that parenting matters.

For example, reading to children and trips outside of the house have positive associations with children's outcomes (Burgess et al, 2006; Gutman and Feinstein, 2010) and shouting at the child, smacking, having an irregular bedtime and watching more hours of television have negative associations with children's outcomes (Hobcraft and Kiernan, 2010; Scott et al, 2013; Kelly et al, 2013; Jones, Gutman and Platt, 2013). Some of the evidence suggests that different parenting behaviours are important for different types of outcomes, for example, Washbrook (2010) found that the home learning environment was particularly important for children's cognitive development, parental sensitivity was particularly important for children's socio-emotional outcomes and parents' health behaviours were most important for children's health outcomes.

The overall conclusion is clear – parenting as variously measured is consistently found to be significant for children's outcomes. However, in terms of informing my approach to measuring parenting the existing evidence is of little use; this is because the measures used across studies are heterogeneous, with different studies focusing on different aspects of parenting and often no justification given for the particular approach taken.

In terms of Jansen et al's (2012) definition of different levels of measurement, some studies measure direct parenting practices (Kelly et al, 2013; Jones, Gutman and Platt, 2013; Ermisch et al, 2011), others organise parenting practices into higher levels of dimensions of parenting although

there is no consistent approach in which dimensions are measured. For example, Gutman and Feinstein (2010) measure 'mother-child interactions' and 'outside activities'; Sacker et al (2002) measure 'parental involvement' and 'parental aspirations'; and Hobcraft and Kiernan (2010) measure 'maternal relations with child', 'promotion of learning', 'family organisation' and 'disciplinary practices'. Two of the studies even combine these different conceptual levels, measuring 'parenting style' or 'authoritative parenting' alongside individual dimensions of parenting (Ermisch, 2008; Washbrook, 2010). Whilst common dimensions crop up across studies (such as the mother-child relationship or the home learning environment as variously named), which parenting practices are grouped under which dimensions is also not consistent. Furthermore, studies that focus on a narrow range of parenting behaviours might be missing other important parenting behaviours and studies which conflate multiple measures of parenting under one score may conceal which types of parenting are significant.

The diversity of approaches to measuring parenting makes it difficult to compare or test results across studies or make broad and substantial claims about specifically which types of parenting behaviours contribute positively to children's outcomes, and therefore which types of parenting behaviours ought to be measured. As O'Connor argues, without a unifying approach to the concept and measurement of parenting it 'inhibits theoretical progress and the translation of research findings to clinical and social settings' (2002: 556).

Therefore, whilst justifying my initial reason for focusing on parenting (that it matters for children), the current evidence, despite being extensive does not provide clear direction on how best to measure parenting as a set of discrete outcomes of interest.

The aims for my own conceptual framework therefore, are to be theoretically informed, and comprehensive in including all parenting

practices likely to be important, but also organised and justified conceptually into parenting domains that are both policy-relevant and replicable in other research. Additionally, I aim to be inclusive of dimensions from the main parenting theories, as well as those most prominent in empirical evidence. Given that it is the effect of parenting on children's outcomes that provides the basis of my interest in parenting, I will begin by considering children's different outcomes and work back to which parenting practices are likely to be relevant for these.

A universal concept of parenting?

Some might argue that parenting varies so much by culture and context that to even describe parenting goals as universal is not appropriate. However, LeVine (1977) has identified three such goals, which he argues to be common to all parents, despite perhaps manifesting themselves in different behaviours across different cultures in adaptation to the childrearing environment (he discusses observations from his own field experiences across Africa). The goals he describes are as follows:

- 1) *The physical survival and health of the child, including (implicitly) the normal development of his reproductive capacity during puberty.*
- 2) *The development of the child's behavioural capacity for economic self-maintenance in maturity.*
- 3) *The development of the child's behavioural capacities for maximizing other cultural values –e.g., morality, prestige, wealth, religious piety, intellectual achievement, personal satisfaction, self-realization – as formulated and symbolically elaborated in culturally distinctive beliefs, norms and ideologies.*

LeVine, 1977, p20

As well as being universal goals LeVine argues they are necessarily hierarchical: 'because if Goal 1, the physical health and survival of the child is threatened, it becomes the foremost concern of the parents, since it is prerequisite to Goals 2 and 3' (LeVine in Leiderman et al 1977: 20). LeVine

suggests this is why in populations with high infant mortality rates 'a mother will probably find incomprehensible the suggestion that she take certain measures to stimulate her infant's cognitive development so that he will be able to perform well in school' (Ibid). The suggestion of a hierarchy of parenting goals is in-line with Lareau's (2003) more recent ethnographic study which compares parenting in poor, working class and middle class families in America. Lareau describes the parenting style of middle class parents as a process of 'concerted cultivation' and the parenting of poor or working class parents as focusing on the 'accomplishment of natural growth', the former being aimed at developing the child into a successful adult, cultivating skills through organised activities, the latter focusing on meeting the child's needs and looking after their wellbeing; aiming for children to be healthy and happy. Whilst Lareau acknowledges that society's institutions tend to reward children whose parents' childrearing logic is of 'concerted cultivation' she argues that this approach to parenting is not superior, and indeed emphasises some of the more negative consequences of this approach and some of the more positive consequences of parents focusing on the 'accomplishment of natural growth'. Importantly, Lareau highlights *why* these different childrearing approaches are prevalent in poorer and wealthier houses respectively; in part this is due to priorities given the context in which parenting takes place:

*Middle class parents who comply with current professional standards and engage in a pattern of concerted cultivation deliberately try to stimulate their children's development and foster their cognitive and social skills. The commitment among working class and poor families to provide comfort, food, shelter, and other basic support **requires ongoing effort, given economic challenges** and the formidable demands of child rearing. But it stops short of the deliberate cultivation of children and their leisure activities that occurs in middle-class families. **For working-class and poor families, sustaining children's natural growth is viewed as an accomplishment.***

(bold added) Lareau, 2003 p5

Similarly to LeVine, Bornstein (2002) suggests there are four domains of parenting that are universal even if the behaviours related to them vary across different cultures. These are:

- 1) Nurturant caregiving - this relates to meeting the physical needs of the child.
- 2) Social caregiving - this includes displays of warmth and affection towards the child as well as managing and monitoring the social relationships the child has with others.
- 3) Didactic caregiving - strategies parents use to engage the child in understanding their environment, including describing and demonstrating, 'providing opportunities to observe, to imitate, and to learn'
- 4) Material caregiving – how parents organise the physical world of their child, including access to toys and limits to physical freedom.

As well as being hierarchical, parenting behaviours also differ at different ages, something which Bornstein's parenting domains take account of (Ibid). These domains clearly overlap with the universal goals described by

Levine. Together both put forward a plausible case for universal parenting domains.

A Proposed Framework Based on Children's Outcomes

In a similar vein to LeVine's and Bornstein's universal parenting goals I develop my own conceptual framework for parenting. Because my interest in parenting is due to its importance for children's outcomes, and because I want my framework to have a theoretical justification I start by focusing on children's outcomes. These can be broadly grouped into physical health, social and emotional wellbeing and cognitive development (Waldfogel, 2006: 11). From these I consider the overall parenting goals that are related to each of these outcomes. By 'parenting goals' I refer to the overall objective of parenting behaviours or practices, for example the parenting practice of feeding a child has the overall goal of meeting the child's physical needs.

Starting from the four main domains of child outcomes, I suggest the corresponding parenting behaviours can be grouped under the following broad goals:

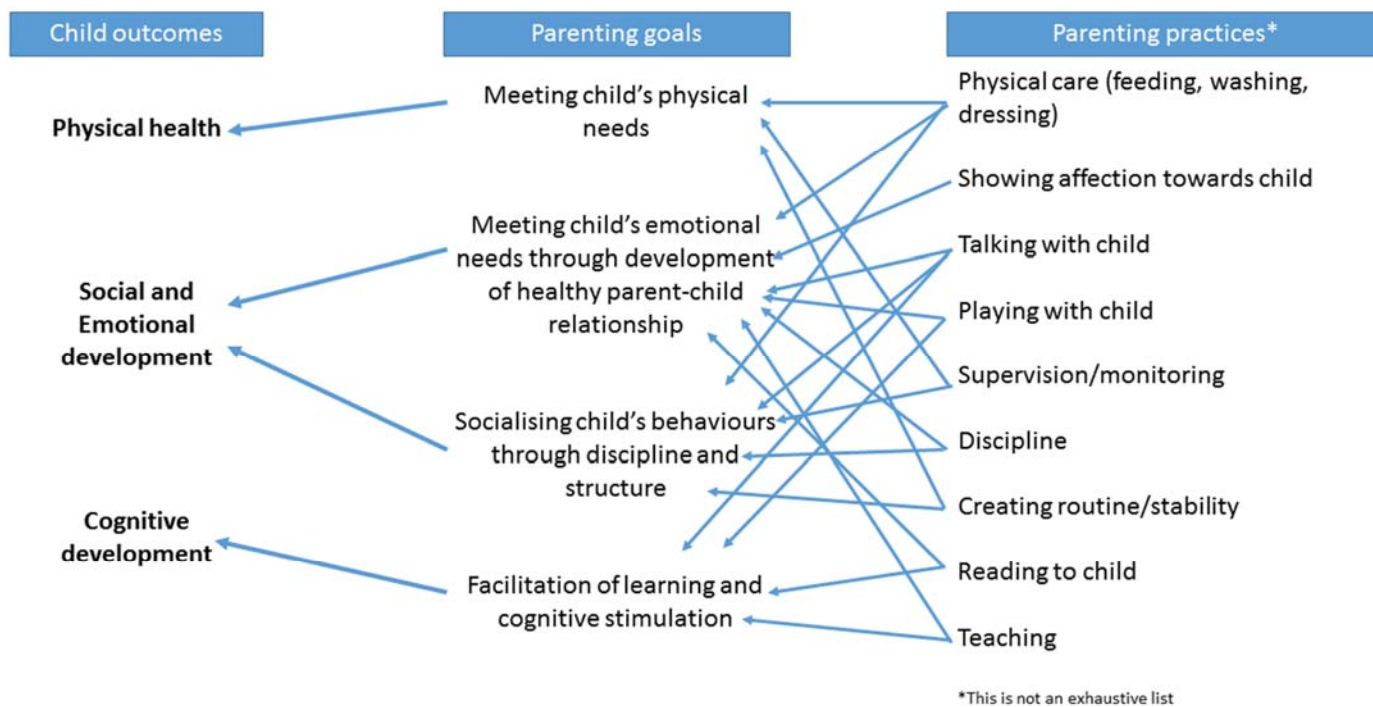
1. **Physical health** → **Meet the child's physical needs** (feeding, washing, clothing etc)
2. **Social and emotional development** → **Meet the child's emotional needs** (warmth, affection, responsiveness – these types of parenting behaviours are also likely to foster secure parent-child relationships as described in Attachment Theory)
3. **Social and emotional development** → **Socialising the child's behaviour through discipline and structure** (enforcement of rules and types of discipline practices for instance. This group of behaviours also includes routine, supervision and monitoring. This incorporates some of the focus from Parenting Style theory as well as Social Learning theory)
4. **Cognitive development** → **Facilitation of learning and cognitive stimulation** (this includes teaching, reading, playing and other activities that are cognitively stimulating including talking to the child)

I suggest that specific parenting practices, of which there are many, can be organised under one of these four goals or dimensions of parenting, although many parenting behaviours will contribute to multiple parenting goals simultaneously (see Figure 2). For example, reading to a child will be cognitively stimulating but is also likely to contribute to a more positive parent-child relationship. Specific practices will change as appropriate when the child ages (Waldfogel, 2006) but arguably they are still aimed at the same overarching goals. For example facilitation of learning may take the form of play when the child is a baby, and as the child ages this may change to teaching letters, numbers, etc and eventually include activities related to taking an interest in and being involved with the child's education at school and helping with homework.

These domains also overlap with Levine and Bornstein's, with Bornstein's nurturant caregiving translating well to meeting physical needs and social caregiving similar to parent-child relationship. Bornstein also similarly suggests that parents will often be contributing to simultaneous domains: 'Although these modes of caregiving are conceptually and operationally distinct, in practice, caregiver-infant interaction is intricate and multidimensional, and infant caregivers regularly engage in combinations of them' (2002: 17).

The conceptual framework outlined here will be used to inform the measurement of parenting in this research. This will be described in more detail in chapter four, where the data to be used will be described (the Millennium Cohort Study) and the specific measures available will be mapped onto this framework based on these four domains of parenting.

Figure 2 Diagram of relationship between parenting practices and parenting goals



3.2 What are the possible pathways through which economic hardship might affect parenting?

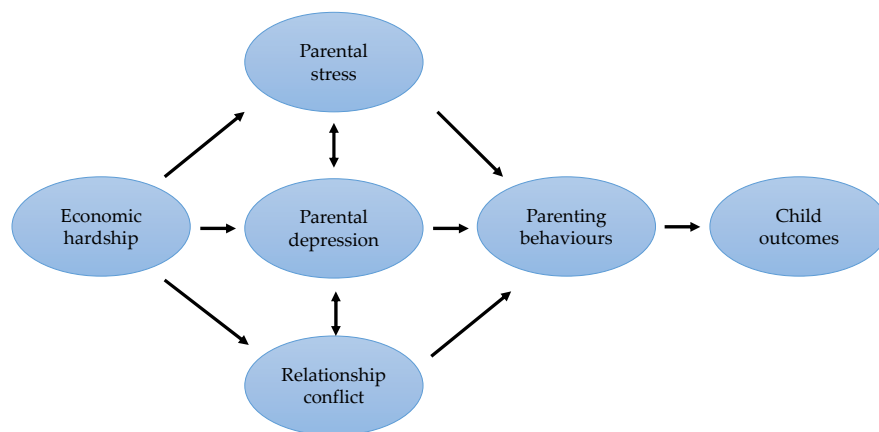
The second part of this conceptual framework considers the possible mechanisms that explain the relationship between economic hardship and parenting with a view to summarising the framework adopted in this research. Each probable pathway is outlined separately below before presenting a framework which incorporates each of the suggested mechanisms as well as the framework for parenting outlined above. As will become clear, a number of different pathways are likely to be relevant, however in practice due to data limitations I am only able to test one of these pathways. Nevertheless these alternative pathways are important to acknowledge and keep in mind later when discussing the findings of this research.

The Family Stress Model

In seeking to explain the relationship between household financial resources and children's outcomes, one of the most dominant theories in the literature, the Family Stress Model (FSM), focuses on the impact of financial resources on the emotional home environment. This conceptual framework originated in work by Conger and colleagues which analysed the impact of the farming crisis in the US on adolescent outcomes (Conger & Elder, 1994). The researchers interviewed and video-recorded interactions between family members, over a number of years, and found that rather than material deprivation being responsible for worsening adolescent outcomes during the farming crisis, it was changes in processes within the family as a result of the economic hardship that influenced adolescent adjustment (Conger & Elder, 1994; Conger et al. 2000). Using path analysis the researchers found that economic hardship leads to economic stress (inability to pay bills for instance), which in turn affected parental psychological wellbeing, marital conflict and discipline style with children (Conger et al. 2000). The model that resulted from this work

therefore identifies various pathways through which economic hardship operates to impede parenting quality, for example through stress and depression. This negative impact on parents' psychological wellbeing can make parents less patient and lacking in emotional resources needed for supportive and nurturing parenting behaviours, instead resulting in a more punitive parenting style, for example using more physical punishment rather than reasoning, as well as parenting that is withdrawn and unresponsive (McLoyd, 1990; 322; Magnuson & Duncan, 2002: 107).

Figure 3 The Family Stress Model



This model has been tested numerous times with slight modifications, (for instance including social support as a buffer (Lee et al. 2009)), using structural equation modelling (SEM). Overall the evidence for this model is strong (see chapter 6 in Cooper and Stewart, 2013) and is also supported by causal evidence which finds financial resources have an impact on maternal depression (Wickham et al, 2017; Boyd-Swan et al, 2016; Dearing et al. 2004; Gennetian & Miller, 2002; Evans & Garthwaite, 2010; Milligan & Stabile, 2011). However, the majority of the evidence for this theory comes from the US.

In terms of the UK evidence for the FSM, there is some evidence that people living in poverty are more likely to suffer from depression

(Wickham et al., 2017; Wrapson et al., 2008) and that maternal depression is negatively associated with children's outcomes (Kiernan & Mensah, 2009) and that this is likely to be partly due to less engaged parenting behaviours (Mensah & Kiernan, 2011). Few UK studies test FSM variables as mediators between hardship and children's outcomes using the MCS: When testing whether income affects children's cognitive and behavioural development (using fixed effects) Violato et al (2011) include a number of variables relating to the FSM as controls, to test if they explain part of the relationship. They found that these variables (maternal depression, discipline style, whether rules are strictly enforced and how much TV the child watches) explain part of the relationship, particularly in relation to children's behavioural outcomes. Just two UK studies use structural equation modelling to test the Family Stress Model: Schoon et al (2010) assess the relationship between hardship, maternal depression, cognitive stimulation and the parent-child relationship and children's outcomes, separately for children's cognitive and behavioural outcomes. They find that both direct and indirect pathways are significant for both types of child outcome, with cognitive stimulation being a more significant mediator for school readiness and the parent-child relationship (which they employ as a construct of the Family Stress Model) is a more significant mediator for behavioural problems. Finally, Kiernan and Huerta (2008) look at the impact of economic deprivation and maternal depression on children's cognitive and behavioural outcomes, with three types of parenting measures included as mediating variables. They find that parenting explains over half of the effect of economic deprivation on children's cognitive development and around 40% of the effect of economic deprivation on children's behaviour problems. They also find that parenting accounts for part of the effect of maternal depression on children's behavioural problems (Kiernan & Huerta, 2008). The authors conclude that the results provide support for the FSM. However they acknowledge that there are other potentially important mediating variables

such as social support or relationship conflict which were not included in their model; they only tested one FSM variable (maternal depression).

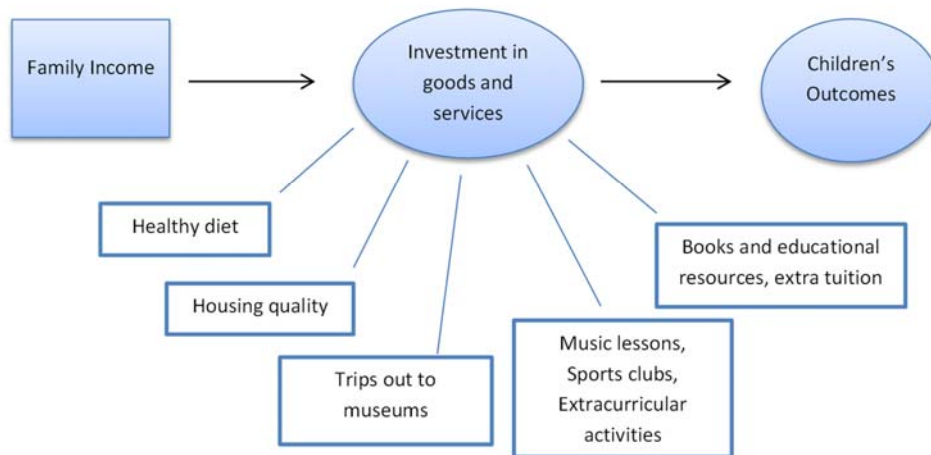
As well as a dearth of UK evidence in relation to the FSM the theory itself may be limited in fully explaining the relationship between economic hardship and parenting behaviours: parents' stress and mental health may not be the only process by which economic hardship influences parenting behaviours.

The Investment Model

Another prominent theory from the literature which may shed some light on the relationship between hardship and parenting is the 'Investment Model'. In contrast to, (although not incompatible with) the Family Stress Model, this theory relates to the direct effects of financial resources on the physical home environment, through parents' ability to afford certain goods that affect children's outcomes (Duncan et al, 2017). For example families constrained by low financial resources have less money to spend on educational toys and learning materials, as well as socially enriching and educational activities such as music lessons and trips to museums (Magnuson & Duncan, 2002: 109). This theory predicts that as parents' financial resources increase they invest more in their children as they are able to buy more goods. In terms of the evidence that supports this theory, there is strong evidence that income is significantly related to food sufficiency as well as spending on food (Loopstra and Tarasuk, 2013; Milligan and Stabile, 2011; Riccio et al, 2010; Heflin et al, 2007; Raschke, 2012), although evidence on the relationship between increases in income and spending on children's items is more mixed (Blow, Walker and Zhu, 2012; Raschke, 2012; Gregg, Waldfogel and Washbrook, 2006; Kaushal, Gao and Waldfogel, 2007) . This potential mechanism will not be the main focus of this research but will be kept in consideration alongside other mechanisms, as although it relates mostly to material resources, it is also dependent on and often overlaps with parenting behaviours (e.g. a

cognitively stimulating home environment relies not only on money to buy educational toys but also on parents to choose to buy these toys and use them with their children). In fact there is some evidence that the pathways from both models interact with each other (Yeung et al. 2002).

Figure 4 The Investment Model



Other Potential Pathways: Attention, Time and Energy

The theory of Scarcity posits that having too few resources, of any kind, changes people's mindset and how they allocate attention, leading them to focus more deeply on problems related to their scarce resources, whilst neglecting others (Shah et al. 2012). This 'tunnelling' of attention to deal with scarcity reduces the 'bandwidth' of the brain and impedes the cognitive functioning, affecting what people notice, what choices they make and how they behave (Mullainathan & Shafir, 2013). The theory is not specific to financial resources but relates to any kind of scarcity including scarcity of time or companionship, but poverty is described as the most extreme case because unlike other types of scarcity the consequences are more severe and harder to escape (Mullainathan & Shafir, 2013). The mental processes required by poverty such as 'managing sporadic income, juggling expenses and making difficult trade-offs' mean that even when

those in poverty are not actually making a financial decision it can be preoccupying and distracting – and as the cognitive system has limited capacity, this leaves fewer cognitive resources available to guide other choices and actions (Mani et al. 2013). This theory has been tested in relation to poverty mostly using laboratory experiments with limited external validity. However, one field experiment strongly supports the theory: sugar cane farmers in India were given cognitive tests at different points in their harvest (when they had most and least money, as they receive their income at one time), controlling for seasonal effects, diet and stress measured with biomarkers (Mani et al. 2013). It was found that scores on the tests were significantly worse when the farmers had less money and that the magnitude of the effect was large - comparable to losing a full night's sleep (Mani et al. 2013). Although this theory has not been tested in relation to parenting behaviours, parenting has been described as an area for which scarcity (of any kind) is likely to have significant consequences and has been suggested as a possible explanation for why 'the poor are worse parents' (Mullainathan & Shafir, 2013). Parenting is a plausible application of this theory, as good parenting practices require mental capacity (Mullainathan & Shafir, 2013).

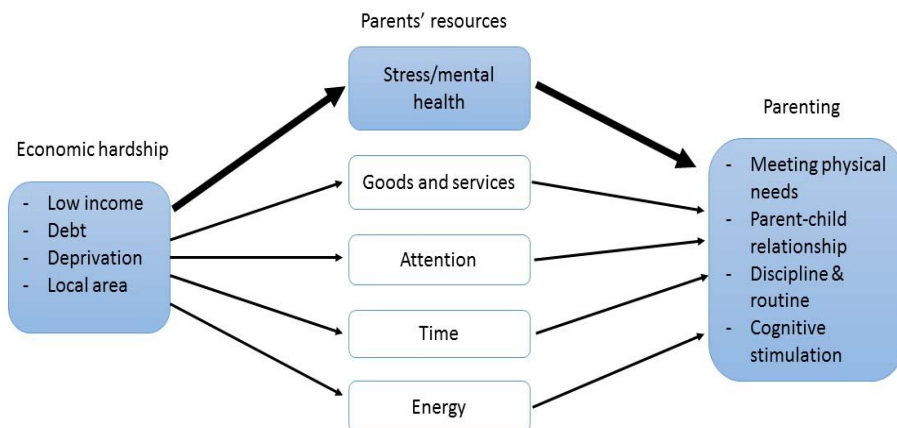
As well as the attention of the mind that is captured, managing with low financial resources is likely to involve a lot of time and effort. In their mixed methods research Gbate and Hazel (2002) describe how respondents spent a great deal of time and energy shopping around in multiple shops to find the cheapest products, as well as dealing with issues of substandard housing, and dangers in their local area; as a great deal of 'coping energy' was spent dealing with these ongoing challenges, the authors suggest it is likely that they were left with 'depleted personal resources upon which to draw' (Ibid: 216). Dealing with a difficult or demanding child in this context therefore was even more challenging (Ibid). Piachaud has also highlighted how people living in poverty face a penalty on their time: those in low paid employment often have to work long hours and sometimes

more than one job in order to reach a poverty-level income. Those with less money are also likely to work antisocial hours and have less time with their children, and the inability to purchase time-saving goods and services means parents with low income often incur additional time costs (for example not owning a car and having to rely on walking or public transport, not owning a washing machine, requiring time and money to visit a laundrette) (Piachaud, 2008). In her analysis of time and income poverty (income poverty defined as 60% of the median income and time poverty defined as 60% of median free time for working-age adults), Burchardt found that although the proportion of households that are both time and income poor is fairly small, children are much more likely to live in households that are both time and income poor, partly because having children increases costs of money and time (Burchardt, 2008), and so the time penalty for those who have fewer resources is particularly relevant for parents.

The Theoretical Framework for this Research

The theoretical framework I will be using for this research will be based on the Family Stress Model (FSM). I am focusing on the FSM in particular because this theory is most relevant to explaining parenting behaviours (the Investment Model is limited to the goods and resources parents provide for their children rather than their parenting behaviours per se), and also has the strongest evidence base so far, albeit from the US. Whilst the theoretical framework includes other potential pathways in recognition that they may explain part of the relationship, due to the limits of the data I will only be able to analyse the pathway in bold, namely the mechanisms relating to the Family Stress Model.

Figure 5 Theoretical Framework for the relationship between economic hardship and parenting behaviours



3.3 Contributions of this research

There are three main contributions this research makes to the existing literature

- i. Exploring the relationship between economic hardship and parenting in the UK

Whilst there are a number of UK studies that look at the association between financial resources and parenting, these often have a broader focus; none of these studies focus on parenting as an outcome and explore in depth the mechanisms of this relationship. This research will provide a more detailed understanding of the relationship between hardship and parenting in the UK and the mechanisms that explain part of this relationship.

- ii. Exploring different dimensions of hardship

Of the studies that have examined the relationship between hardship and parenting, a narrow definition of hardship is often used, usually income poverty (below 60% of median income). However, other experiences of hardship, such as debt or material deprivation may also be important for parenting. This research will take a broader definition of hardship and explore the relationship between multiple different measures of hardship and parenting, including debt, subjective hardship, housing quality and local area.

- iii. A more comprehensive and theoretically justified measure of different dimensions of parenting

In existing research the measures of parenting behaviours used often lack justification and focus on just one aspect of parenting or conflate multiple dimensions together in one measure; it is therefore unclear whether some parenting behaviours are more responsive to changes in economic hardship than others. In this research a new conceptual framework for parenting will be operationalised based on consultation

of existing parenting theories and measures used in empirical research. This conceptual framework of parenting will be used to inform and justify parenting measures used, distinguishing between different domains of parenting in order to analyse whether the relationship between hardship and parenting differs according to these different domains.

3.4 Research questions

The overarching research question for this thesis is: What is the relationship between economic hardship and parenting in the UK and what mechanisms explain this relationship?

This is broken down into four main questions (one for each empirical chapter) and corresponding sub-questions.

- 1) Do mothers in the lowest income quintile group parent differently to mothers in the median income quintile? And if so,
 - I. Are mothers in the lowest income quintile uniquely different or 'deviant' compared with mothers in other income groups or is there a gradient in parenting behaviours across income quintiles?
 - II. Are low income mothers less likely to behave in ways considered to be 'ideal parenting' or are they more likely to behave in ways considered to be 'poor parenting'?
 - III. Would we expect most children in the lowest income quintile to have different experiences of parenting to children in the median quintile or are these differences restricted to a minority of parents within the lowest quintile?
 - IV. Do any differences remain once other explanatory factors are taken into account?

- 2) Does the relationship between different types of hardship and parenting differ compared with the relationship between income and parenting?
 - I. Do the alternative hardship measures identify a *subset* of the low income respondents? Or do the hardship measures identify *different* groups of respondents not captured by the low income measure?
 - II. Are different types of hardship associated with particular types of parenting?
 - III. Are some types of hardship particularly wide-reaching in their influence on parenting?

3. What mechanisms explain the relationship between hardship and parenting?

- I. Are Family Stress Model mechanisms (parental mental health) significant in explaining the relationship between hardship and parenting?
- II. For households with two parents/carers does relationship quality explain part of the relationship between hardship and parenting?
- III. Is this model more relevant for some types of parenting than others?

4. What happens to the relationship between hardship and parenting when it is analysed longitudinally?

- I. Are changes in hardship associated with changes in parenting?
- II. Are changes in hardship associated with changes in Family Stress Model mechanisms (mother's mental wellbeing)?

Following the chapter on data, each of the four research questions and their sub-questions will be explored, dedicating one empirical chapter to each.

Chapter 4

The Data

The aim of this research is to understand more about the relationship between economic hardship and parenting in the UK and what factors help explain this relationship. In order to answer my research questions (outlined in chapter 3) I conduct quantitative analysis of the Millennium Cohort Study. The specific methods used are detailed in each chapter; this section includes a description of the data, the measures available and the strengths and limitations of the data.

4.1 Description of MCS data

I will be using the Millennium Cohort Study (MCS). This is a birth cohort study of around 19,000 children from England, Wales, Scotland and Northern Ireland (Hansen, 2012). The sample is clustered geographically and includes boosted samples of families from areas of high child poverty and high proportions of ethnic minorities in England (Hansen, 2012). The survey started in 2001/2 when the target child was 9 months old, and there have since been five more waves when the children were three, five, seven, eleven and the most recently available wave collected in 2015 when the children were fourteen years old. This dataset is ideal for answering these research questions: it is very rich including a range of measures of economic hardship, different types of parenting behaviours as well as multiple measures of the potential mechanisms I am interested in exploring from the Family Stress Model, namely parental mental health and relationship satisfaction.

The data are longitudinal which enables me to measure changes in economic hardship and parenting behaviours in order to more confidently assess the relationship between the two. The datasets for waves one to five of the MCS was downloaded from the UK Data Archive (University of London, UCL Institute of Education a-e).

The first three empirical chapters are cross-sectional analyses and use the third wave of the MCS when cohort children were aged around 5 years, with the final empirical chapter looking at changes in hardship and parenting between age 5 and 7, using the fourth wave also. The third wave was chosen for this analysis for a number of reasons. Firstly, in terms of policy implications the early years period (age 0 to 5) has not only received a lot of political attention (e.g. Field, 2010; Allen, 2011), but there is also evidence which suggests that this is an important period because development at these early ages occurs at an accelerated rate and also influences development at later ages (Feinstein & Duckworth, 2006; Cuhna and Heckman, 2008; Shonkoff et al. 2012). Therefore children's environments and experiences at this age are of particular significance and policy interventions during these early years should yield greater returns (Heckman and Masterov, 2007). Of course it would have been possible to use the second wave where children are aged around three years instead, however, the third wave was chosen over the second because of the greater variety of parenting measures included. Age five is also an age where parental influence is still important but children have started school and are therefore exposed to a different environment external to the home; with the starting of school a broader range of parenting behaviours related to cognitive stimulation become relevant. Age five is therefore an important age to consider the relationship between hardship and parenting, the subject of this thesis.

For all analysis the sample used is restricted to natural mothers only (who are 97% of the original sample). This is because of expected differences in parenting between mothers and fathers, as well as parenting of step, foster and adoptive parents or grandparents/other relatives. Twins and triplets were also excluded from the sample, similarly because parenting in families with twins/triplets is likely to be different to parenting in families with singleton births. The main sample size is therefore reduced from the

original 15,246 to 14,595.⁶ Sample weights were used for all analysis, to adjust for the stratified cluster sample design used (more information about this can be found in Plewis, (2007a & 2007b)).

4.2 Measures available in the MCS

The measures are discussed in greater detail in each empirical chapter, but below is a brief summary of the main types of variables of interest and how the parenting measures available map onto my conceptual framework.

For this thesis I am interested in three main groups of variables (as well as some potentially explanatory variables that need to be accounted for to more accurately estimate the relationships between the variables below):

- 1) Measures of hardship – this is my main independent variable of interest.
- 2) Measures of mechanisms through which hardship may relate to parenting – these are intervening factors, or variables that mediate the relationship between hardship and parenting and illustrate indirect pathways between hardship and parenting.
- 3) Measures of parenting – this is my dependent variable of interest or outcome variable.

Approaches to measuring parenting have been discussed in chapter 3 in which I summarise the different approaches to measuring parenting before developing my own conceptual framework, grouping parenting behaviours into four domains: meeting physical needs, the parent-child relationship, discipline and control; and cognitive stimulation.

Below Table 1 demonstrates how the parenting measures available in the third wave of the MCS map onto this conceptual framework. In addition to

⁶ This is later restricted further to respondents with non-missing data on key variables of interest, as discussed in later chapters.

the measures described in the table there is also one measure of parent's confidence in their parenting ability which is included in the analysis.

Table 1 Measures of parenting from MCS wave 3 mapped onto conceptual framework

Parenting domain	MCS wave 3 parenting measures
Meeting physical needs	<ul style="list-style-type: none"> - How many days a week does [child] usually eat breakfast? - On a typical day, how many portions of fresh, frozen, tinned or dried fruit does [child] eat? - How often do you play sports or physically active games outdoors or indoors with [child]? - On average how many days a week does [child] go to a club or class to do sport or any other physical activity like swimming, gymnastics, football, dancing? - How often do you take [child] to the park or to an outdoor playground? - How often do you [or your partner] take part in physical activities (e.g. swimming, walking) with [child]?
Parent-child relationship	<ul style="list-style-type: none"> - Overall, how close would you say you are to [child]?
Discipline and control	<ul style="list-style-type: none"> - How often do you do the following when [child] is naughty: <ul style="list-style-type: none"> - Send to bedroom/naughty chair, etc. - Take away treats - Tell [him/her] off - Try to reason with [him/her] - Smack [him/her] - Shout at [him/her] - Bribe [him/her] (e.g. with sweets, or a treat) - Ignore [him/her] - When you give [child] an instruction or make a request to do something, how often do you make sure that [he/she] does it? - On weekdays during term-time, does [child] go to bed at a regular time? - Does [child] have meals at regular times?

Cognitive stimulation	<p>Over the past 12 months, which, if any, of the places on this card has [child] been to?</p> <ol style="list-style-type: none"> 1. Play, pantomime, music concert, circus or other live show 2. Art gallery, museum or historical site 3. Zoo, aquarium, wildlife reserve or farm 4. Theme park or funfair 5. Cinema 6. Professional sporting event as a spectator 7. None <p>- On a normal week day during term time, how many hours does [child] spend watching television, videos or DVDs?</p> <p>- On a normal weekday during term time, how many hours does [child] spend using a computer or playing electronic games outside school lessons?</p> <p>- How often do you read to [child]?</p> <p>- How often do you tell stories to [child] not from a book?</p> <p>- How often do you play music, listen to music, sing songs or nursery rhymes, dance or do other musical activities with [child]?</p> <p>- How often do you draw, paint or make things with [child]?</p> <p>- How often do you play with toys or games indoors with [child]?</p> <p>- How often does [child] spend time with [his/her] friends outside school?</p> <p>- How often do all or most of your family spend an evening or part of the weekend at home, doing things together such as watching television or playing an indoor game?</p> <p>- Does anyone at home help [child] with reading (including a homework book from school)? How often?</p> <p>- Does anyone at home help [child] with writing? How often?</p> <p>- Does anyone at home help [child] with numbers, counting and adding up? How often?</p> <p>- Over the past 12 months, how often has [child] been to a library (not a school library)?</p> <p>- During this school year has anyone at home been to a parents' evening or similar event?</p>
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4.3 Strengths and limitations of the data

Overall the parenting measures available fit well with my conceptual framework. In terms of the four domains of interest there are most measures for 'cognitive stimulation', followed by 'discipline and control' and 'meeting physical needs'. However, in this wave there is only one measure of the parent-child relationship. The greater focus on cognitively stimulating activities in wave three is likely to be because at this wave children have started school and so the measures of the learning environment at home become particularly relevant. In the first and second wave of the MCS there are multiple measures of parent-child relationship, most likely due to the interest in bonding between the mother and child during the first few years. Whilst it is unfortunate that the parent-child relationship is limited to one measure in the third wave, overall three of the four domains are well represented in the measures available; the richness of the parenting measures available is a clear strength of the MCS data. Additionally the multiple types of hardship measures and parental mental health mean that each of my main groups of variables are well represented in the data (see Table 2 below).

Table 2 Hardship and Family Stress Model variables in MCS wave 3

Hardship measures	'Family Stress Model' variables
<p>1. income and (persistent) income poverty</p> <p>2. debt</p> <p>3. material deprivation</p> <p>4. subjective hardship</p> <p>Housing:</p> <p>5. damp</p> <p>6. crowding</p> <p>Local area:</p> <p>7. how safe mother feels in the area and /whether it is a child-friendly area (self-reported)</p> <p>8. interviewer felt uncomfortable (observed by interviewer wave 2)</p> <p>9. Index of Multiple Deprivation worst 10%</p>	<p>Self-reported maternal mental health – Kessler scale</p> <p>In past 30 days how often felt</p> <ul style="list-style-type: none"> - Depressed - Hopeless - Restless/fidgety - Everything an effort - Worthless - Nervous <p>Clinical depression</p> <p>Whether mother <i>ever</i> been diagnosed with depression and if so whether being treated for depression.</p> <p>Life satisfaction</p> <p>1-10 scale regarding how satisfied mother is with 'how life has turned out so far'</p> <p>Relationship quality – subset from Golombok Rust Inventory of Marital State</p> <p>1-5 scale of how much agree/disagree:</p> <ul style="list-style-type: none"> - My partner is usually sensitive to and aware of my needs - My partner doesn't seem to listen to me - I sometimes feel lonely even when I am with my partner - I suspect we may be on the brink of separation <p>Other relationship questions:</p> <ul style="list-style-type: none"> - How often disagree over issues related to child - How often go out together without children - Scale 1-7 how happy with relationship - Whether partner has ever used force on them for any reason

Two further strengths of the data are worth noting. Firstly, they include a booster sample of families living in high poverty areas, which is useful given that I will be focusing on families experiencing hardship. Secondly,

the data are longitudinal which will enable me to measure changes in economic hardship and parenting behaviours.

One important limitation of the data is that the parenting measures are self-reported.⁷ This means there may be social desirability effects which influence mothers to answer questions the way they feel they should rather than giving a more accurate response i.e. exaggerating the frequency of desirable parenting behaviours and underreporting parenting behaviours that are less socially valued. Indeed most of the parenting measures appear to be positively skewed (although this may reflect that on the whole there is genuinely little difference in parenting behaviours and most parents are doing lots of good things and not many things that are commonly understood to be poor parenting). As middle-class parents have been found to be more quickly responsive to the latest professional advice on parenting (Lareau, 2003: 5) this social desirability effect may affect middle class mothers more. On the other hand, it could also be the case that mothers from lower income groups are more worried about judgements on their parenting and in extreme cases interventions from social services, giving reason to over-report and under-report certain behaviours.

However, there is some evidence from the US that self-reported parenting measures match well with observational measures (Hawes and Dadds, 2006; Bennet, Sullivan and Lewis, 2006). Furthermore, the alternative - observational measures - can also be problematic as parents may moderate their behaviour to be more socially desirable when being watched and observers may carry their own biases that mean the behaviour of some parents are more harshly or favourably recorded than others depending on their characteristics.

In the MCS some of the more sensitive questions are answered anonymously using the self-completion questionnaire which ought to

⁷ Although there are some observational measures in wave 2.

reduce the problem of social desirability bias. However, it is still a clear limitation that all measures used are actually parents' reflections and presentations of their parenting rather than direct measures of their parenting behaviours. This needs to be kept in mind when discussing results.

4.3 Missing data

Some of the variables have item non-response (this includes refusal to answer, don't know and not applicable). Kline (2011) suggests missing values are a concern when there are more than 5% of the sample missing. Where there is 5% or more of the sample missing for a variable, each of these variables are discussed below, including how observed characteristics of those with missing data compare to the characteristics of the sample, and the implications of how this missing data may affect the analyses. The tables listing the number and percentage of respondents with item non-response and comparing characteristics can be found in Appendix 3.

Variables used in chapter 5

Of the variables used in the chapter 5 analysis three have more than 5% missing. This is the case for:

- How close the mother feels to the child (6% missing)
- Authoritative discipline index (8% missing)
- Harsh or permissive discipline index (8% missing)

Individual discipline measures included in the two discipline indices were analysed but it was not any one discipline measure in particular (for example we might assume smacking would have higher item non-response), which was responsible for the proportion missing for these overall discipline indices. Each of these three measures are clearly related to sensitive topics which respondents may feel wary of being judged for, even though they were answered anonymously using the self-completion, which may explain the non-response. A mother who is not feeling close to

her child may not want to acknowledge this in answering the question. Similarly a mother who uses harsh discipline more frequently or is struggling with discipline in general might not want to answer any of the discipline questions. Another explanation is that the missing data could be due to the fact that these questions were self-completed rather than asked by the interviewer, making it easier for respondents to opt out or allowing more space for confusion, particularly if there were language barriers.

In terms of the characteristics of those with missing values for these variables, tables 3 to 7 in Appendix 3 demonstrate that those with missing responses are more disadvantaged than the full sample – they have lower income and education levels and are more likely to be from a non-white ethnic group and not working.

Variables used in chapter 6

Of the variables used in chapter 6 those with more than 5% missing are the measure of persistent poverty (14%), the interviewer observation of the neighbourhood (7%) and the Index of multiple deprivation measure (36%). In the case of these variables there are clear explanations for those missing: the persistent poverty measure includes respondents with non-missing data for each of the MCS waves 1 to 3 so any attrition between waves 1 and 2 and between 2 and 3 will result in missing values. This therefore gives a more restricted sample than the full sample at wave 3 for this variable. The neighbourhood observation measure was restricted to respondents who did not move house between wave 2 and 3, so those who did move will be missing. The Index of Multiple Deprivation is a measure for England only so excludes respondents from other parts of the UK.

In terms of checking the impact of those with missing values on these variables, I have re-run analyses from this chapter with the most restrictive sample to check if there is a difference in findings given the number missing for the persistent poverty measure, area observations and Index of

Multiple Deprivation which is for England only. This robustness check is discussed in chapter 6 of the main text and detailed in Appendix 16.

Variables used in chapter 7

Of the variables used in chapter 7 each of the measures used as potential mechanisms have more than 5% missing:

- Kessler scale measuring symptoms of anxiety and depression (6% missing)
- Life satisfaction (7% missing)

And of the subsample of mothers in a relationship:

- GRIMS score measure relationship quality (8% missing)
- Relationship satisfaction (6% missing)

Much like the parenting measures with high item non-response these are all sensitive measures that might make people more likely to opt out of answering especially if their answer might be negative. We might expect that mothers who have symptoms of depression and anxiety, low life satisfaction and low relationship quality to be more likely to not respond. Additionally these measures are also self-reported so some of the missing values may be due to language barriers or simply opting out of answering more questions. This latter explanation cannot fully explain the pattern of missing values however, as if that were the case there would be exactly the same number missing on all of the self-reported measures, but as is clear from the tables in Appendix 3 there is some variation.

As with the parenting measures, those with missing data on these measures tended to be more disadvantaged. This is particularly the case for the Kessler measure of mother's mental health; a much greater proportion of those with missing Kessler scores mostly spoke a non-English language at home, were much more likely to be in the lowest income quintile, to have

no qualifications, to be in a non-White ethnic group, and to not be working, compared with the full sample (tables 10 – 15 Appendix 3).

Variables used in chapter 8

Unsurprisingly, when measuring change in variables between waves 3 and 4 in the final empirical chapter, it is the same measures as previously identified and discussed which have more than 5% missing:

- Change in mother's Kessler score (6% missing)
- Change in mother's life satisfaction (8% missing)
- Change in closeness to child (6% missing)
- Change in authoritative discipline (9% missing)
- Change in harsh/permissive discipline (11% missing)

The proportions missing are now a little higher than before as they are missing if the response was missing for either wave 3 or 4. Again respondents with missing information on these measures are more disadvantaged than the full sample, over-represented in the lowest income and education groups, non-White ethnic groups, in particular Pakistani and Black African (tables 24 – 29 Appendix 3). The same explanations apply as previously discussed; the sensitive nature of these questions may have discouraged respondents from answering, particularly if they would have answered negatively. Additionally, the method of self-report may have also contributed to some of the missing values as the lack of having to answer the interviewer and/or language barriers may have caused some respondents to skip these questions.

Implications of missing data for the analyses

As described above the variables for which there are 5% or more missing are sensitive measures which even in the non-missing data are likely to be underreported because of the nature of the questions (closeness to child, disciplining the child, mental health and relationship satisfaction). So the measures affected by missing data are already expected to contain more

measurement error and the missing values for them reinforce the need to be cautious when interpreting results related to these measures. I.e. we expect to be underestimating the true relationship between hardship and closeness to the child or mother's mental health even for those who responded. Because those who have missing values for these measures tend to be more disadvantaged than the full sample, if the relationships theorised in this thesis hold (that hardship is related to worse maternal mental health and in some cases worse parenting) then the missing values will cause a downward bias in the results, meaning I will be underestimating the strength of the relationship between hardship and mothers' mental health and parenting. Results in relation to these measures then can be interpreted as a conservative estimate. I expect to be underestimating these relationships not only because negative answers to these measures are likely to be underreported by those who have responded, but also because those who haven't responded are more likely to be disadvantaged and we might therefore expect them to be more likely to answer negatively to some of these questions if they did answer (for example to have worse maternal mental health).

One approach to dealing with missing data is to use multiple imputation, the assumptions of which include that the data is missing completely at random (MCAR) or missing at random (MAR), in other words their missingness is either entirely unrelated to their characteristics (observed or otherwise) or can be explained by the observed variables in the data set rather than unobserved variables that cannot be accounted for in the model, or as Rezvan et al (2015) explain 'the probability of data being missing depends on the observed data but not the missing data' (p3). As Sterne et al highlight, 'When data are missing not at random, bias in analyses based on multiple imputation may be as big as or bigger than the bias in the analyses of complete cases' (Sterne et al., 2009: 4). Given that the variables that have 5% or more missing are for sensitive measures related to the mother child relationship, discipline, mothers' mental health and

relationship satisfaction, it is not clear that this assumption is justified. It is very plausible that the probability of having missing values for these variables is related to the variable of interest i.e. parents who smack their child more frequently not answering the discipline questions, mothers who have a symptoms of depression or anxiety not answering the Kessler scale.

As Koutoumanou and Wade argue 'all of the imputation methods suffer from a fundamental problem: analysing imputed data as though the data set was complete increases the sample size while adding no new information' (2012: 21). The values that are imputed are generated based on those who are not missing from the data, who as discussed above are likely to differ in important ways that cannot be accounted for with the observed data. Therefore because sample size was not a problem and because the missing data is unlikely to be missing at random I decided against using multiple imputation. As explained above the missing data may lead to bias in my estimates, but given that respondents who have missing data for these variables tend to be more disadvantaged and we might expect that the missing values are related to the variables themselves (closeness to the child, discipline, maternal mental health), in estimating the relationship between disadvantage, mother's mental health and parenting it is likely that the missing data will result in a downward bias in terms of the results; i.e. I may be under-estimating the relationship between disadvantage, mother's mental health and parenting, which may be stronger than the estimates suggest. Because of the sensitive nature of the measures that have missing values it is likely that even for respondents that have responded and are not missing they are underreporting these measures; the measures affected by missing data are already measures that are likely to have a lot of measurement error and therefore related results need to be interpreted with caution in any case. Missing data are discussed again in chapter 7 in relation to the assumptions of structural equation modelling and analyses is re-run with the most restricted sample as a robustness check.

Chapter 5

Are poor parents *poor* parents? The association between income and parenting at age five in the Millennium Cohort Study

Over the last few decades, attention and concern has focused on a particular sort of mother. She is portrayed as irresponsible, immature, immoral, and a potential threat to the security and stability of society as a whole. While this type of mother is accused of bad parenting, it is her status as poor and marginalised that sees her located at the centre of society's ills.

Gillies, 2007: 1

The overarching research question for the thesis is 'what is the relationship between economic hardship and parenting behaviours and what mechanisms explain this relationship?' As a first step towards answering this question, this chapter will establish to what extent there *is* a difference in parenting behaviours by income group. There is a long history of demonisation of poor people, from concerns about changes in family structure in the sixties and seventies and cycles of deprivation (Gillies, 2007: 5), to the theory of an 'underclass' and 'culture of dependency' in the nineties (Lister, 1996). Gillies (2007) argues that these negative stereotypes of people from working class or low income backgrounds, with differences in parenting being prominent in these characterisations, are still prevalent today in the media. Beyond representations in newspapers and on television, successive governments have focused on parenting as a key factor explaining children's antisocial behaviour, crime and their own economic disadvantage in adulthood, ignoring the role of resources: 'For the sake of their children's future and for the stability and security of society as a whole, working-class parents must be taught how to raise children who are capable of becoming middle class' (Gillies, 2007: 7). Similarly, in her ethnographic study of working class and middle class approaches to childrearing, Lareau argues that although middle class

parenting ('concerted cultivation') is not superior to working class parents' approach ('accomplishment of natural growth'), teachers and other professionals endorse the former while 'the strategies of working-class or poor families are generally denigrated and seen as unhelpful or even harmful to children's life chances' (2003: 13). This depiction of poor parents' parenting as deviant compared with the endorsed middle class approach to parenting, from mainstream media, political rhetoric and institutions results in 'a powerful web of discourses which position working class mothers as inferior, irresponsible or even dangerous' (Gillies, 2007: 8).

In relation to these discourses this chapter therefore examines whether there are differences and importantly whether these differences are specific to low income parents – are they deviant as these discourses suggest? This research contributes to the evidence base as existing evidence on poverty and parenting typically focuses on comparing parents in poverty with all parents not in poverty and so is not able to unpick whether low income parents are unique in any of their parenting differences or whether there are differences in parenting across parents in other income groups.

As discussed in the literature review there are a number of UK studies that provide some evidence on the relationship between financial resources and parenting, as part of their analysis on the relationship between financial resources and children's outcomes. The UK evidence on this subject on the whole finds that parenting, as variously measured, explains part of the relationship between low income and worse child outcomes. The relationship between low income and parenting then is found to be negative, though many of the studies do not provide specific measures of the association between income poverty and parenting itself because they include parenting as a mediating variable, focusing on children's outcomes as the dependent variable of interest (e.g. Dickerson and Popli, 2016; Violato et al, 2011; Gutman and Feinstein, 2008; Burgess et al, 2006). There

are exceptions to this: focusing on comparisons between persistently poor and episodically poor households, and which factors promote resilience, Holmes and Kiernan (2013) first analyse bivariate descriptors, comparing (among other characteristics) parenting measures between households who were never poor, episodically poor or persistently poor, using MCS data from when the child was aged 9 months to five years. Though the authors focus on differences between those who experience poverty episodically compared with those who experience poverty persistently, finding the latter to be associated with more negative characteristics, it is apparent from their descriptive analysis that there is a pattern between *any* experience of poverty and children's experiences of parenting. Children who experience poverty are likely to be read to less frequently and less likely to have visited a library compared with children who were never poor. Children in never poor households have higher scores on the PIANTA maternal warmth scale and lower scores on the PIANTA conflict scale, compared with children who experience episodic or persistent poverty. Children who experienced poverty were more likely to have irregular meal and bedtimes at both ages three and five than children who never experienced poverty. There is less of a clear pattern between experiences of poverty and the frequency of shouting at or smacking the child at age three, although for households that have experienced poverty mothers are more likely to report they rarely or never tell the child off when naughty.

Kiernan and Mensah (2011) also include analysis of parenting as an outcome, before including parenting as a mediator in their main analysis. They developed a parenting index including a large range of different parenting measures and then grouped this into thirds - low, mid and high parenting scores. They found that 66% of children whose families experienced persistent poverty were in the lowest third of the parenting index score, compared with just 20% of children from families who never experienced poverty. Children who experience episodic poverty were

between the two with 46-49% being in the lowest third of the parenting index. Because all parenting measures are combined in one index score it is not possible to conclude anything about the relationship between income poverty and specific parenting practices. It is also not possible to conclude anything about the size of absolute differences in parenting practices as this analysis compares parents in the bottom, middle and top third of the parenting index score.

In preliminary descriptive analysis Ermisch (2008) finds that income (measured in four bands) when the child is aged 9 months is positively associated with parental inputs when the child is aged three years. Parents with higher incomes are more likely to report reading to the child daily, taking the child to the library, more structured parenting, and to a lesser extent more frequent educational activities.

In their structural equation model analysis Kiernan and Huerta (2008) find that economic deprivation (measured as a latent variable including income poverty, housing tenure and financial difficulties) is negatively associated with reading activities and the mother-child relationship (also both measured as latent variables). They conclude that there is no significant relationship between economic deprivation and disciplinary practices (again latent), although the indirect pathways from economic deprivation via maternal depression are significantly associated with more frequent harsh discipline. Unlike the previous findings described which have all been bivariate, these findings of Kiernan and Huerta's are from the main analysis, taking into account other factors which are controlled for⁸, and so these are not just raw patterns between deprivation and parenting, but patterns that persist after taking into account other related factors.

Finally, Dermott and Pomati (2015) analyse the importance of poverty, education and time for parenting practices, with parenting practices as the

⁸ The control variables included in the analysis are: ethnicity, birth order, family status, maternal age at first birth, maternal education and maternal working status.

main dependent variable, rather than a mediator between poverty and children's outcomes. In contrast to the previous studies described in this section, which all make use of the MCS, Dermott and Pomati use the Poverty and Social Exclusion Survey (PSE). Again unlike previous studies which focus on children aged up to five years, Dermott and Pomati's sample includes households with a parent and at least one child up to age sixteen. They included seven measures of parenting, related to educational activities, leisure activities and family mealtimes. They found that poverty, whether measured objectively (less than 60% median income) or subjectively (feeling poor) is not significantly related to parenting. There were two exceptions to this although these can be interpreted as positive differences: parents in income poverty were more likely to watch television with their child and more frequently eat evening meals with their child. They conclude that 'despite the frequently made association between poverty and a lack of appropriate parenting, there is no clear evidence for this relationship in our findings' (Ibid: 135). The findings from this last study are at odds with the majority of evidence on poverty and parenting. This may be because of the parenting measures used as well as different ages of the children included in the PSE sample compared with MCS sample, which is a cohort study including children of a similar age. Whilst studies using the MCS have more age-relevant measures of parenting, the PSE parenting measures are more general. The authors acknowledge also that the analysis is limited in including a narrow range of parenting practices and misses out other aspects of parenting such as discipline, routine and nutrition. Furthermore, similarly to the largely descriptive analysis from the MCS studies, Dermott and Pomati's analysis does not take into account other related factors.

Overall then most of the evidence on poverty and parenting comes from studies that examine parenting as a possible mechanism between poverty and children's outcomes and these studies find on the whole that experiencing poverty is associated with worse parenting. By contrast one

study, which includes older children in the sample, finds there is little difference in the parenting behaviours of parents experiencing poverty, though this analysis is limited to a few measures of educational activities, leisure activities and family meal times. Most of the existing evidence focuses on income poverty rather than analysing parenting across the income distribution⁹. In doing so it arguably reinforces the idea prevalent in political rhetoric that poor mothers are a deviant group that parent differently to other mothers, and potentially obscures differences in parenting further up the income distribution, perhaps also exaggerating differences between mothers in poverty and all other mothers. Additionally, the majority of these studies (all apart from Kiernan and Huerta, 2008) present estimates of the association between poverty and parenting based on bivariate analyses that do not take into account other relevant factors. Furthermore, whilst the evidence shows there are differences in parenting depending on experiences of income poverty, it is not clear how prevalent these differences are – whether most parents experiencing poverty are reporting parenting differently, or whether these differences are actually driven by an extreme minority of parents experiencing poverty. Finally, although many of the studies identify differences in parenting it is not clear how big these differences are, for example whether parents experiencing poverty are overrepresented in the categories which are second to the most frequent categories (for example report reading to their child ‘several times a week’ rather than ‘every day’), or are over-represented in the more extreme very infrequent categories (for example overrepresented in the ‘never’ categories). In other words are these differences reflecting parents in poverty parenting in ways we would consider to be insufficient or are these differences actually an artefact of the benchmark being pushed up by the most advantaged parents, as Dermott

⁹ There are two exceptions to this: Ermisch, 2008 measures income in four bands and Kiernan and Huerta measure hardship as a latent variable, based on income poverty housing tenure and financial difficulties.

and Pomati (2016) suggest. The analysis in this chapter addresses these considerations in building on the existing evidence on poverty and parenting. Additionally, a more comprehensive and transparent approach to measuring parenting is used, based on my conceptual framework of parenting.

I approach this analysis differently from previous research in a number of ways. Firstly, instead of comparing those in poverty with those not in poverty (usually measured as less than 60 per cent of median income) the analysis is based on income quintiles. This is for two reasons: firstly to allow for comparisons between parents with low incomes and parents with median incomes. This is important because poor parents are often represented as being deficient in their parenting compared with parents who are not poor (Taylor et al. 2000; Magnuson & Duncan, 2002: 104). Middle income parents are therefore the appropriate reference group when comparing parenting behaviours of low-income parents, as this is the implicit reference group in the dominant discourses. It may be the case for instance that low income parents parent differently to high income parents or the super-rich (who may have their own parenting differences compared with median income parents), but not compared with those on average incomes. This is a significant distinction because when comparisons are made between low-income parents and everyone else, including the rich, differences may be exaggerated.

The second reason for using income quintiles instead of poverty as a measure, is it enables an assessment of the association between income and parenting behaviours across the income distribution. This will identify whether any differences in parenting are because low-income parents are a distinct group that are uniquely different (again suggested in some discourses on low income parents), or whether any differences are part of a much broader pattern, of which the lowest income might do worst, but the median income parents still parent differently to those at the top.

Another key contribution of this analysis is that instead of using parenting measures in their original, mostly ordinal form (e.g. how often do you read to your child? With five categories ranging from 'not at all' to 'every day'), each measure is recoded into two binary variables, one isolating any differences in 'ideal' parenting (e.g. reading everyday) and one identifying behaviours considered to be poor or substandard (e.g. never reading to their child). A parent might, for instance read to their child three times a week, in which case they would not meet the criteria of ideal parenting but nor would this behaviour be considered a significant detriment to the child (though they are getting less reading experience than those read to every day). This is significant because the key issue of concern is not just do low income parents do less of the ideal or perfect parenting behaviours, but whether low income parents do not meet expected standards of parenting i.e. whether their parenting behaviours would actually give us cause for concern. Again the dominant discourse regarding low income parents is that their parenting is a cause of concern, yet previous research has not made this distinction.

A third contribution of my analysis is in examining the prevalence of any differences in parenting by income. If statistical differences are found in the parenting behaviours of low income parents compared with median income parents, would we expect the average child in the lowest income group to have a different experience of parenting to the average child in the median income group? Or is there an extreme minority within the low income group who parent differently? This is important to unpick; if the majority of low income parents parent differently the mechanisms explaining this relationship are likely to be different than if there is a minority of parents within the low income group who parent differently or 'badly'.

Finally, rather than focus on a general measure of parenting or one type of parenting this analysis will distinguish between different types of

parenting behaviours, in-line with the proposed conceptual framework outlined previously: (1) meeting children's physical needs; (2) the parent-child relationship; (3) discipline and routine; and (4) cognitive stimulation. This attempt to use more precise operationalisations of parenting behaviours will allow for any differences in the relationship with income by type of parenting behaviour to become clear. Parenting measures will first be analysed individually, to allow for a detailed understanding of the relationship between income and parenting behaviours. In the second part of this chapter the parenting measures will be combined into indices, in-line with the conceptual framework, in order to take into account the overall parenting experience of the child.

The analysis is in two parts. The first part explores in detail the bivariate relationship between income and parenting, before introducing possible confounding factors in the second part of the analysis. This is for two reasons. First, as the political rhetoric on poor parents suggests they parent differently, it is important to examine the evidence in relation to this, before attempting to unpick what other related factors may explain this relationship: do low income parents parent differently in the first place? Second, as much of the evidence on this subject comes from descriptive analysis from studies whose main focus is on low income and children's outcomes, examining the bivariate relationship between income and parenting allows for comparisons between this analysis and previous research.

5.1 Research Questions

This chapter addresses the following research questions:

1. Do parents in the lowest income group parent differently to parents in the median income group? And if so:
2. Are low income parents a distinct group behaving differently from all other income groups or is there a gradient in parenting behaviours across income quintiles?
3. Are low-income parents less likely to behave in ways that are considered to be 'ideal parenting' or are they more likely to be behaving in ways that are considered to be 'poor parenting' i.e. are they under/overrepresented in extreme categories?
4. Would we expect most children in the lowest income quintile to have different experiences of parenting to children in the median quintile or are these differences restricted to a minority of parents within the lowest quintile?
5. Do any differences remain once other explanatory factors are taken into account?

Questions one to four will be addressed in part one of this chapter, using bivariate analyses. Question five will be answered in part two, where potential explanatory factors will be taken into account.

Part One – Investigating the relationship between income and individual parenting behaviours

5.2 Data and methods

This chapter uses data from the third wave of the Millennium Cohort Study (MCS) when the children were aged around 5 years (see chapter 4 for justifications for choosing this wave). The sample was restricted to natural mothers of singleton births, who had non-missing data on all of the control variables (described in part 2) which reduced the sample size to 14, 376. Sample weights were used for all analysis, to adjust for the stratified cluster sample design used (more information about can be found in (Plewis, 2007a & 2007b)).

Variables used

There are 38 measures of parenting behaviours in wave three as well as one measure of how good a parent respondents think they are, all of which are included in the analysis presented here. Throughout the analysis these parenting measures are organised into groups relating to the four types of parenting behaviours outlined in the conceptual framework, namely parenting behaviours that relate to:

- Meeting children's physical needs;
- The parent-child relationship;
- Socialising children's behaviours through discipline and structure;
- Facilitating learning and cognitive stimulation.

Although I have argued previously in chapter three that a number of behaviours belong to two or more of these categories simultaneously, to save repetition of results each parenting behaviour is grouped into just one main domain of parenting.

The majority of the parenting measures are ordinal with five or more categories, which makes it difficult to analyse patterns by income and

answer the fourth research question (is it that low income parents are less likely to behave in ways that are considered to be 'ideal parenting' or are they more likely to be behaving in ways that are considered to be 'poor parenting'?), because there are many categories to make comparisons across. In order to resolve both of these problems all parenting measures were recoded into two sets of binary variables: one binary variable to capture ideal parenting, comparing the best categories to the rest, and one binary variable to capture what would be considered as 'poor' parenting compared to all other categories. Some might object to these categorisations of parenting as being inherently biased towards more typically middle class parenting (e.g. see Lareau's discussion of 'concerted cultivation', 2003). However, for the purpose of exploring differences in parenting behaviours it seems clear that doing more positive behaviours (such as reading to their child, playing games with their child) and less of the behaviours that are negative (such as smacking and shouting), can be evaluated as good or bad comparatively (though precisely where to draw the line is not always clear, as discussed further below). The analysis is also restricted by the data itself, which, whilst rich with many parenting measures, could be critiqued for mostly including measures which might be considered typically middle-class ideals of parenting.

Recoding variables

In order to decide where to draw the line for what counts as 'ideal' and 'poor' parenting the literature on parenting and children's outcomes was first surveyed. Despite evidence for the importance of many of the parenting behaviours measured in the dataset (see Appendix 2), evidence of specific cut offs for minimum requirements are not clear. With the absence of evidence-based guidelines, two approaches could have been taken for deciding where to draw the line for 'ideal' and 'poor' parenting: to create these cut-offs for 'ideal' and 'poor' parenting based on the sample distribution (taking a certain proportion from the top and bottom), or to

use the response categories for each variable (taking the top and bottom categories as representing 'ideal' and 'poor' parenting). The problem with taking a distribution-based approach is that many measures are skewed towards the ideal end of parenting behaviours, often with more than 50% of the sample represented in the top category. Taking a category-based approach was also not straightforward however, as for the same reason the lowest categories often included less than 1% of the sample; this would make comparisons of 'poor' parenting less meaningful if categories were constructed that applied to almost none of the respondents. This approach also would have placed undue emphasis on the scales constructed for each question, with little information available as to what these scales are based on. As neither approach was ideal I used a combination of both approaches: behaviours were categorised as 'ideal' by taking the top categories that included the top 5% of the sample (as mentioned this was often more than 5%, so in most cases amounted to taking the top category). Behaviours were categorised as 'poor' by taking the bottom categories that included the bottom 5% of the sample (this often meant taking the bottom two or three categories because of the skew in frequency categories reported). This allowed for a consistent approach to recoding the measures and minimised the subjectivity of the process. A number of minor exceptions were made to this rule. Firstly, the measures of trips outside of the home were already binary variables so it was not possible to categorise these as ideal and poor. These measures were taken to be akin to the ideal binary variables as trips out are considered to be positive for children. In addition:

- For the 'poor' measure of portions of fruit just under 5% was used as cut-off as next category would have meant taking 22%.
- For the 'poor' measure of smacking this includes the bottom 11% because if only the two lowest categories are taken that would only be 1.6% of the sample. Also this measure is particularly likely to be

underreported so it is better to include a greater proportion of the lower categories.

- For the 'poor' measure of help with reading at home this includes only 2.3% of the sample. But to include the next category 'once or twice a week' would have been less meaningful as a distinction.
- For the 'ideal' measure of visits to the library this measure includes the top 3 categories as the top one and two are less than 2% of the sample in each. With the top three categories this category includes 9% of the sample.
- The measure of attending parents' evening does not include the whole sample – only those for which there has been a parents evening they could have gone to by the time of the interview.
- For the measures of playing on the computer the 'ideal' measure includes 77% of the sample because it was not clear that never playing on the computer is ideal and the 'poor' measure includes the bottom categories with the bottom 3% only. This is because to include the next category up would include the bottom 24% and be less meaningful in terms of the categories, as it would include from 1 hour only.
- For the 'poor' measure of confidence in parenting the cut-off is at 3.8% otherwise to include the next category up would have included 36% more. Also the distinction would not have been meaningful in terms of the categories.

A couple of points are worth observing about this analysis: because this approach to recoding is based on the assumption that a higher frequency of good parenting behaviours is always better (and a lower frequency of good behaviours is worse), this has meant that often extreme categories are counted as ideal. However, it is questionable whether the highest category is necessarily ideal. For example, watching television never or less than an hour a day might be considered less than optimal and moderate amounts of television may be stimulating. Similarly taking part in musical activities

every day might be considered a nice thing to do, but is not necessarily ideal. Nevertheless, I persist with using these categories as ideal, as they represent the top end of the spectrum in terms of parental input.

A second point to note is that analysing the parenting measures individually, although useful in having a detailed understanding of differences between parents in different income groups, is of limited utility in understanding the overall experience of the child. Whilst some behaviours are clearly important themselves, such as having breakfast every day, other behaviours may be substitutive. For instance, a parent may rarely do painting or drawing with their child but may do lots of other creative games and activities. This will be taken into account in part two where the individual parenting measures are combined into indices.

Issues with measurement

In terms of the measures available in the survey there are some issues to note. The measures of discipline are all phrased 'How often do you do the following when [your child] is naughty', to which the five possible responses range from 'daily', to 'never'. The problem with measuring discipline behaviours in this way is that the measure of the frequency of particular discipline behaviours is inextricably linked to the frequency of naughtiness of the child. It does not necessarily represent clear preferences for types of discipline strategies, or even which types of discipline are mainly used over others; a respondent might use a discipline behaviour that is deemed to be positive (such as reasoning) or negative (such as smacking) 'daily' because the child is naughty daily. Similarly because these measures mean it is not possible to separate out regularity of discipline techniques used from how frequently the child is naughty, it might be that respondents rarely use certain types of discipline behaviours deemed as ideal, simply because their child is not often naughty. There are measures of the child's behaviour included in the survey so these could be controlled for, but it would be difficult to separate out the direction of

causality – i.e. a child might also be naughty more often because of a particular discipline technique used. Furthermore the measures of the child's behaviour are based on self-report of the parent – parents that discipline their children regularly are likely to perceive their children as regularly naughty. An alternative approach to factoring out the behaviour of the child is to measure discipline behaviours used as a proportion of overall discipline behaviours which would identify which types of discipline strategies are used most of the time, regardless of how frequently they are used overall. This measure is created in part two as part of the sensitivity analysis for these measures, discussed later.

Another reason it is not clear that using a positive discipline technique less often is negative is that there may be other positive discipline techniques being used instead e.g. if never sending child to naughty chair, the respondent still might be doing other positive discipline practices such as reasoning or taking away treats. Perhaps this makes a case for combining the measures and using them as part of the scale they are based on (Strauss' Conflict Tactics Scale), although this would mask differences between income groups for particular behaviours. In addition, the scale is designed to capture physical and psychological maltreatment of children, rather than discipline more widely.

One last point to note about the discipline measures is that for some measures it is ambiguous whether it might be considered positive or negative, for example ignoring the child when naughty could be interpreted as not rewarding naughty behaviour with attention, or it could be interpreted as a lack of discipline practices altogether (Jones and Smith, 2008). Measures have been interpreted differently in other research, for example telling the child off when naughty is interpreted here as fitting with an authoritative approach to discipline which is positive, but has been interpreted as a negative behaviour elsewhere (Kiernan and Huerta, 2008).

Finally, an important limitation of the data overall and parenting measures used is that they are based on self-report from the parents themselves. Inevitably social desirability bias (Krumpal, 2013) will mean that certain behaviours, such as smacking, will be underreported and others, such as portions of fruit consumed, will be over-reported. Furthermore, it is middle-class parents that tend to be more familiar with expert advice on parenting (Lareau, 2003: 248), and therefore may be more susceptible to social desirability bias. Some of the more sensitive questions were answered anonymously using the self-completion questionnaire which should reduce this problem. However, these are still not direct measures of parenting behaviours but are reflections from parents themselves on their own behaviours. Furthermore, selective non-response to the self-completion (for example for those who need an interpreter), may affect the distribution of these measures also.

Table 3 Recoding of parenting measures in MCS wave 3 into 'ideal' and 'poor' binary parenting measures

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
PHYSICAL NEEDS									
Days a week the child has breakfast				Child has breakfast every day			Child has breakfast 4 x a week or less		
none	146	1.0	1.02	No	1,201	7.7%	No	13,533	95.2%
one	41	0.3	1.31	Yes	13,122	92.3%	Yes	790	4.8%
two	174	1.2	2.52						
three	209	1.5	3.98	Total	14,323	100	Total	14,323	100
four	220	1.5	5.52						
five	278	1.9	7.46						
six	133	0.9	8.39						
seven	13,122	91.6	100.00						
Total	14,323	100.0							
Portions of fruit per day				Has 3+ portions of fruit per day			Has no portions of fruit per day		
none	630	4.4	4.40	No	7,174	47.3%	No	13,689	95.8%
one	2,512	17.5	21.94	Yes	7,145	52.7%	Yes	630	4.2%
two	4,032	28.2	50.10						
three +	7,145	49.9	100.00	Total	14,319	100	Total	14,319	100
Total	14,319	100.0							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
How often take to park				Takes child to park several times a week+			Takes child to park less than once a month		
not at all	472	3.3	3.29	No	11,630	82.1%	No	12,688	88.7%
less often	1,166	8.1	11.43	Yes	2,696	17.9%	Yes	1,638	11.3%
once or twice a month	3,751	26.2	37.62						
once or twice a week	6,241	43.6	81.18	Total	14,326	100	Total	14,326	100
several times a week	2,201	15.4	96.54						
every day	495	3.5	100.00						
Total	14,326	100.0							
How often goes to sports club				Goes to sports club 3+ days a week			Goes to sports club less than once a week		
less often/ not at all	6,933	48.4	48.36	No	12,970	90.3%	No	7,402	53.9%
once a week	3,855	26.9	75.26	Yes	1,365	9.7%	Yes	6,933	46.2%
2 days a week	2,182	15.2	90.48						
3 days a week	981	6.8	97.32	Total	14,335	100	Total	14,335	100
4 days a week	256	1.8	99.11						
5+ days a week	128	0.9	100						
Total	14,335	100.0							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
how often parents do physical activities with child				Parent does physical activities with child every day			Parent does physical activity with child less than once a year		
less often or never	1,676	11.7	11.69	No	12,637	88.5%	No	12,658	88.9%
at least once a year	200	1.4	13.09	Yes	1,697	11.5%	Yes	1,676	11.1%
every few months	686	4.8	17.87						
at least once a month	1,984	13.8	31.71	Total	14,334	100	Total	14,334	100
once or twice a week	5,616	39.2	70.89						
several times a week	2,475	17.3	88.16						
every day/almost every day	1,697	11.8	100.00						
Total	14,334	100.0							
How often mother plays physically active games with child				Mother plays physically active games with child every day			Mother never plays physically active games with child		
not at all	1,323	9.2	9.23	No	13,374	93.9%	No	13,007	91.5%
less often	1,974	13.8	23.01	Yes	956	6.1%	Yes	1,323	8.5%
once or twice a month	2,473	17.3	40.27						
once or twice a week	5,079	35.4	75.71	Total	14,330	100	Total	14,330	100
several times a week	2,525	17.6	93.33						
every day	956	6.7	100.00						
Total	14,330	100.0							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
EMOTIONAL NEEDS									
How close to child				Mother feels extremely close to child			Mother feels fairly or not very close to child		
not very close	26	0.19	0.2	No	4,052	29.8%	No	13,116	96.6%
fairly close	443	3.26	3.5	Yes	9,533	70.2%	Yes	469	3.4%
very close	3,583	26.37	29.8						
extremely close	9,533	70.17	100.0	Total	13,585	100	Total	13,585	100
Total	13,585	100.00							
DISCIPLINE AND ROUTINE									
how often...									
Reasons with child				Reasons with child daily			Reasons with child rarely/never		
never	322	2.39	2.39	No	10,814	80.1%	No	12,073	90.2%
rarely	1,106	8.19	10.58	Yes	2,687	19.9%	Yes	1,428	9.8%
sometimes	3,395	25.15	35.72						
often	5,991	44.37	80.1	Total	13,501	100	Total	13,501	100
daily	2,687	19.9	100						
Total	13,501	100							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent	
Sends child to bedroom										
never	1,599	11.79	11.79	No	10,143	74.3%	Sends child to bedroom never	No	11,967	89.1%
rarely	3,283	24.2	35.99	Yes	3,423	25.7%		Yes	1,599	10.9%
sometimes	5,261	38.78	74.77							
often	3,088	22.76	97.53	Total	13,566	100		Total	13,566	100
daily	335	2.47	100							
Total	13,566	100								
Takes away treats										
never	1,292	9.56	9.56	No	10,712	79.3%	Takes treats away never	No	12,219	90.8%
rarely	3,508	25.96	35.53	Yes	2,799	20.7%		Yes	1,292	9.2%
sometimes	5,912	43.76	79.28							
often	2,616	19.36	98.65	Total	13,511	100		Total	13,511	100
daily	183	1.35	100							
Total	13,511	100								

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
Tells child off				Tells child off daily			Tells child off rarely/never		
never	104	0.77	0.77	No	11,901	88.1%	No	11,937	88.6%
rarely	1,508	11.13	11.9	Yes	1,648	11.9%	Yes	1,612	11.4%
sometimes	4,154	30.66	42.56						
often	6,135	45.28	87.84	Total	13,549	100	Total	13,549	100
daily	1,648	12.16	100						
Total	13,549	100							
Makes sure obeys instructions				Makes sure child obeys all the time			Makes sure child obeys less than half the time		
never/almost never	235	1.7	1.74	No	6,308	46.7%	No	12,544	93.3%
less than half the time	690	5.1	6.87	Yes	7,161	53.3%	Yes	925	6.7%
about half the time	1,321	9.8	16.68						
more than half the time	4,062	30.2	46.83	Total	13,469	100	Total	13,469	100
all the time	7,161	53.2	100.00						
Total	13,469	100.0							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
Smacks child				Never smacks child			Smacks child often /daily		
never	6,037	44.61	44.61	No	7,496	55.0%	No	11,911	88.7%
rarely	5,874	43.41	88.01	Yes	6,037	45.0%	Yes	1,622	11.3%
sometimes	1,408	10.4	98.42						
often	198	1.46	99.88	Total	13,533	100	Total	13,533	100
daily	16	0.12	100						
Total	13,533	100							
Shouts at child				Never/rarely shouts at child			Shouts at child daily		
never	408	3.01	3.01	No	9,735	72.3%	No	12,816	94.8%
rarely	3,411	25.17	28.18	Yes	3,819	27.7%	Yes	738	5.2%
sometimes	4,881	36.01	64.19						
often	4,116	30.37	94.56	Total	13,554	100	Total	13,554	100
daily	738	5.44	100						
Total	13,554	100							
Bribes child				Never bribes child			Bribes child often/ daily		
never	5,093	37.61	37.61	No	8,449	63.0%	No	12,173	89.8%
rarely	4,023	29.71	67.32	Yes	5,093	37.0%	Yes	1,369	10.2%
sometimes	3,057	22.57	89.89						
often	1,160	8.57	98.46	Total	13,542	100	Total	13,542	100
daily	209	1.54	100						
Total	13,542	100							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
Ignores child never rarely sometimes often daily Total	 2,784 3,876 4,249 2,140 392 13,441	 20.71 28.84 31.61 15.92 2.92 100	 20.71 49.55 81.16 97.08 100 100	Never ignores child No Yes Total	 10,657 2,784 13,441	 80.2% 19.9% 100	Ignores child often/daily No Yes Total	 10,909 2,532 13,441	 80.9% 19.1% 100
Regular meal times never/almost never sometimes usually always Total	 399 718 4,642 8,574 14,333	 2.8 5.0 32.4 59.8 100.0	 2.78 7.79 40.18 100 100	Always has regular meal times No Yes Total	 5,759 8,574 14,333	 40.0% 60.0% 100	Sometimes/never has regular meal times No Yes Total	 13,216 1,117 14,333	 93.0% 7.0% 100
Regular bed times never/almost never sometimes usually always Total	 725 805 3,946 8,859 14,335	 5.1 5.6 27.5 61.8 100.0	 5.06 10.67 38.2 100 100	Always has regular bed times No Yes Total	 5,476 8,859 14,335	 36.8% 63.2% 100	Never has regular bed time No Yes Total	 13,610 725 14,335	 95.2% 4.8% 100

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
COGNITIVE STIMULATION									
Trips out in the last year = already binary									
Cinema									
No	4,175	29.1	29.12						
Yes	10,162	70.9	100.00						
Total	14,337	100.0							
theme park/funfair									
No	4,573	31.9	31.90						
Yes	9,764	68.1	100.00						
Total	14,337	100.0							
gallery/museum									
No	7,729	53.9	53.91						
Yes	6,608	46.1	100.00						
Total	14,337	100.0							
play/panto/circus									
No	4,420	30.8	30.83						
Yes	9,917	69.2	100.00						
Total	14,337	100.0							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
zoo/farm									
No	2,789	19.5	19.45						
Yes	11,548	80.6	100.00						
Total	14,337	100.0							
sport event									
No	12,069	84.2	84.18						
Yes	2,268	15.8	100.00						
Total	14,337	100.0							
How often...									
Mother reads to child				Mother reads to child every day			Mother reads to child once/twice a month or less		
not at all	224	1.6	1.56	No	6,975	48.4%	No	13,524	94.9%
less often	220	1.5	3.10	Yes	7,358	51.6%	Yes	809	5.1%
once or twice a month	365	2.6	5.64						
once or twice a week	2,098	14.6	20.28	Total	14,333	100	Total	14,333	100
several times a week	4,068	28.4	48.66						
every day	7,358	51.3	100.00						
Total	14,333	100.0							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
Mother tells stories to child				Mother tells child stories every day			Mother never tells child stories		
not at all	1,719	12.0	12.00	No	12,432	88.1%	No	12,610	87.5%
less often	2,251	15.7	27.71	Yes	1,897	11.9%	Yes	1,719	12.5%
once or twice a month	2,252	15.7	43.42						
once or twice a week	3,604	25.2	68.57	Total	14,329	100	Total	14,329	100
several times a week	2,606	18.2	86.76						
every day	1,897	13.2	100.00						
Total	14,329	100.0							
Mother does musical activities with child				Mother does musical activities with child every day			Mother does musical activities with child less than once a month or not at all		
not at all	418	2.9	2.92	No	8,957	62.7%	No	13,355	93.9%
less often	558	3.9	6.81	Yes	5,374	37.3%	Yes	976	6.2%
once or twice a month	961	6.7	13.52						
once or twice a week	2,976	20.8	34.28	Total	14,331	100	Total	14,331	100
several times a week	4,044	28.2	62.50						
every day	5,374	37.5	100.00						
Total	14,331	100.0							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off			'Poor' category cut off		
				Frequency	Weighted percent	Frequency	Weighted percent	Frequency	Weighted percent
Mother draws or paints with child				Mother draws/paints with child every day			Mother never paints/draws with child		
not at all	589	4.1	4.11	No	13,065	91.9%	No	13,744	96.3%
less often	1,226	8.6	12.66	Yes	1,268	8.1%	Yes	589	3.7%
once or twice a month	2,986	20.8	33.50						
once or twice a week	5,285	36.9	70.37	Total	14,333	100	Total	14,333	100
several times a week	2,979	20.8	91.15						
every day	1,268	8.9	100.00						
Total	14,333	100.0							
Plays indoor games with child				Plays indoor games with child every day			Plays indoor games with child less than once a month/never		
not at all	370	2.6	2.58	No	11,167	78.2%	No	13,320	93.3%
less often	640	4.5	7.05	Yes	3,163	21.8%	Yes	1,010	6.7%
once or twice a month	1,230	8.6	15.63						
once or twice a week	4,494	31.4	46.99	Total	14,330	100	Total	14,330	100
several times a week	4,433	30.9	77.93						
every day	3,163	22.1	100.00						
Total	14,330	100.0							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
Family does activity together				Family does activity together every day/almost			Family does activity together once a month/ less		
less often or never	171	1.19	1.2	No	7,820	55.2%	No	13,693	95.5%
at least once a year	16	0.11	1.3	Yes	6,514	44.8%	Yes	641	4.5%
every few months	98	0.68	2.0						
at least once a month	356	2.48	4.5	Total	14,334	100	Total	14,334	100
once or twice a week	3,076	21.46	25.9						
several times a week	4,103	28.62	54.6						
every day/ almost									
every day	6,514	45.44	100.0						
Total	14,334	100.00							
Child spends time with friends				Child spends time with friends every day/almost			Child never spends time with friends		
not at all	1,730	12.07	12.1	No	12,205	87.9%	No	12,600	89.0%
less often	1,383	9.65	21.7	Yes	2,125	12.1%	Yes	1,730	11.0%
once or twice a month	2,388	16.66	38.4						
once or twice a week	4,410	30.77	69.2	Total	14,330	100	Total	14,330	100
several times a week	2,294	16.01	85.2						
day or almost every day	2,125	14.83	100.0						
Total	14,330	100.00							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
Someone at home helps with reading							Someone at home helps with reading once/twice a month or less		
not at all	338	2.4	2.39	No	5,854	41.5%	No	13,740	97.7%
less often	20	0.1	2.53	Yes	8,304	58.5%	Yes	418	2.3%
once or twice a month	60	0.4	2.95						
once or twice a week	1,446	10.2	13.17	Total	14,158	100	Total	14,158	100
several times a week	3,990	28.2	41.35						
every day	8,304	58.7	100.00						
Total	14,158	100.0							
Someone at home helps with writing							Child receives no help at home with writing		
not at all	1,279	9.0	9.03	No	9,840	73.2%	No	12,878	91.3%
less often	158	1.1	10.15	Yes	4,317	26.8%	Yes	1,279	8.8%
once or twice a month	286	2.0	12.17						
once or twice a week	3,239	22.9	35.05	Total	14,157	100	Total	14,157	100
several times a week	4,878	34.5	69.51						
every day	4,317	30.5	100.00						
Total	14,157	100.0							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent		
Someone at home helps with maths											
not at all	1,021	7.2	7.21	No	9,363	68.9%	Child receives no help at home with maths	No	13,139	93.4%	
less often	143	1.0	8.22	Yes	4,797	31.1%	Yes	1,021	6.7%		
once or twice a month	300	2.1	10.34								
once or twice a week	2,935	20.7	31.07	Total	14,160	100	Total	14,160	100		
several times a week	4,964	35.1	66.12								
every day	4,797	33.9	100.00								
Total	14,160	100.0									
Child has visited library in the last year											
less often or never	5,293	36.9	36.92	Child visits library once/twice a week or more	No	12,985	91.0%	Child visits library less than once a year/never	No	9,043	64.5%
at least once a year	1,232	8.6	45.51		Yes	1,351	9.0%	Yes	5,293	35.5%	
every few months	2,898	20.2	65.73								
at least once a month	3,562	24.9	90.58	Total	14,336	100	Total	14,336	100		
once or twice a week	1,232	8.6	99.17								
several times a week	101	0.7	99.87								
every day/almost every day	18	0.1	100.00								
Total	14,336	100.0									

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
Whether someone at home has been to parents evening									
No	884	6.24	6.2						
Yes	12,286	7.03	13.3						
		86.73	100.0						
Total	13,170								
		100.00							
Hours a day child watches TV				Child watches TV for less than an hour a day			Child watches TV for 5+ hours a day		
7+ hours	429	2.99	2.99	No	11,322	78.8%	No	13,591	94.8%
5 - 7 hours	311	2.17	5.16	Yes	3,009	21.2%	Yes	740	5.2%
3 - 5 hours	1,442	10.06	15.23						
1 - 3 hours	9,140	63.78	79	Total	14,331	100	Total	14,331	100
< 1 hour	2,738	19.11	98.11						
none	271	1.89	100						
Total	14,331	100							

Variable	Frequency	Percent	Cumulative percent	'Ideal' category cut off	Frequency	Weighted percent	'Poor' category cut off	Frequency	Weighted percent
Hours a day child plays on computer				Plays on computer for less than an hour a day			Plays on computer for 3 hours or more a day		
7+ hours	98	0.68	0.68	No	3,415	22.7%	No	13,896	97.1%
5 - 7 hours	78	0.54	1.23	Yes	10,915	77.3%	Yes	434	2.9%
3 - 5 hours	258	1.8	3.03						
1 - 3 hours	2,981	20.8	23.83	Total	14,330	100	Total	14,330	100
< 1 hour	6,284	43.85	67.68						
none	4,631	32.32	100						
Total	14,330	100							
Confidence in parenting not very good at being a parent has some trouble being a parent an average parent a better than average parent a very good parent				Feels they are a very good parent			Feels they are not v good or has some trouble		
	61	0.45	0.5	No	9,088	68.7%	No	13,038	96.2%
	424	3.14	3.6	Yes	4,435	31.3%	Yes	485	3.8%
	4,889	36.15	39.7						
	3,714	27.46	67.2	Total	13,523	100	Total	13,523	100
	4,435	32.80	100.0						
Total	13,523	100.00							

Methods

I estimated logistic regression models to assess the relationship between income quintile and each of the 72 binary variables of parenting behaviours.¹⁰ This was a bivariate analysis, to examine the unadjusted associations between income quintile and parenting behaviours.

The income measure used is available as a derived variable in the MCS dataset and is based on the single income banded question rather than the multiple detailed questions about different income sources (Hansen, 2014). Respondents were asked to select from 18 bands, implicitly including state benefits, which had been referred to in previous income questions, although housing benefit and council tax benefit may not have been included in the estimate (Ibid). Different sized bands were included for lone and couple families; using a modified OECD scale the income measure was equivalised in order to account for the different numbers of adults and children in the families (Ketende and Joshi, 2008). For cases where income data were missing (1,629 cases in wave 3 of the MCS), these were imputed (Hansen, 2014: 84).

There are a number of limitations to this income measure that ought to be acknowledged. Because it uses the single banded income question only, it provides a rough approximation but not the actual amount of respondents' income. Using single measures of income, rather than making use of a variety of income measures has been found to give less accurate estimates; respondents tend to select the income band below which their income actually falls (Hansen and Kneale, 2013). The income measure in the MCS has been found to not match up well with the Households Below Average Income (HBAI) statistics (Ketende and Joshi, 2008), a survey with much more detailed income questions, which gives more reason to question the

¹⁰ There are 72 binary variables rather than 76 (which would be exactly double the number of original variables), because some of the measures, such as trips out were already binary.

accuracy of the MCS derived income variable. Nevertheless, the income measure has been found to behave as expected in terms of the relative differences in income between different groups and countries in the UK (Ketende and Joshi, 2008).

5.3 Descriptive results

1) Do parents in the lowest income group parent differently to parents in the median income group?

Taking the overall results, in terms of the main question 'Do parents in the lowest income group parent differently to the median income parents?', the answer is yes – there is a significant difference between the lowest quintile and the median for most of the parenting measures (see Appendix 5 for bar charts comparing proportions of parents reporting ideal and poor parenting behaviours in the lowest and median quintile and Appendix 6 for a summary table of all results).

Only 10 out of 72 measures showed no significant difference in probability (at the 5 per cent level) between the lowest quintile and the median quintile. These are shaded out in the bar charts in Appendix 5 and shown in Table 4 below.

Table 4 Parenting measures from MCS wave 3 that are not significantly different between the lowest and median income quintile group

Type of parenting measure	Description of variable	Ideal or poor
Physical needs	Main plays sports/physically active games with child every day	Ideal
Discipline	Never ignores child when naughty ¹¹	Ideal
Discipline	Reasons with child daily when naughty	Ideal
Discipline	Smacks child sometimes, often or daily when naughty	Poor
Discipline	Never sends child to bedroom/naughty chair when naughty	Poor
Discipline	Often or daily bribes child when naughty	Poor
Cognitive stimulation	Watches TV for less than an hour each day or never	Ideal
Cognitive stimulation	Main tells child stories every day	Ideal
Cognitive stimulation	Family does indoor activities together around once a month or less	Poor
Cognitive stimulation	Watches TV for five hours or more each day	Poor

Measures for which low income parents are doing better than parents on median incomes

There are 17 measures of parenting where mothers in the lowest income group report doing better than mothers in the median income group (including 9 measures for which parents in the lowest quintile are uniquely different as mentioned below). Respondents in the lowest quintile had a significantly greater probability of doing the behaviours summarised in Table 5.

¹¹ This is marginally significant at 10%.

Table 5 Parenting measures from MCS wave 3 for which parents in the lowest income quintile are doing better than parents in the median quintile

Type of parenting	Parenting behaviour	Overrepresented in poor category also?
Physical needs	Main takes child to playground/park several times a week or more	Yes
Physical needs	Main or partner does sport/exercise with child everyday	Yes
Discipline	Never smacks child when naughty	No
Discipline	Never or rarely shouts at child when naughty	Yes
Discipline	Often/daily sends child to bedroom when naughty	No
Discipline	Often/daily takes away treats when naughty	Yes
Discipline	Never bribes child when naughty	No
Discipline	Tells child off daily when naughty	Yes
Cognitive stimulation	Family does indoor activities together every day or almost every day	No
Cognitive stimulation	Child sees friends every day or almost every day	Yes
Cognitive stimulation	Main does musical activities with child every day	Yes
Cognitive stimulation	Main paints/draws with child every day	Yes
Cognitive stimulation	Main plays with toys/games with child every day	Yes
Cognitive stimulation	Someone at home helps child with writing every day*	Yes
Cognitive stimulation	Someone at home helps child with maths every day	Yes
Cognitive stimulation	Child visits library once/twice a week or more	Yes
Confidence in parenting	Feels they are a very good parent	Yes

These are all measures of ideal parenting behaviours, so for these behaviours mothers in the lowest quintile have a greater probability of doing the ideal parenting behaviour. For the majority of these measures (13

of the 17) mothers in the lowest income quintile have a greater probability than the median of doing both the ideal and 'poor' type of parenting behaviour, i.e. they are overrepresented in both extreme categories, as the final column of Table 5 shows.

For the remaining four measures the related binary measure of poor parenting is not significant i.e. parents in the lowest quintile are significantly more likely to behave in the ideal way for these behaviours and not significantly different from the median quintile in the probability of behaving in the negative ways for these measures.

In terms of the four types of parenting behaviours (physical needs, emotional needs, discipline and cognitive stimulation) the measures where parents in the lowest income group are doing better are mainly related to discipline and activities with the child that are cognitively stimulating. The discipline measures seem to go against the existing (US) literature (McLoyd, 1990; Magnuson & Duncan, 2002, Lareau, 2003) and should be treated with some caution, especially given the concerns with the discipline measures that were discussed above. In terms of the higher probability of doing certain cognitively stimulating activities, this may be related to having more time with the child. It may be therefore that this is showing differences in time spent working. It could also reflect differences in how the time of the child is spent. For example, doing more activities with the child in the home rather than organised activities outside of the home.

For over half of the parenting measures there were significant negative differences between mothers in the lowest and median income quintiles; this was the case for 45 of the 72 binary parenting measures as can be seen from Table 6. The rows that are highlighted show the parenting measures for which mothers in the lowest income group are also overrepresented in the 'ideal' categories, compared with mothers in the median income group. The majority of the negative differences (27 of the 45) are for low income parents being overrepresented in the 'poor' categories of parenting.

Table 6 Negative differences in parenting between mothers in the lowest and median income quintile in MCS wave 3

Parenting domain	Ideal or poor	Parenting measure	Gradient?	% from lowest	% from median
Physical needs	Ideal	child has breakfast every day	yes	87	93
Physical needs	Ideal	child has three or more portions of fruit a day	yes	38	53
Physical needs	Ideal	child goes to sports club/class twice a week or more	yes	4	8
Physical needs	Poor	child has breakfast 3 times a week or less	yes	9	4
Physical needs	Poor	child has no portions of fruit a day	yes	6	4
Physical needs	Poor	main never plays sports or physically active games with child	yes	15	7
Physical needs	Poor	main/partner does sport/exercise with child less than once a year or never	yes	21	9
Physical needs	Poor	child goes to sports club/class less than once a week or not at all	yes	71	46
Physical needs	Poor	main takes child to park/playground less than once a month or never	yes	15	10
Emotional needs	Ideal	feels extremely close to child	yes	65	70
Emotional needs	Poor	feels fairly or not very close	no	6	3
Discipline	Ideal	child always has regular bedtime (term-time)	no	59	64
Discipline	Ideal	child always has meals at regular times	no	56	61
Discipline	Ideal	makes sure child obeys instructions all of the time	no	47	54
Discipline	Poor	child never has meals at regular times	yes	13	6
Discipline	Poor	child never has regular bedtime (term-time)	yes	8	5
Discipline	Poor	never ignores child when naughty	yes	21	19
Discipline	Poor	shouts at child often or daily when naughty	yes	7	5
Discipline	Poor	never takes away treats when naughty	no	12	9
Discipline	Poor	rarely or never tells child off when naughty	yes	18	11

Parenting domain	Ideal or poor	Parenting measure	Gradient?	% from lowest	% from median
Discipline	Poor	rarely or never reasons with child when naughty	yes	16	8
Discipline	Poor	makes sure child obeys instructions less than half the time or never	no	11	5
Confidence	Poor	not very good or person who has some trouble being a parent	no	6	3
Cognitive stimulation	Poor	plays on computer for three hours or more	yes	5	2
Cognitive stimulation	Poor	main reads to child once or twice a month or less	yes	8	5
Cognitive stimulation	Poor	main never tells child stories	no	17	12
Cognitive stimulation	Poor	main does musical activities with child not at all or less than once a month	no	10	5
Cognitive stimulation	Poor	main never paints/draws with child	yes	7	3
Cognitive stimulation	Poor	main plays toys/games with child less than once a month or never	yes	12	6
Cognitive stimulation	Poor	someone at home helps child with reading once/twice a month or less	yes	4	2
Cognitive stimulation	Poor	someone at home helps child with writing once/twice a month or less	no	12	8
Cognitive stimulation	Poor	someone at home helps child with maths once/twice a month or less	yes	9	7
Cognitive stimulation	Poor	child visits library less than once a year or never	yes	48	36
Cognitive stimulation	Poor	child never spends time with friends outside school	yes	20	11
Cognitive stimulation	Ideal	plays on computer for less than an hour or never	yes	70	78
Cognitive stimulation	Ideal	main reads to child every day	yes	44	51
Cognitive stimulation	Ideal	someone at home helps child with reading everyday	no	53	60
Cognitive stimulation	Ideal	someone at home has been to a parents evening this school year	yes	89	95
Cognitive stimulation	Trips out	whether visited any places listed	yes	93	99

Parenting domain	Ideal or poor	Parenting measure	Gradient?	% from lowest	% from median
Cognitive stimulation	Trips out	whether been to play/panto/concert/circus past 12 months	yes	50	72
Cognitive stimulation	Trips out	whether been to gallery/museum/historical site in past year	yes	28	46
Cognitive stimulation	Trips out	whether been to zoo/aquarium/wildlife reserve or farm in past year	yes	68	86
Cognitive stimulation	Trips out	whether been to theme park/funfair in past year	yes	60	70
Cognitive stimulation	Trips out	whether been to cinema in past year	yes	53	75
Cognitive stimulation	Trips out	whether been to professional sporting event as spectator in past year	yes	10	16

Note: highlighted rows identify parenting measures for where mothers in the lowest income group are overrepresented in both the poor and ideal categories.

2) Are low income parents a unique group behaving differently from all other income groups or is there a gradient in parenting behaviours across income quintiles?

Of the 45 parenting measures where there are negative differences the majority of these (34) differences between mothers in the lowest and median income quintile are part of a wider gradient across all income groups.¹² That is to say that for the 'poor' categories of parenting behaviours the probability of doing these decreases with an increase in income and for the 'ideal' parenting behaviours the probability of doing these behaviours increases with income and for most of.

Although not shown in Table 6 which only presents negative differences, there are a further 7 measures of parenting where there is a gradient across all income groups, although the relationship is in the opposite direction to

¹² I have described the pattern as a gradient when at least one quintile below the median and one quintile above the median is significantly different from the median quintile in opposite directions.

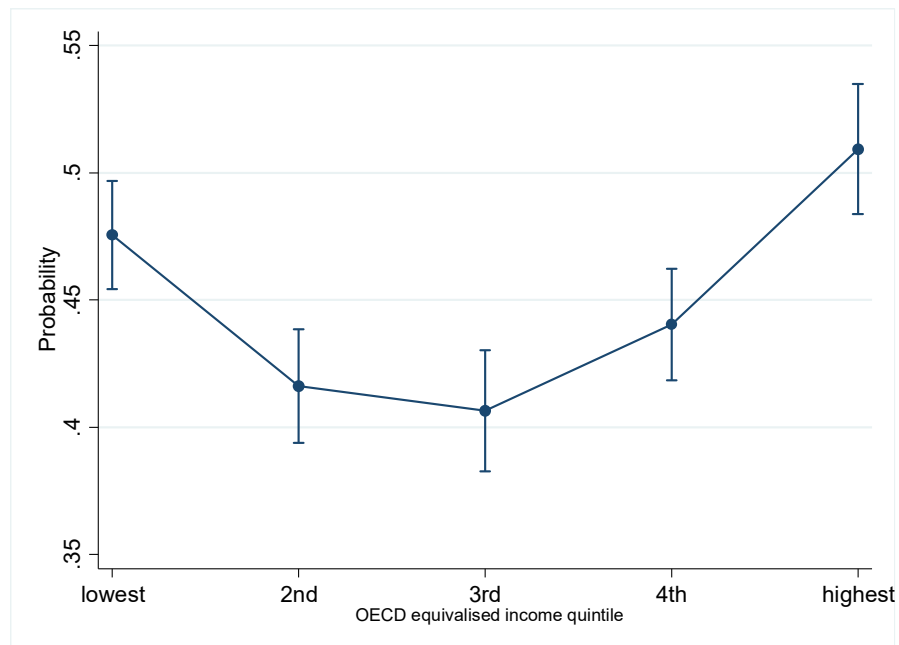
that expected: lower income groups are overrepresented in the 'ideal' categories of parenting compared with higher income groups. This is the case for the following measures:

- main/partner does sport/exercise with child once a week or more
- sends child to bedroom/naughty chair often or daily when naughty
- often or daily takes away treats when naughty
- never bribes child when naughty
- someone at home helps child with writing every day
- someone at home helps child with maths everyday
- child spends time with friends outside school once a week or more

Therefore, in total there is a gradient in parenting found for 41 of the parenting measures.

For one measure of parenting the pattern is not part of a gradient or unique to low income parents: 'never smacks child when naughty' has a U-shaped association with income. For this measure, parents in both the highest and lowest quintile are more likely to report that they never smack their child, compared with parents in the median quintile.

Figure 6 Probability of reporting 'never' smacking their child by income quintile



Only 11 of the 45 negative differences are differences that are unique to parents in the lowest income quintile; this is the case for how close the mother feels to the child, routine meal and bed times, making sure the child obeys instructions, taking away treats when naughty, how often the mother tells stories and does musical activities with the child, how frequently anyone at home helps the child with reading and writing, and confidence in their parenting. In terms of the four parenting domains all of these negative differences that are unique to low income parents relate to discipline and routine, cognitive stimulation and the parent-child relationship.

As can be seen from Table 7 there are 20 measures in total for which differences in parenting are unique to the lowest income quintile or two lowest income quintiles. For these measures there does seem to be something specific to having incomes below the median quintile that

relates to parenting behaviours, although for 9 of the 20 measures the association between income quintile and parenting measures is not in the direction expected; mothers in the lowest income quintile are overrepresented in the ideal categories. Considering the attention given to parenting behaviours of parents with low incomes it is a striking finding that for most measures differences in parenting are not specific to parents on low incomes, rather for most differences in parenting there is an gradient across all income groups, which is wrongly interpreted as pertaining to low-income only. Further, almost half of the differences that are specific to low income parents only (parents whose income is below the median), suggest low income parents behave in more ideal ways than parents in other income groups.

Table 7 Parenting measures in MCS wave 3 for which the lowest quintile or the two lowest quintiles only are significantly different from the median

Parenting domain	Ideal/poor?	Parenting measure	Direction of difference	Proportion of lowest income quintile
Physical needs	Ideal	Main takes child to park/playground several times a week or more	More likely (opposite)	22.8%
Emotional needs	Poor	Parent feels fairly or not very close to child	More likely	5.6%
Discipline	Ideal	child always has meals at regular times	Less likely	56.4%
Discipline	Ideal	child always has regular bedtime (term-time)	Less likely	59.5%
Discipline	Ideal	never or rarely shouts at child when naughty	More likely (opposite)	34.7%
Discipline	Ideal	makes sure child obeys instructions all of the time	Less likely	46.7%
Discipline	Ideal	Tells child off daily when naughty.	More likely (opposite)	14%
Discipline	Poor	makes sure child obeys instructions less than half the time or never	More likely	11.1%
Discipline	Poor	Never takes away treats when naughty	More likely (also more likely for ideal)	11.7%
Cognitive stimulation	Ideal	Family does indoor activities together every day or almost every day	More likely (opposite)	50.1%
Cognitive stimulation	Poor	main never tells child stories	More likely	16.9%
Cognitive stimulation	Ideal	main plays toys/games with child every day	More likely (opposite)	26%
Cognitive stimulation	Ideal	main does musical activities with child every day	More likely (opposite)	42.4%
Cognitive stimulation	Poor	main does musical activities with child not at all or less than once a month	More likely	9.8%
Cognitive stimulation	Ideal	main paints/draws with child every day	More likely (opposite)	10.8%

Cognitive stimulation	Poor	Child receives no help at home with writing	More likely	11.8%
Cognitive stimulation	Ideal	someone at home helps child with reading everyday	Less likely	53%
Cognitive stimulation	Ideal	Child visits library once/twice a week or more	More likely (opposite)	9.9%
Parenting confidence	Poor	Feels not very good or person who has some trouble being a parent	More likely	5.7%
Parenting confidence	Ideal	Feels they are a very good parent	More likely (opposite)	35.4%

3) Would we expect most children in the lowest income quintile to have different experiences of parenting to children in the median quintile or are these differences restricted to a minority of parents within the lowest quintile?

This question is difficult to answer because the answer is necessarily shaped by the cut off points chosen for what counts as ‘poor’ or ‘ideal’ parenting. As can be seen from the proportions listed in Table 7 (and the bar charts in Appendix 5), where there are distinct differences in behaviour there is still generally only a minority of parents within the lowest quintile behaving in ways described as ‘poor’, often around 10% or less. Similarly, for ideal behaviours that parents in the lowest quintile are uniquely less likely to do, there are still a large proportion of parents in the lowest quintile who are doing these ‘ideal’ behaviours, often around 50%. See Appendix 6 for details of corresponding proportions for mothers in the median income quintile and the size of the difference between the proportions of the two groups.

4) Are low-income parents less likely to behave in ways that are considered to be ‘ideal’ parenting or are they more likely to be behaving in ways that are considered to be ‘poor’ parenting?

Despite there being a greater number of variables labelled as ‘ideal’, (due to the binary measures of trips out as mentioned previously), there are more

negative differences between parents in the lowest quintile and parents in the median quintile for poor parenting behaviours (i.e. where parents in the lowest quintile are more likely to be doing the behaviour categorised as 'poor'). Of the 62 measures for which there is a significant difference, 27 are for parents in the lowest quintile being more likely to do behaviours categorised as 'poor'; 18 measures have differences where parents in the lowest quintile are less likely to be doing 'ideal' behaviours, and almost as many (17) measures have differences where parents in the lowest quintile are *more* likely to be doing the 'ideal' behaviours.

This means that on the whole, more of the differences between parents in the lowest and median quintile (that fit the expected pattern of negative differences), are due to parents in the lowest income quintile being more likely to behave in ways considered to be poor parenting. It is worth reiterating however, that for the vast majority of these measures less than 20 per cent parents in the lowest quintile report behaving in these ways considered 'poor' and in fact for almost half of these measures less than 10 per cent of parents in the lowest quintile report doing these behaviours.

5.4 Discussion

Overall it was found that there are significant differences between parents in the lowest and median income quintile in terms of parenting, for example children in the lowest quintile are less likely to have breakfast every day, experience trips out, and be read to every day by their mothers. They are also less likely to be told off or reasoned with when naughty. However, there are some important qualifications to these differences. Firstly, most of these differences were found to be part of a broader gradient in parenting across all income groups. Less than one third of parenting measures were found to be different for the lowest income groups only. Secondly, although more likely to report 'poor' parenting, it is still a minority of parents in the lowest income quintile that describe their parenting in this way and likewise, although less likely to report some of

the 'ideal' parenting behaviours, still a large proportion (around 50%) of parents in the lowest quintile do. Finally, there are a number of behaviours for which parents in the lowest income group are actually more likely to behave in 'ideal' ways than parents with median incomes, for example children in the lowest income quintile are more likely to have someone at home helping with maths and writing every day, more likely to paint/draw, do musical activities and play games with their parent and get taken to the park several times a week or more. Parents in the lowest income quintile are also more likely to report never smacking and never or rarely shouting at their child when naughty, although these latter results need more investigation. Whilst the findings that low income parents are doing better than median income parents on some parenting measures are unexpected, they are not completely out of line with existing evidence: Using the Poverty and Social Exclusion Survey, Dermott and Pomati (2015) have found that parents in poverty were more likely to report having family meals with their children and watching television with their children, both of which are arguably positive measures of family time together.

It is therefore not a straightforward story that low income parents are parenting less well than median income parents. These findings are not evident in most previous studies, including studies using the same MCS data (e.g. Holmes and Kiernan, 2013; Kiernan and Mensah, 2011; Kiernan and Huerta, 2008). This is likely to be because previous studies have only compared parents in poverty with parents not in poverty, thereby missing the opportunity to consider whether low income parents are uniquely different or whether there is a broader income-parenting pattern across the full income distribution, and potentially exaggerating differences between low income parents and other parents. Previous studies have also not distinguished in what ways parenting behaviours may differ – specifically whether lower income parents are doing less 'ideal' parenting behaviours or whether they are doing more 'poor' parenting behaviours. Finally, this

analysis also offers a more comprehensive overview of the relationship between income group and parenting by first examining all available measures in what is a considerably rich dataset; previous research even using the same data has often used just a selection of the parenting measures or combined these measures without analysing them separately. These differences in the approach taken here have allowed for a more nuanced understanding of differences in parenting by income group.

Part Two– Is it income that matters for parenting? Taking into account other possible explanatory factors

This section builds on the preceding analysis in two ways: firstly, the individual parenting measures are combined to form indices, in-line with the four parenting domains. This was done in order to better evaluate the overall experience of children, within each parenting domain. Secondly, other possible explanatory factors are taken into account, in order to more precisely identify the role of income in relation to parenting, independently of the contribution of other factors that may be associated with both low income and parenting. Below the approach to creating parenting indices is described before introducing the methods used and other factors incorporated in the analysis.

5.5 Creating index measures

The analysis of individual parenting measures in part one was useful in providing a detailed overview of differences in parenting between parents in the lowest income quintile group and the median quintile. Nevertheless, in order to use the parenting measures in a way that better identifies the overall experience of children within each of the four suggested parenting domains, the original 38 parenting measures were combined to form nine measures in-line with the conceptual framework of parenting: an index measure of meeting physical needs, a measure of the parent-child relationship (there was only one measure for this so this is not an index), three index measures for discipline and control (separating measures of authoritative discipline, harsh or permissive discipline and routine), and four index measures for parenting behaviours that are cognitively stimulating (separating trips out, time spent watching television or on the computer, play activities and involvement in education). The measure of confidence in parenting was also analysed. Table 8 summarises the variables included in each index measure.

To create the index measures parenting behaviours grouped into the different domains were first standardised (so all were on a scale of 0-1 despite different numbers of categories) then combined into one measure. The index scores were then normalised to have a mean of zero and a standard deviation of one.

Although specific behaviours are likely to contribute to more than one type of parenting domain each variable is included in one index only; this was decided in order to avoid the issue where variables that are main drivers of particular index measures or show big differences between the lowest and median quintile groups, if repeated in more than one index measure would suggest similar results and conceal potential differences across different domains of parenting.

Table 8 Index measures of parenting in MCS wave 3

Index measure	Variables included
Physical needs	<ul style="list-style-type: none"> - How many days a week does [child] usually eat breakfast? (8 categories from 'none' to 'every day') - On a typical day, how many portions of fresh, frozen, tinned or dried fruit does [child] eat? (4 categories from 0 – 'three or more') - How often do you play sports or physically active games outdoors or indoors with [child]? (6 categories from 'not at all' to 'every day') - On average how many days a week does [child] go to a club or class to do sport or any other physical activity like swimming, gymnastics, football, dancing? (6 categories from 'less than once a week or not at all' to 'five or more days a week') - How often do you take [child] to the park or to an outdoor playground? (6 categories from 'not at all' to 'every day') - How often do you [or your partner] take part in physical activities (e.g. swimming, walking) with [child]? (7 categories from 'less than once a year or never' to 'every day')
Emotional needs	<ul style="list-style-type: none"> - Overall, how close would you say you are to [child]? (4 categories from 'not very close' to 'extremely close')
Discipline and structure 1: Authoritative discipline	How often do you do the following when [child] is naughty: <ul style="list-style-type: none"> - Send to bedroom/naughty chair, etc. - Take away treats - Tell [him/her] off - Try to reason with [him/her] - When you give [child] an instruction or make a request to do something, how often do you make sure that [he/she] does it? (all with 5 categories from 'never' to 'daily')

<p>Discipline and structure 2:</p> <p>Authoritarian and permissive discipline</p>	<p>How often do you do the following when [child] is naughty:</p> <ul style="list-style-type: none"> - Smack [him/her] - Shout at [him/her] - Bribe [him/her] (e.g. with sweets, or a treat) - Ignore [him/her] <p>(all with 5 categories from 'never' to 'daily')</p>
<p>Discipline and structure 3: Routine</p>	<ul style="list-style-type: none"> - On weekdays during term-time, does [child] go to bed at a regular time? - Does [child] have meals at regular times? <p>(both measured by 4 categories from 'never' to 'always')</p>
<p>Cognitive stimulation 1:</p> <p>Trips out</p>	<p>Over the past 12 months, which, if any, of the places on this card has [child] been to?</p> <ol style="list-style-type: none"> 1. Play, pantomime, music concert, circus or other live show 2. Art gallery, museum or historical site 3. Zoo, aquarium, wildlife reserve or farm 4. Theme park or funfair 5. Cinema 6. Professional sporting event as a spectator 7. None <p>(for these variables given a score from 0 – 6 depending on how many places visited)</p>
<p>Cognitive stimulation 2:</p> <p>Time spent watching TV or on the computer</p>	<ul style="list-style-type: none"> - On a normal week day during term time, how many hours does [child] spend watching television, videos or DVDs? - On a normal weekday during term time, how many hours does [child] spend using a computer or playing electronic games outside school lessons? <p>(Six categories from 'none' to '7 hours or more'. They are reverse-coded so a higher number of hours results in a lower score)</p>

<p>Cognitive stimulation 3: Play activities</p>	<p>- How often do you read to [child]? - How often do you tell stories to [child] not from a book? - How often do you play music, listen to music, sing songs or nursery rhymes, dance or do other musical activities with [child]? - How often do you draw, paint or make things with [child]? - How often do you play with toys or games indoors with [child]? - How often does [child] spend time with [his/her] friends outside school? (all 6 categories from 'not at all' to 'every day')</p> <p>- How often do all or most of your family spend an evening or part of the weekend at home, doing things together such as watching television or playing an indoor game? (7 categories from 'less than once a year/never' to 'every day')</p>
<p>Cognitive stimulation 4: Involvement in education</p>	<p>- Does anyone at home help [child] with reading (including a homework book from school)? How often? - Does anyone at home help [child] with writing? How often? - Does anyone at home help [child] with numbers, counting and adding up? How often? (All six categories from 'not at all' to 'every day').</p> <p>- Over the past 12 months, how often has [child] been to a library (not a school library)? (7 categories from 'less than once a year/never' to 'every day')</p> <p>- During this school year has anyone at home been to a parents' evening or similar event? (3 categories: no, not applicable or yes)</p>
<p>Confidence in parenting</p>	<p>The next question is about how you feel about being a parent</p> <p>(5 categories from 'I am not very good' to 'I am very good at being a parent')</p>

Weighting

A number of alternative approaches can be taken to weighting indices; In their discussion of multidimensional indices of well-being Decancq and Lugo identify three types of approaches taken to weighting in indices: data-driven, normative and hybrid (2013:3). Normative approaches, such as expert opinion or surveying public opinion (the latter of which is described as hybrid by Decancq and Lugo), were not available to me nor is it clear that in the case of weighting parenting behaviours they would have been desirable approaches to take: whilst they may establish some behaviours as believed to be more important than others, the precise weighting of relative importance given to each item is still arbitrary.

Another type of normative (or 'hybrid') approach would be to regress parenting behaviours on children's outcomes and choose the weights for the parenting measures depending on the strength of their association (e.g. see Kiernan and Mensah, 2011). Given that the initial motivation for analysing parenting is because of the importance of parenting for children's outcomes, this normative approach seems to be the most appropriate, however it is not clear which types of children's outcomes the weights ought to be based on (social, behavioural or cognitive). Furthermore, it may be the case that individual parenting measures on their own are not very significantly associated with children's outcomes, but once taken with other parenting measures do contribute significantly. For these reasons I did not adopt this approach.

In terms of data-driven approaches two main examples from the literature appear to be relevant: approaches using prevalence weighting and approaches using multivariate analyses. The first approach could be used so that negative parenting behaviours that are reported by very few parents would receive a larger weight. This makes sense for a number of behaviours such as smacking, or not feeding their child breakfast every day, but it is not clear this reasoning extends to all types of behaviours, for

example painting and drawing. Unlike Willets' (2006) use of this approach for measuring deprivation, it is not clear how the prevalence of others experiencing these parenting behaviours impacts the value of them for children. It does not follow that parenting behaviours are good/bad just because they are widely/rarely practised. Furthermore, preliminary analysis of this approach showed some counter-intuitive results (for example, because of the shape of the distribution parents who fed their child breakfast six days a week would receive a worse score than parents who fed their child breakfast only two days a week because there were fewer respondents who fitted into the former category).

The second data-driven approach is multivariate analysis, such as factor analysis or principal component analysis. Here the weights are derived from the loadings of each item onto the component or factor they explain. The aim of these approaches is to capture the maximum amount of variation in the minimum possible number of factors. This type of analysis is useful for guarding against double-counting (i.e. including two items that are measuring very similar behaviours and therefore if given equal weights are actually applying double weights to this aspect of parenting behaviour). However this type of weighting 'intervenes only to correct for overlapping information between two or more correlated indicators and is not a measure of the theoretical importance of the associated indicator' (OECD, 2008: 89). If indicators are not correlated then this type of weighting cannot be used.

Given that for these measures, the weighting of items ought to reflect the importance of each parenting behaviour, data-driven approaches were also rejected. In the absence of clear evidence that can be used to quantify the relative importance of each parenting measure it was decided that the items for each indices should be unweighted (or equally weighted). A significant advantage of equally weighting the items is the transparency of the indices; it is clear what each index is measuring and how the overall

score is influenced by each item. This approach is also in-line with similar index measures that are widely used to measure children's home environments such as the Home Inventory (Bradley, 1988) and the Home Learning Environment Index (Sylva et al, 2004). Still, this is not a neutral decision, as equal weighting implies equal importance of each item (OECD, 2008), which may be criticised as being overly simplistic and potentially downplaying the importance of some measures, (such as smacking) that there may be a clear case for arguing are definitely worse than others, (such as shouting). This criticism will be kept in mind throughout the discussion of the results and results for the individual parenting measures will be re-introduced so it can be made clear which parenting behaviours are driving the results of the index measures.

Checking for double-counting:

When using equal weights there may be cases of double-counting, when variables highly related to each other are combined in an index and given the same weight (OECD, 2008: 32). To avoid this the variables from the index can be tested for statistical correlation and either only keep variables that are not highly correlated, or adjust the weights so that highly correlated variables are given less weight (Ibid). The threshold for what counts as highly correlated enough to be considered double counting is a matter of judgement, but given that we would expect the items to be significantly correlated as the indices are grouping similar types of parenting behaviours (e.g. play activities, authoritative discipline), the possibility of double counting will only be considered in cases where the correlation coefficient is 0.8 or above.

Spearman's correlation coefficient was calculated for all variables of each index, apart from the binary variables which include the measures of trips out and the measure of whether a parent has attended parent's evening. This is not a problem as the trips out are measuring different categories of

places and the measure of parent's evening is the most different measure in the 'involvement in education index'.

Table 9 Spearman's correlations for MCS wave 3 parenting measures in the physical needs index (N = 14933)

	breakfast	fruit	park	sports club	physical activities	active games
breakfast	1					
fruit	0.1256	1				
park	0.0308	0.0825	1			
sports club	0.1132	0.1912	0.0636	1		
physical activities	0.0481	0.149	0.2122	0.1246	1	
active games	0.0596	0.149	0.297	0.1356	0.3252	1

Key

breakfast =	days per week child has breakfast
fruit =	number of portions of fruit per day
park =	how often main takes child to park/playground
sports club =	How often child goes to a club or class for sport
physical activities =	how often main/part does physical activities with child e.g. swimming
active games =	how often main plays physically active games with child

Table 10 Spearman's correlations for MCS wave 3 parenting measures in the authoritative discipline index (N= 13735)

	reason	bedroom	treats	tell off	obey
reason	1				
bedroom	0.2195	1			
treats	0.2317	0.486	1		
tell off	0.4146	0.3785	0.3582	1	
obey	0.088	0.0395	0.0446	0.0482	1

Key

reason =	how often reasons with child when naughty
bedroom =	how often sends child to bedroom/naughty step when naughty
treats =	how often takes away treats when naughty
tell off =	how often tells child off when naughty
obey =	how often makes sure child obeys requests/instructions

Table 11 Spearman's correlations for MCS wave 3 parenting measures in the harsh or permissive discipline index (N= 13783)

	smack	shout	bribe	ignore
smack	1			
shout	0.3661	1		
bribe	0.1751	0.2481	1	
ignore	0.146	0.2602	0.2072	1

Key

smack = how often smacks child when naughty
 shout = how often shouts at child when naughty
 bribe = how often bribes child when naughty
 ignore = how often ignores child when naughty

Table 12 Spearman's correlations for MCS wave 3 parenting measures in the routine index (N= 14969)

Spearman's rho =
 0.3421

Table 13 Spearman's correlations for MCS wave 3 parenting measures in the play activities index (N= 14955)

	read	story	music	paint	games	family	friends
read	1						
story	0.1826	1					
music	0.1803	0.2657	1				
paint	0.2672	0.2868	0.2895	1			
games	0.2858	0.2571	0.2848	0.4039	1		
family	0.1132	0.133	0.1491	0.145	0.2232	1	
friends	0.066	0.099	0.1364	0.0881	0.0927	0.03	1

Key

read = how often main reads to child
 story = how often main tells stories to child
 music = how often main does musical activities with child
 paint = how often main draws/paints with child
 games = how often main plays with toys or games indoors with child
 family = how often do activities together as a family
 friends = how often child spends time with friends outside of school

Table 14 Spearman's correlations for MCS wave 3 parenting measures in the educational activities index (N= 14777)

	reading	maths	writing	library
reading	1			
maths	0.3542	1		
writing	0.4061	0.5412	1	
library	0.1202	0.0653	0.073	1

Key

- reading = how often someone at home helps with reading
 maths = how often someone at home helps child with maths
 writing = how often someone at home helps with writing
 library = how often has child visited library in past year

Table 15 Spearman's correlations for MCS wave 3 parenting measures in electronic entertainment index (N= 14962)

Spearman's rho = 0.1972

Results suggest there are no cases of double counting within the index measures. Most of the variables are only weakly to moderately correlated (with a correlation coefficient between 0.1 and 0.3). None of the correlation coefficients approach the threshold of 0.8. The most highly correlated variables are help with maths and help with writing (Spearman's correlation =0.54). This is unsurprising as children who receive help at home with one type of subject are also likely to receive help with other subjects.

Cronbach's alpha to test the internal consistency

Although we do not want to be measuring the same thing twice or double counting, it is important that the indices which have been designed to measure different parenting domains, are capturing the same kind of parenting behaviours. This can be tested by calculating Cronbach's alpha, which is a measure of internal consistency (although not a measure of unidimensionality (OCED, 2008:72)). The threshold for what is considered to

be a good level of internal consistency varies but is usually between 0.6 and 0.8 (OECD, 2008:72).

Results are below for each index measure – rows are highlighted where removing an item would improve the score, although none of the scores would be improved dramatically by the removal of an item. This is the case for removing the measure of breakfast from ‘physical needs’, obey from ‘authoritative discipline’, friends from ‘play activities’ and parents evening from ‘educational activities’. In each of these cases I took the approach of being inclusive and keeping these variables in the index measures for the sake of these index measures being exploratory and comprehensive which outweighed the often minor improvement in the alpha had they been removed.

Most of the results are between 5 and 6, so in some cases just below the threshold considered to represent good internal consistency. A couple of index measures are lower than this: routine and television/computer hours. This is likely to be largely because these index measures are only made up of two variables and Cronbach’s coefficient is influenced by the number of variables, i.e. the internal consistency will increase just by adding more measures. Given this measure is not perfect and the scores are mostly around the threshold, overall this suggests there is not a big problem with the internal consistency of the index measures.

Table 16 Cronbach’s alpha for MCS wave 3 variables in physical needs index

Item	Obs	Sign	item-test correlation	item- rest correlation	average interitem correlation	alpha
breakfast	14933	+	0.4269	0.1254	0.1749	0.5146
fruit	14933	+	0.5257	0.2429	0.1433	0.4555
park	14933	+	0.5251	0.2422	0.1435	0.4559
sports club	14933	+	0.5082	0.2214	0.1489	0.4666
physical activities	14933	+	0.5946	0.3309	0.1213	0.4084
active games	14933	+	0.6178	0.3618	0.1139	0.3912
Test scale					0.141	0.4962

Table 17 Cronbach's alpha for MCS wave 3 variables in authoritative discipline index

Item	Obs	Sign	item-test correlation	item-rest correlation	average interitem correlation	alpha
reason	13735	+	0.6297	0.3731	0.2468	0.5672
bedroom	13735	+	0.6821	0.4464	0.2193	0.5291
treats	13735	+	0.6868	0.4531	0.2168	0.5255
tell off	13735	+	0.7149	0.4943	0.202	0.5032
obey	13735	+	0.4377	0.1327	0.3476	0.6807
Test scale					0.2465	0.6206

Table 18 Cronbach's alpha for MCS wave 3 variables in harsh or permissive discipline index

Item	Obs	Sign	item-test correlation	item-rest correlation	average interitem correlation	alpha
smack	13783	+	0.6468	0.3265	0.2385	0.4844
shout	13783	+	0.7185	0.4342	0.1761	0.3907
bribe	13783	+	0.625	0.2957	0.2575	0.5098
ignore	13783	+	0.6185	0.2867	0.2631	0.5172
Test scale					0.2338	0.5496

Table 19 Cronbach's alpha for MCS wave 3 variables in routine index

Average interitem correlation: 0.3205
 Number of items in the scale: 2
 Scale reliability coefficient: 0.4855

Table 20 Cronbach's alpha for MCS wave 3 variables in trips out index

Item	Obs	Sign	item-test correlation	item-rest correlation	average interitem correlation	alpha
cinema	14973	+	0.5713	0.3021	0.1329	0.4339
funfair	14973	+	0.4787	0.1875	0.1626	0.4927
gallery	14973	+	0.5553	0.2817	0.1381	0.4447
panto	14973	+	0.6026	0.3431	0.1228	0.4118
zoo	14973	+	0.5481	0.2726	0.1404	0.4495
sport spectator	14973	+	0.4581	0.1632	0.1693	0.5047
Test scale					0.1443	0.503

Table 21 Cronbach's alpha for MCS wave 3 variables in play activities index

Item	Obs	Sign	item-test correlation	item-rest correlation	average interitem correlation	alpha
read	14955	+	0.5654	0.3529	0.2004	0.6006
story	14955	+	0.5735	0.3631	0.1983	0.5974
music	14955	+	0.6139	0.4145	0.1877	0.581
paint	14955	+	0.6503	0.4623	0.1782	0.5653
games	14955	+	0.6659	0.483	0.1741	0.5584
family	14955	+	0.4637	0.23	0.2271	0.638
friends	14955	+	0.399	0.1558	0.244	0.6595
Test scale					0.2014	0.6384

Table 22 Cronbach's alpha for MCS wave 3 variables in educational activities index

Item	Obs	Sign	item-test correlation	item-rest correlation	average interitem correlation	alpha
reading	14777	+	0.6595	0.3845	0.1271	0.368
maths	14777	+	0.6783	0.4117	0.1181	0.3487
writing	14777	+	0.6727	0.4035	0.1208	0.3546
library	14777	+	0.4549	0.121	0.2255	0.5381
parents evening	14777	+	0.4212	0.0821	0.2418	0.5605
Test scale					0.1666	0.5

Table 23 Cronbach's alpha for MCS wave 3 variables in electronic entertainment index

Average interitem correlation: 0.2418
 Number of items in the scale: 2
 Scale reliability coefficient: 0.3894

5.6 Methods

I estimated linear regression (OLS) models to assess the relationship between income quintile group and types of parenting behaviours as summarised in the index measures. The measure of confidence in parenting ability was not included in any index measure but is analysed separately as it does not measure specific parenting behaviours but rather parents' subjective evaluations of their overall parenting. Model 1 shows the unadjusted regression results; in model 2 possible explanatory variables were added in order to more accurately identify the association between income itself and parenting behaviours. That is, to get closer to isolating the 'direct' relationship between income and parenting. It is important to acknowledge however, that in doing so we may be over-controlling and thereby underestimating the relationship between income and parenting behaviours, as these explanatory variables are also part of the story of how income is related to parenting. Whilst acknowledging this, they are included in the models because an important motivation for this research is to identify whether and how much income *itself* is important for parenting, as this has important policy implications, and so confounding factors that are related to both income and parenting need to be taken into account. Below each explanatory variable is discussed regarding the reason for including it in the model and how it is measured.

Maternal education

This was measured as highest NVQ level¹³ in six categories: levels 1- 5 and 'none of these' which included respondents with 'overseas qualifications only'. This was a key explanatory factor to take account of, as education is correlated with parenting behaviours: more highly educated mothers 'provide more interactive parenting both inside and outside of the home

¹³ This is available as a derived variable in the MCS and measures the mother's highest academic or vocational qualification in terms of the equivalent National Vocational Qualification level. More details on this can be found in Rosenberg (2012).

than their contemporaries with less education' (Gutman and Feinstein, 2007: 23) and also take part in more frequent reading and teaching (Burgess et al, 2006). As can be seen from Table 24 education is also correlated with income; as expected a greater proportion of those with the lowest levels of education are concentrated in the lowest income quintiles.

Table 24 Maternal Education by Income Quintile in MCS wave 3

maternal education	OECD equivalised income quintile						% of sample
	lowest	2nd	3rd	4th	highest	Total	
none of these/overseas	49.2	29.3	13.9	4.5	3.1	100	13.6
NVQ level 1	34.3	29.9	19.7	11.5	4.7	100	7.7
NVQ level 2	22.3	23.4	23.3	20.6	10.4	100	28.6
NVQ level 3	13.9	21.0	25.8	24.2	15.1	100	14.5
NVQ level 4	6.3	11.3	18.9	26.3	37.2	100	30.4
NVQ level 5	4.1	4.9	11.6	22.8	56.5	100	5.3
							100

Maternal work status

This measure was coded to categorise whether the main respondent was not working, working part-time (less than 35 hours per week) or working full-time (35 hours per week or more). As can be seen from the table below, respondents who are not working are largely concentrated in the lowest two income quintiles and respondents working full-time are largely concentrated in the two highest income quintiles. As well as being associated with income, maternal work status is also associated with the amount of time the mother feels they have with the child (

Table 26) and this may have implications for parenting behaviours and activities with their child. Therefore, despite recent evidence that maternal employment does not tend to have a detrimental effect on children's outcomes (McMunn et al, 2011; Cooksey et al, 2009) and may even be beneficial for single mothers and lower income families (Harvey, 1999), it was included as an explanatory factor because it may explain some of the differences in parenting behaviours between income groups (as suggested in part one), due to differences in the amount of time with the child. Of course it could also be the case that parents being out of work could have a negative influence on parenting. In their analysis of ALSPAC and the MCS, Parsons, Schoon and Vignoles (2014) found that parents who had spells of worklessness up to when the child was aged five, were less likely to read to the child every day, take the child to the library and give the child a regular bedtime, compared with parents who were never workless during this period. They found no relationship between worklessness and parental teaching behaviours.

Table 25 Maternal Work Status by Income Quintile in MCS wave 3

maternal work status	OECD equivalised income quintile					Total	% of sample
	lowest	2nd	3rd	4th	highest		
not work	38.9	25.2	14.7	10.6	10.6	100	41.8
working <35 hours	7.0	17.0	25.3	26.9	23.8	100	45.4
working 35 hours+	3.1	11.3	19.8	26.9	38.9	100	12.8
							100

Table 26 Maternal work status and time with child in MCS wave 3

work status	nowhere near enough time	not quite enough time	just enough time	more than enough time	too much time	Total
not work working	3.1	15.1	45.3	32.0	4.4	100
<35 hours working	5.0	28.5	47.7	17.8	1.0	100
35 hours+	18.5	47.5	27.6	6.0	0.5	100
Total	5.9	25.3	44.1	22.2	2.4	100

Family composition

The number of parents or carers in the household is associated with income – single parents are more likely to be in the lowest income quintile (Table 27). The association between lone parent families and worse outcomes for children has been found to be largely explained by differences in poverty status (Kiernan and Mensah, 2009). However, there are other ways in which being a lone parent may impact parenting: lone parenthood itself is also related to parent’s mental health, with lone mothers having worse mental health than mothers who are cohabiting or married (Kiernan and Mensah, 2010); and mother’s mental health has been found to be related to less engaged parenting behaviours (Smith, 2004; Kiernan and Huerta, 2008).¹⁴

¹⁴ Mother’s mental health has not been included in the adjusted model, as this will be explored in later chapters as a possible mechanism for explaining the relationship between economic hardship and parenting behaviours.

Table 27 Family composition by income quintile in MCS wave 3

number of parents/carers in household	OECD equivalised income quintile						% of sample
	lowest	2nd	3rd	4th	highest	Total	
two parents/carers	11.2	18.3	22.3	23.7	24.6	100	80.2
one parent/carer	55.0	25.6	11.6	5.3	2.4	100	19.8
							100

Family size

The number of siblings the child has is included in four categories: none, one, two, three or more. This has been identified as a risk factor for a number of measures of children's cognitive outcomes at age seven (Jones, Gutman and Platt, 2013). This may be due to having to share attention from parents with brothers and sisters, thereby reducing the amount of parental investment the child receives, or may also be due to playing with siblings instead and therefore less interaction with friends which has been identified as a promotive factor (Ibid). Larger families also tend to have lower equivalised incomes as is clear from Table 28.

Table 28 Number of Siblings by Income Quintile in MCS wave 3

number of siblings	OECD equivalised income quintile						% of sample
	lowest	2nd	3rd	4th	highest	Total	
none	21.0	18.2	18.6	19.9	22.3	100	16.5
one	14.0	16.9	20.2	24.1	24.7	100	48.4
two	21.6	22.7	22.4	17.3	16.0	100	23.6
three or more	38.9	27.4	17.5	9.0	7.2	100	11.6
							100

Mother's ethnic group

Mother's ethnic group was included in the model in eight categories: White, Mixed, Indian, Pakistani, Bangladeshi, Black Caribbean, Black African, Other (including Chinese). This measure was included because mother's ethnic group is related to income; as can be seen from Table 29 mothers whose ethnic group is Bangladeshi, Pakistani, Black African, Mixed or Black Caribbean are overrepresented in the lowest income quintile. There is also evidence that parenting practices vary across ethnic groups, for example there is some US evidence that Black parents tend to be more authoritarian, and UK evidence that Indian, Pakistani, Bangladeshi and Black mothers are significantly less likely to report playing with their child weekly than White mothers (Brocklebank et al. 2013).

Table 29 Mother's Ethnic Group by Income Quintile in MCS wave 3

Mother's ethnic group	OECD equivalised income quintile					Total	% of samp.
	low	2nd	3rd	4th	high		
White	17.6	19.1	20.9	21.1	21.3	100.0	89.1
Mixed	39.2	22.6	12.8	13.4	12.1	100.0	1.0
Indian	15.2	22.3	18.6	23.0	21.0	100.0	1.9
Pakistani	50.8	32.5	10.1	2.0	4.5	100.0	2.8
Bangladeshi	56.1	28.4	7.9	4.8	2.9	100.0	0.9
Black Caribbean	38.1	23.7	15.6	13.0	9.7	100.0	1.1
Black African	42.2	20.3	15.4	9.3	12.8	100.0	1.7
Other ethnic group	27.5	20.6	16.0	21.5	14.5	100.0	1.5
							100

Maternal age at time of interview.

Maternal age was included in the adjusted model and the continuous measure was recoded into four categories, in-line with important distinctions between mothers' age group at time of birth: 18-24, 25-34, 35-44

and 45 plus¹⁵. This measure was included because as can be seen from the contingency table below, younger parents are overrepresented in the lowest income quintiles. The age of the mother is also associated with children's outcomes, with children of younger mothers (particularly before their twenties) tending to do worse, although this is largely explained by their mother's pre-existing disadvantage (Hawkes and Joshi, 2012). Nevertheless we still might expect age to be related to parenting behaviours, net of the relationship with income: younger mothers may have more energy to take part in more physically active games with their child for instance.

Table 30 Maternal Age by Income Quintile in MCS wave 3

maternal age at wave 3 interview	OECD equivalised income quintile					Total	% of sample
	lowest	2nd	3rd	4th	highest		
18 to 24	51.9	28.5	12.9	5.3	1.3	100	7.3
25 to 34	23.9	24.4	22.3	18.4	11.0	100	44.1
35 to 44	11.2	14.0	19.5	23.9	31.4	100	46.1
45 plus	14.5	16.6	15.1	22.0	31.9	100	2.6
							100

¹⁵ Age of mother at child's birth was therefore around five years younger than the age groups presented: (13-19) (20-29) (30-39) (40 plus).

5.7 Results

Results are discussed below for each parenting domain in turn. In the following results tables the median income quintile is the reference category. Reference categories for other variables are:

- maternal age: 18-24 years
- maternal education: none of these qualifications (which includes overseas qualifications)
- siblings: none
- family composition: two parents/carers
- maternal ethnic group: white
- maternal work status: not working

As index scores are standardised to have a mean of zero and a standard deviation of 1, results are shown in terms of percentage of a standard deviation. Model 1 shows the unadjusted associations and model 2 shows remaining associations once the possible explanatory factors are added to the model. Standard errors are shown in parentheses.

The charts below show the difference in the index score (again measured as a difference in percentage points of standard deviation) for each quintile compared with the median quintile (represented by the x axis at 0). Higher scores always represent more positive parenting i.e. the harsh and permissive discipline index and the hours of television and computer index are reverse-coded so higher scores represent *less* harsh/permissive discipline and fewer hours of television or computer games respectively.

Physical needs

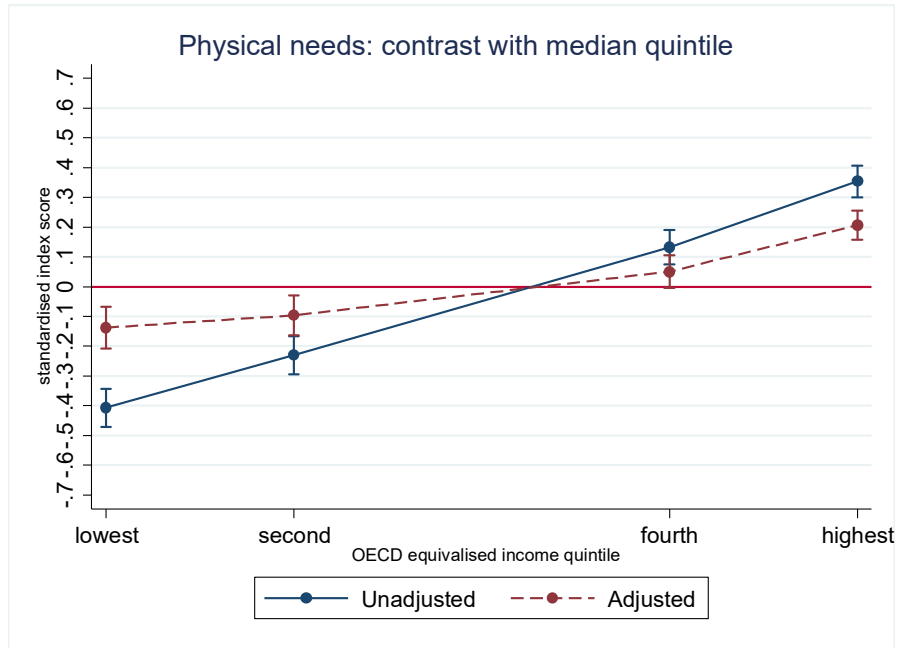
Table 31 Regression results for Physical needs index in MCS wave 3

		Model 1	Model 2
Income quintile	lowest	-0.407 *** [0.03]	-0.134 *** [0.04]
	2nd	-0.222 *** [0.03]	-0.088 * [0.03]
	4th	0.131 *** [0.03]	0.049 [0.03]
	highest	0.352 *** [0.03]	0.206 *** [0.02]
Maternal age	25 to 34		-0.013 [0.04]
	35 to 44		-0.025 [0.04]
	45 plus		-0.221 ** [0.07]
Maternal education	NVQ level 1		0.131 ** [0.05]
	NVQ level 2		0.28 *** [0.04]
	NVQ level 3		0.457 *** [0.04]
	NVQ level 4		0.595 *** [0.04]
	NVQ level 5		0.646 *** [0.05]
Siblings	one		-0.064 ** [0.02]
	two		-0.135 *** [0.03]
	three or more		-0.249 *** [0.04]
Family composition	One parent/carer		-0.093 *** [0.03]
Ethnicity	Mixed		-0.054 [0.09]
	Indian		-0.407 *** [0.08]
	Pakistani		-0.506 *** [0.05]
	Bangladeshi		-0.744 *** [0.12]
	Black Caribbean		-0.345 *** [0.10]
	Black African		-0.537 *** [0.08]
	Other Ethnic group		-0.306 *** [0.08]
Maternal work status	working < 35 hours		0.029 [0.02]
	working 35 hours+		-0.183 *** [0.03]
	Constant	0.059 * [0.02]	-0.157 ** [0.05]
	R-squared	0.074	0.146
	N	14285	14285

* p<0.05, ** p<0.01, *** p<0.001

For the physical needs index parents in the lowest income quintile remain significantly different from the median even after other explanatory factors are added to the model, although the association becomes smaller. On average parents in the lowest quintile score lower than parents in the median quintile on meeting the child's physical needs. There is also a clear gradient across each income quintile, with those in the highest quintile on average scoring the highest on this measure (see below). Analysis of the individual items (see Appendix 8) show that these results are driven by the measures related to nutrition: how many days a week the child has breakfast and how many portions of fruit the child eats each day (which had slightly larger differences between lowest and median income quintiles). In fact none of the measures of physical activity were significant in the adjusted model, although for two of these measures this may be partly explained by the relationship being nonlinear: for how often the main respondent takes the child to a park and how often the main or partner respondent take part in physical activities with child, parents in the lowest income quintile are overrepresented in comparison with the parents in the median quintile, at both ends of the scales ('poor' and 'ideal' – see Appendix 6). All explanatory factors had some significance but maternal education and maternal ethnic group seem to be most important for the physical needs measure.

Figure 7



Emotional needs

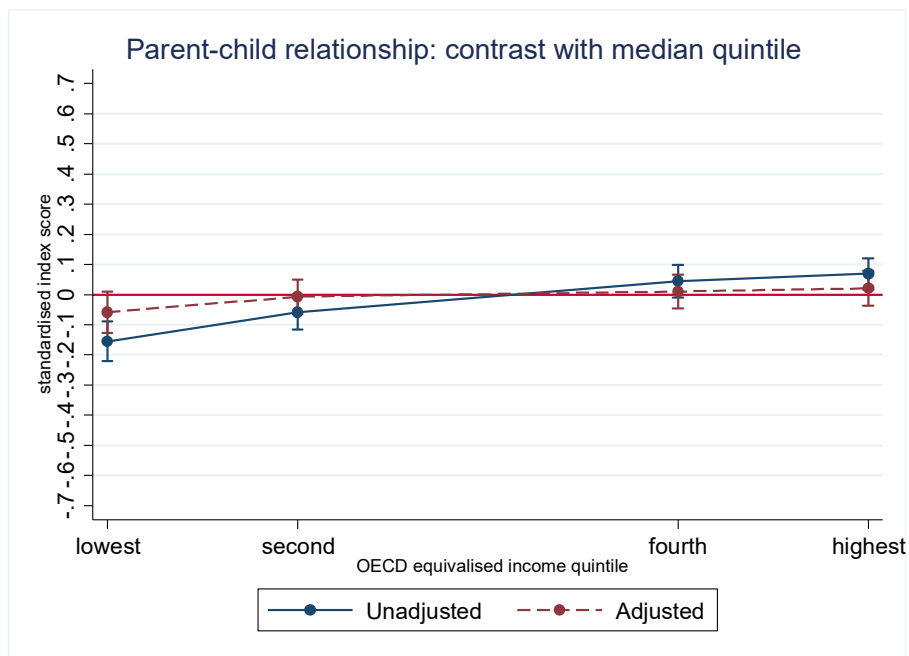
Table 32 Parent-child Relationship Regression Results from MCS wave 3

		Model 1	Model 2
Income quintile	lowest	-0.159 *** [0.03]	-0.058 [0.04]
	2nd	-0.056 [0.03]	-0.003 [0.03]
	4th	0.04 [0.03]	0.006 [0.03]
	highest	0.066 * [0.03]	0.017 [0.03]
	Maternal age	25 to 34	
	35 to 44		0.217 *** [0.05]
	45 plus		0.225 ** [0.08]
Maternal education	NVQ level 1		0.123 * [0.05]
	NVQ level 2		0.068 [0.04]
	NVQ level 3		0.09 * [0.04]
	NVQ level 4		0.138 *** [0.04]
	NVQ level 5		0.001 [0.05]
Siblings	one		-0.137 *** [0.03]
	two		-0.228 *** [0.03]
	three or more		-0.288 *** [0.04]
Family composition	One parent/carer		0.062 [0.04]
Ethnicity	Mixed		-0.051 [0.09]
	Indian		-0.268 ** [0.09]
	Pakistani		-0.351 *** [0.07]
	Bangladeshi		-0.184 [0.14]
	Black Caribbean		-0.136 [0.15]
	Black African		-0.507 *** [0.11]
	Other Ethnic group		-0.441 *** [0.10]
	Maternal work status	working < 35 hours	
	working 35 hours+		0.053 [0.03]
	Constant	0.021 [0.02]	-0.134 * [0.06]
	R-squared	0.006	0.03
	N	13578	13578

* p<0.05, ** p<0.01, *** p<0.001

The measure for how close the parent feels to the child is significantly associated with income quintile but the association ceases to be significant once the explanatory factors are incorporated into the model. In fact none of the quintiles are significantly different from the median quintile in the second model. For this measure then income does not seem to make a difference. The most important explanatory factor for this measure appears to be ethnic group, with mothers from Black African, Pakistani, Indian and other ethnic groups reporting feeling less close to their child than white mothers. Mothers with a greater number of children also report feeling less close to their child. Maternal age and education are also significant: mothers with higher educational qualifications and older mothers on average report feeling closer to their child.

Figure 8



Discipline and control

Table 33 Authoritative Discipline Index Regression Results MCS wave 3

		Model 1	Model 2
Income quintile	lowest	-0.171 *** [0.03]	-0.115 *** [0.03]
	2nd	-0.077 * [0.03]	-0.047 [0.03]
	4th	0.017 [0.03]	0.007 [0.03]
	highest	0.044 [0.03]	0.039 [0.03]
Maternal age	25 to 34		0.013 [0.04]
	35 to 44		-0.13 ** [0.04]
	45 plus		-0.269 *** [0.07]
Maternal education	NVQ level 1		0.19 *** [0.05]
	NVQ level 2		0.246 *** [0.04]
	NVQ level 3		0.345 *** [0.04]
	NVQ level 4		0.368 *** [0.04]
	NVQ level 5		0.36 *** [0.06]
Siblings	one		0.148 *** [0.03]
	two		0.158 *** [0.04]
	three or more		0.043 [0.04]
Family composition	One parent/carer		0.069 * [0.03]
Ethnicity	Mixed		-0.156 [0.11]
	Indian		-0.439 *** [0.07]
	Pakistani		-0.518 *** [0.05]
	Bangladeshi		-0.614 *** [0.10]
	Black Caribbean		-0.107 [0.12]
	Black African		-0.307 *** [0.07]
	Other Ethnic group		-0.445 *** [0.11]
Maternal work status	working < 35 hours		-0.036 [0.02]
	working 35 hours+		-0.045 [0.03]
	Constant	0.054 * [0.02]	-0.245 *** [0.07]
	R-squared	0.006	0.04
	N	13224	13224

* p<0.05, ** p<0.01, *** p<0.001

Table 34 Harsh and Permissive Discipline index Regression Results in MCS wave 3

		Model 1	Model 2
Income quintile	lowest	0.095 ** [0.03]	0.129 *** [0.03]
	2nd	0.012 [0.03]	0.03 [0.03]
	4th	-0.012 [0.03]	-0.03 [0.03]
	highest	0.042 [0.03]	-0.015 [0.03]
Maternal age	25 to 34		-0.048 [0.05]
	35 to 44		0.047 [0.05]
	45 plus		0.206 ** [0.07]
Maternal education	NVQ level 1		-0.014 [0.05]
	NVQ level 2		-0.038 [0.04]
	NVQ level 3		-0.045 [0.05]
	NVQ level 4		-0.004 [0.04]
	NVQ level 5		0.019 [0.05]
Siblings	one		-0.179 *** [0.03]
	two		-0.191 *** [0.03]
	three or more		-0.029 [0.04]
Family composition	One parent/carer		-0.08 ** [0.03]
Ethnicity	Mixed		-0.074 [0.10]
	Indian		-0.028 [0.08]
	Pakistani		-0.138 [0.09]
	Bangladeshi		0.001 [0.13]
	Black Caribbean		-0.094 [0.08]
	Black African		0.172 * [0.08]
	Other Ethnic group		0.015 [0.08]
Maternal work status	working < 35 hours		-0.006 [0.02]
	working 35 hours+		0.075 * [0.03]
	Constant	-0.037 [0.02]	0.129 [0.07]
	R-squared	0.001	0.013
	N	13260	13260

* p<0.05, ** p<0.01, *** p<0.001

Note: The scores for this index are reverse-coded so higher scores mean less frequent use of harsh or permissive discipline.

Table 35 Routine Index Measure Regression Results in MCS wave 3

		Model 1	Model 2
Income quintile	lowest	-0.236 *** [0.03]	-0.109 ** [0.04]
	2nd	-0.085 ** [0.03]	-0.032 [0.03]
	4th	0.07 ** [0.03]	0.043 [0.03]
	highest	0.112 *** [0.03]	0.078 ** [0.03]
Maternal age	25 to 34		0.073 [0.05]
	35 to 44		-0.031 [0.05]
	45 plus		-0.289 *** [0.08]
Maternal education	NVQ level 1		0.184 *** [0.05]
	NVQ level 2		0.221 *** [0.04]
	NVQ level 3		0.337 *** [0.04]
	NVQ level 4		0.389 *** [0.04]
	NVQ level 5		0.368 *** [0.05]
Siblings	one		0.162 *** [0.03]
	two		0.129 *** [0.03]
	three or more		0.082 [0.04]
Family composition	One parent/carer		-0.06 * [0.03]
Ethnicity	Mixed		0.037 [0.09]
	Indian		0.01 [0.09]
	Pakistani		-0.055 [0.05]
	Bangladeshi		-0.189 * [0.08]
	Black Caribbean		-0.467 *** [0.10]
	Black African		-0.255 ** [0.08]
	Other Ethnic group		-0.249 ** [0.09]
	Maternal work status	working < 35 hours	
working 35 hours+			-0.147 *** [0.03]
	Constant	0.057 ** [0.02]	-0.301 *** [0.06]
	R-squared	0.016	0.047
	N	14310	14310

* p<0.05, ** p<0.01, *** p<0.001

Each of the three index measures relating to discipline and control remain significant once other potentially explanatory factors are added, although the patterns are quite different. Only the measure of routine shows a gradient where on average the higher the income quintile, the higher the score on routine behaviours. For the routine index measure only regular bed times is still significant in the adjusted model, with parents in the lowest quintile reporting less regular bed times for their child (Appendix 8).

For the measures of authoritative discipline and harsh or permissive discipline the lowest quintile is uniquely different (in both the unadjusted and adjusted models) as being the only quintile that scores significantly differently from the median. The relationship suggests less discipline of either kind: parents in the lowest quintile use authoritative discipline practices less frequently than parents in the median quintile. For the measure of harsh or permissive discipline practices parents in the lowest quintile actually report using these discipline practices (shouting, smacking, bribing, ignoring) less frequently also.

For the authoritative discipline results these results are driven by two measures only which remained significant in the adjusted model: how often the main respondent tells their child off when naughty and how often they make sure the child obeys instructions given to them. This is an interesting finding and may relate to the harsh and permissive discipline results as it suggests although there is no longer a significant difference between parents in the lowest and median quintile for using authoritative discipline techniques (reasoning, sending to bedroom or naughty chair or taking away treats), that parents in the lowest quintile are telling their child off less and this is where the difference is.

As for the measure of harsh and permissive discipline, all of the items in the index are significant in the adjusted model, apart from how often they ignore their child when naughty (which is interesting as this measure could

be interpreted as capturing the opposite to telling off in which case we would also expect parents in the lowest quintile to do this more frequently). For the other measures, smacking, shouting and bribing, parents in the lowest quintile report doing all of these less often than parents in the median quintile, but the biggest difference is for smacking. These are in-line with the findings from part one, but as mentioned previously are both unexpected given existing (US) literature on income and discipline style (McLoyd, 1990; Magnuson and Duncan, 2002). Sensitivity analysis (see Appendix 9) suggests that the findings for harsh discipline are not likely to be completely explained by parents in the lowest income quintiles simply telling their child off less overall; when the types of discipline used are analysed as a proportion of the overall discipline used, rather than as a frequency, parents in the lowest income group report that a slightly smaller proportion of the overall discipline they use is harsh, compared with parents in the median income group.

In terms of the role of other explanatory factors most were significant for authoritative parenting, particularly the mother's ethnic group, education and age. For harsh and permissive discipline few of the additional factors are significant. However, it is most notable that mothers in the oldest age category scored higher (used less harsh and permissive discipline) compared with mothers in the youngest age category. For the measure of routine, mothers with higher levels of education and another one or two children (compared with having just one child) reported higher levels of routine. Mothers who were Black Caribbean, Black African, from 'other' ethnic group or Bangladeshi reported lower levels of routine compared with white mothers, as did mothers working full-time and mothers in the oldest age category.

Figure 9

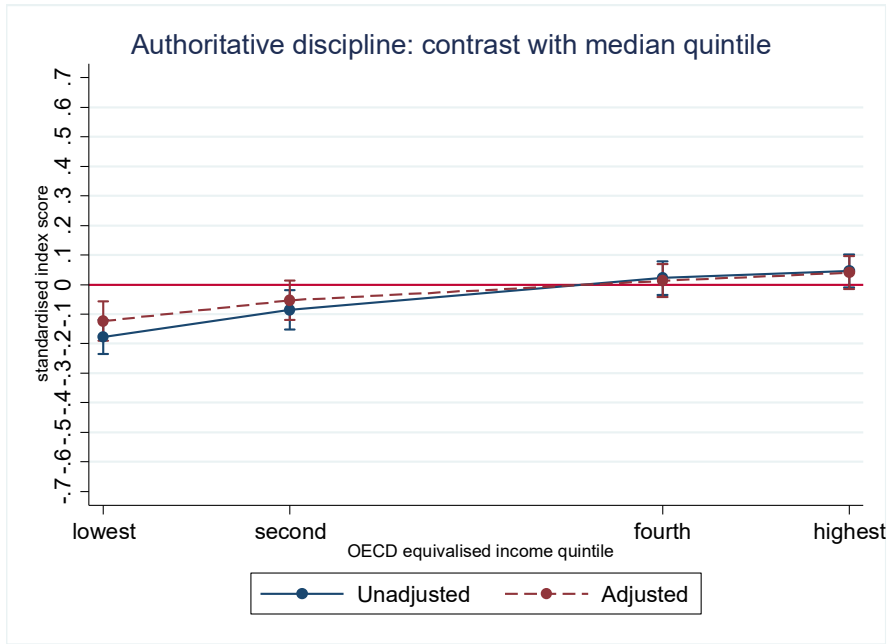


Figure 10

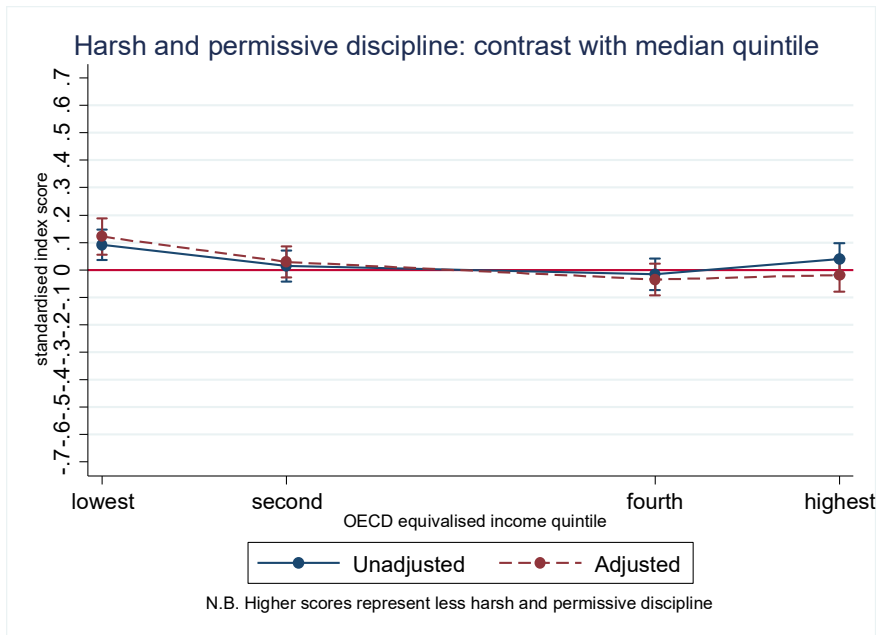
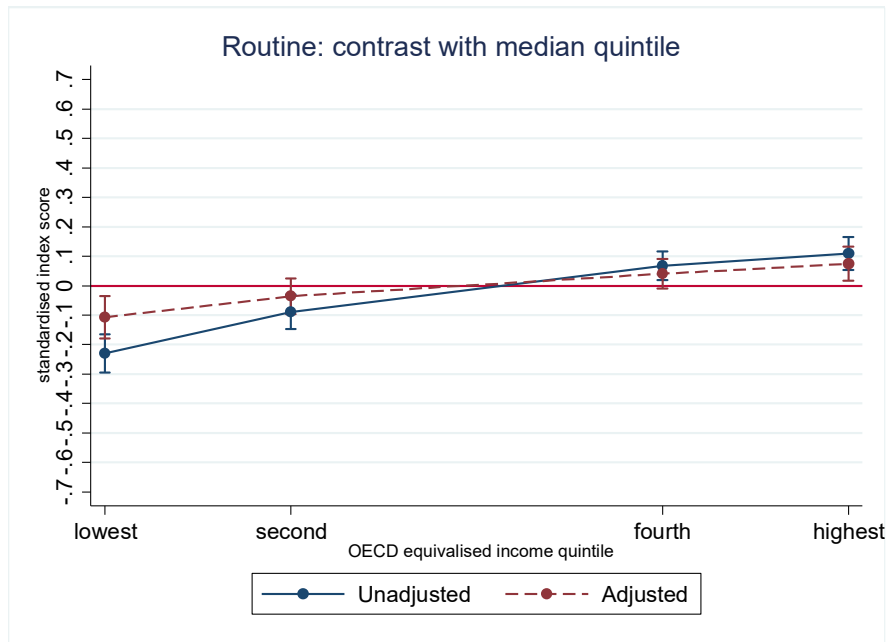


Figure 11



Cognitive stimulation

Table 36 Trips Out Index Regression Results in MCS wave 3

		Model 1	Model 2
Income quintile	lowest	-0.661 *** [0.03]	-0.322 *** [0.03]
	2nd	-0.361 *** [0.03]	-0.187 *** [0.03]
	4th	0.231 *** [0.03]	0.114 *** [0.03]
	highest	0.44 *** [0.03]	0.224 *** [0.03]
Maternal age	25 to 34		0.041 [0.04]
	35 to 44		0.145 ** [0.04]
	45 plus		0.147 * [0.07]
Maternal education	NVQ level 1		0.148 *** [0.04]
	NVQ level 2		0.417 *** [0.03]
	NVQ level 3		0.618 *** [0.03]
	NVQ level 4		0.711 *** [0.03]
	NVQ level 5		0.789 *** [0.04]
Siblings	one		-0.029 [0.02]
	two		-0.124 *** [0.03]
	three or more		-0.221 *** [0.03]
Family composition	One parent/carer		0.064 ** [0.02]
Ethnicity	Mixed		0.126 [0.08]
	Indian		-0.305 *** [0.06]
	Pakistani		-0.4 *** [0.07]
	Bangladeshi		-0.637 *** [0.08]
	Black Caribbean		-0.318 ** [0.10]
	Black African		-0.669 *** [0.06]
	Other Ethnic group		-0.389 *** [0.07]
Maternal work status	working < 35 hours		0.126 *** [0.02]
	working 35 hours+		0.12 *** [0.03]
	Constant	0.107 *** [0.02]	-0.468 *** [0.06]
	R-squared	0.164	0.26
	N	14311	14311

* p<0.05, ** p<0.01, *** p<0.001

Table 37 Play Activities Index Regression Results in MCS wave 3

		Model 1	Model 2
Income quintile	lowest	-0.066 [0.04]	0.055 [0.04]
	2nd	-0.011 [0.04]	0.057 [0.04]
	4th	0.008 [0.03]	-0.045 [0.03]
	highest	0.111 *** [0.03]	0.016 [0.03]
	Maternal age	25 to 34	
	35 to 44		-0.186 *** [0.04]
	45 plus		-0.338 *** [0.08]
Maternal education	NVQ level 1		0.017 [0.05]
	NVQ level 2		0.177 *** [0.04]
	NVQ level 3		0.328 *** [0.04]
	NVQ level 4		0.409 *** [0.04]
	NVQ level 5		0.511 *** [0.06]
Siblings	one		-0.287 *** [0.03]
	two		-0.409 *** [0.03]
	three or more		-0.574 *** [0.04]
Family composition	One parent/carer		-0.007 [0.03]
Ethnicity	Mixed		-0.154 [0.09]
	Indian		-0.367 *** [0.07]
	Pakistani		-0.594 *** [0.06]
	Bangladeshi		-0.701 *** [0.10]
	Black Caribbean		-0.214 * [0.10]
	Black African		-0.572 *** [0.10]
	Other Ethnic group		-0.432 *** [0.08]
	Maternal work status	working < 35 hours	
	working 35 hours+		-0.229 *** [0.04]
	Constant	-0.031 [0.03]	0.269 *** [0.06]
	R-squared	0.003	0.088
	N	14298	14298

* p<0.05, ** p<0.01, *** p<0.001

Table 38 Involvement in Education Regression Results in MCS wave 3

		Model 1	Model 2
Income quintile	lowest	-0.213 *** [0.03]	-0.024 [0.03]
	2nd	-0.143 *** [0.03]	-0.054 [0.03]
	4th	0.077 ** [0.03]	0.011 [0.03]
	highest	0.087 *** [0.02]	-0.028 [0.03]
Maternal age	25 to 34		0.066 [0.04]
	35 to 44		0.079 [0.04]
	45 plus		-0.035 [0.08]
Maternal education	NVQ level 1		0.07 [0.05]
	NVQ level 2		0.208 *** [0.03]
	NVQ level 3		0.329 *** [0.04]
	NVQ level 4		0.388 *** [0.04]
	NVQ level 5		0.417 *** [0.05]
Siblings	one		-0.113 *** [0.03]
	two		-0.216 *** [0.03]
	three or more		-0.257 *** [0.04]
Family composition	One parent/carer		-0.116 *** [0.03]
Ethnicity	Mixed		-0.041 [0.09]
	Indian		0.188 *** [0.05]
	Pakistani		0.103 [0.09]
	Bangladeshi		0.023 [0.09]
	Black Caribbean		0.145 [0.08]
	Black African		-0.036 [0.07]
	Other Ethnic group		0.043 [0.08]
	Maternal work status	working < 35 hours	
working 35 hours+			-0.03 [0.03]
	Constant	0.047 * [0.02]	-0.151 * [0.07]
	R-squared	0.016	0.042
	N	14131	14131

* p<0.05, ** p<0.01, *** p<0.001

Table 39 Hours of TV and Computer Regression Results in MCS wave 3

		Model 1	Model 2
Income quintile	lowest	-0.14 *** [0.04]	-0.114 ** [0.04]
	2nd	-0.087 ** [0.03]	-0.066 [0.03]
	4th	0.048 [0.03]	0.021 [0.03]
	highest	0.254 *** [0.03]	0.178 *** [0.03]
Maternal age	25 to 34		0.066 [0.04]
	35 to 44		0.093 * [0.05]
	45 plus		0.084 [0.07]
Maternal education	NVQ level 1		-0.011 [0.05]
	NVQ level 2		0.041 [0.04]
	NVQ level 3		0.117 ** [0.04]
	NVQ level 4		0.194 *** [0.04]
	NVQ level 5		0.304 *** [0.05]
Siblings	one		-0.012 [0.03]
	two		-0.027 [0.03]
	three or more		-0.018 [0.04]
Family composition	One parent/carer		0.054 [0.03]
Ethnicity	Mixed		-0.047 [0.10]
	Indian		-0.074 [0.07]
	Pakistani		0.042 [0.07]
	Bangladeshi		-0.07 [0.08]
	Black Caribbean		-0.175 * [0.08]
	Black African		-0.205 [0.11]
	Other Ethnic group		-0.044 [0.07]
	Maternal work status	working < 35 hours	
working 35 hours+			-0.055 [0.03]
	Constant	-0.003 [0.03]	-0.128 * [0.06]
	R-squared	0.019	0.027
	N	14303	14303

* p<0.05, ** p<0.01, *** p<0.001

N.B. For this index measure higher scores represent fewer hours of television and computer games.

For the four measures of cognitive stimulation three have significant bivariate associations with income but in the adjusted model it is only the measure of trips out (which shows the largest difference between the lowest and median quintile of all parenting measures) and hours of television/computers that continue to have significant differences between mothers in the lowest and median income quintile. On average mothers in the lowest income quintile report that their child has fewer trips out and more hours of television and computer games than parents in the median quintile, however, both these associations are part of a broader gradient across the income quintiles. It is not surprising that these measures remain associated with income, as many of the trips out cost money and, by contrast watching television and playing computer games can be comparatively cheap ways for children to spend their time.

For the measure of trips out all of the measures, apart from viewing a professional sport, remained significant in the adjusted model, with parents in the lowest income group being less likely to report trips out of all kinds (Appendix 8). There were similar sized differences between the lowest and median quintile for all trips out, although the biggest difference was for visiting the cinema.

Of the hours of television and computers, only differences in hours of television was significant in both the unadjusted and adjusted model, which is driving the overall index score.

Mothers with higher levels of education and mothers working (full-time or part-time) reported more trips out for their children and mothers from most other ethnic groups compared with white mothers reported fewer trips out. Children with two or more siblings also experienced fewer trips out. For hours of television only mother's education level seems to be important (other than income), with fewer hours of TV associated with higher maternal education. Mothers who worked full-time reported that

their children had more hours of television than mothers who were not working.

For the measure of play activities none of the quintiles are significantly different from the median quintile. However, when the items of the play index are analysed individually two of them are significantly related to income in the adjusted model: parents in the lowest quintile read to their child less frequently than parents in the median income quintile but parents in the lowest income quintile also play indoor games with their child *more* frequently (see Appendix 8). For involvement in education the results suggest mothers in the lowest quintile do not have less involvement in their child's education overall, once other factors are controlled for.

Although, again analyses of the individual measures from the index tell a more nuanced story: although frequency of library visits are not significantly different for parents in the lowest and median income groups, parents in the lowest income quintile report that someone at home helps their child with reading less frequently and they (or anyone at home) are less likely to have gone to a parent's evening than median income parents. On the other hand, parents in the lowest income quintile also report that someone at home helps their child with writing and maths more frequently than median income parents. The two positive difference and two negative differences appear to cancel each other out so the overall score for involvement in education is not significantly different between parents in the lowest and median quintile.

For involvement with education, as might be expected maternal education has the biggest predictive power, followed by number of siblings (with more siblings associated with less educational involvement from the mother). There is also more involvement in education from Indian mothers compared with white mothers, and less involvement from lone mothers and mothers working full time. Most of the explanatory factors were significant for play activities: higher levels of education were associated

with a greater frequency of play activities, having more siblings and working full or part-time was associated with less frequent play activities. Having a mother from most other ethnic groups compared to having a white mother was also associated with less frequent play activities. Interestingly mothers of all older age groups play with their children less frequently than the youngest mothers.

Figure 12

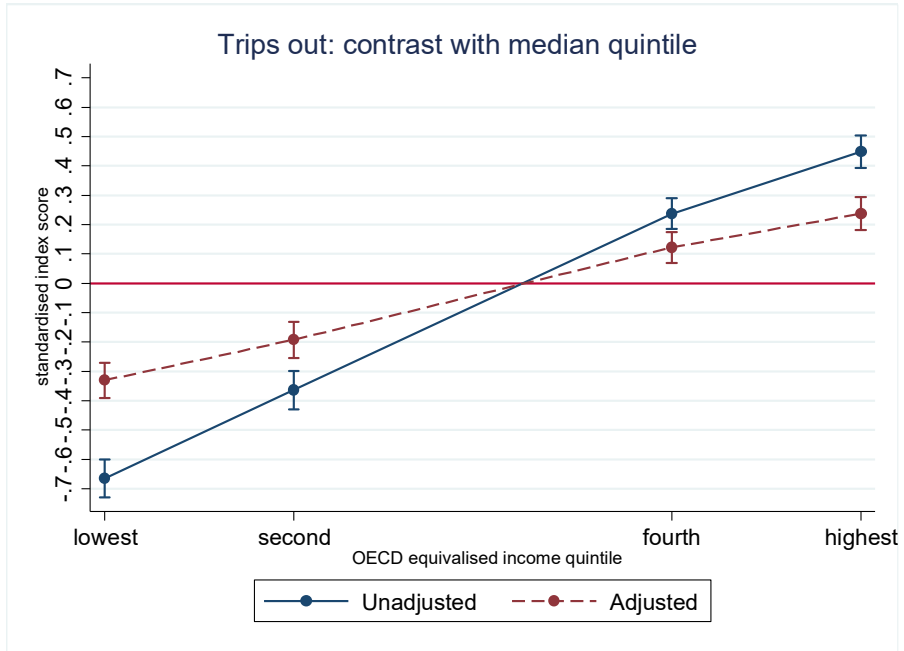


Figure 13

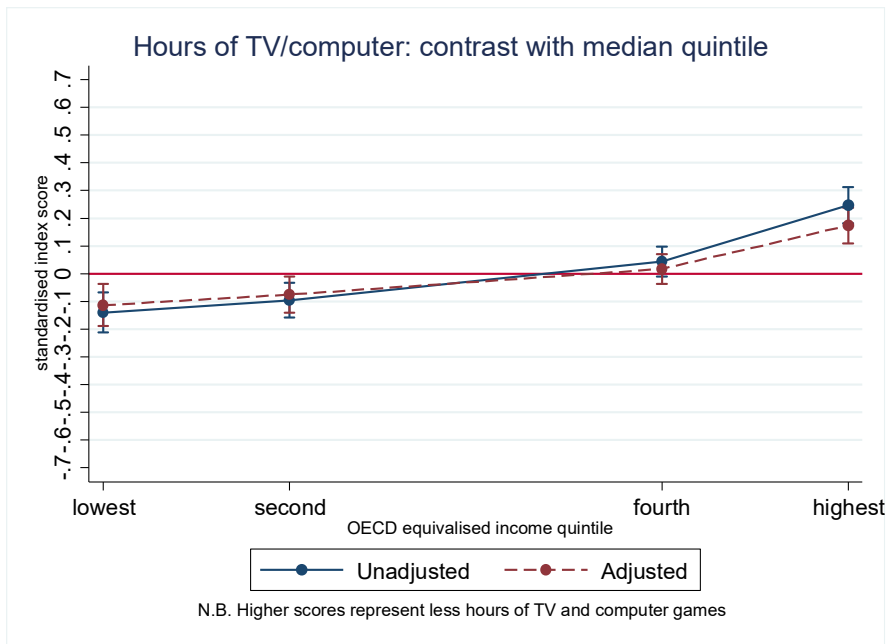


Figure 14

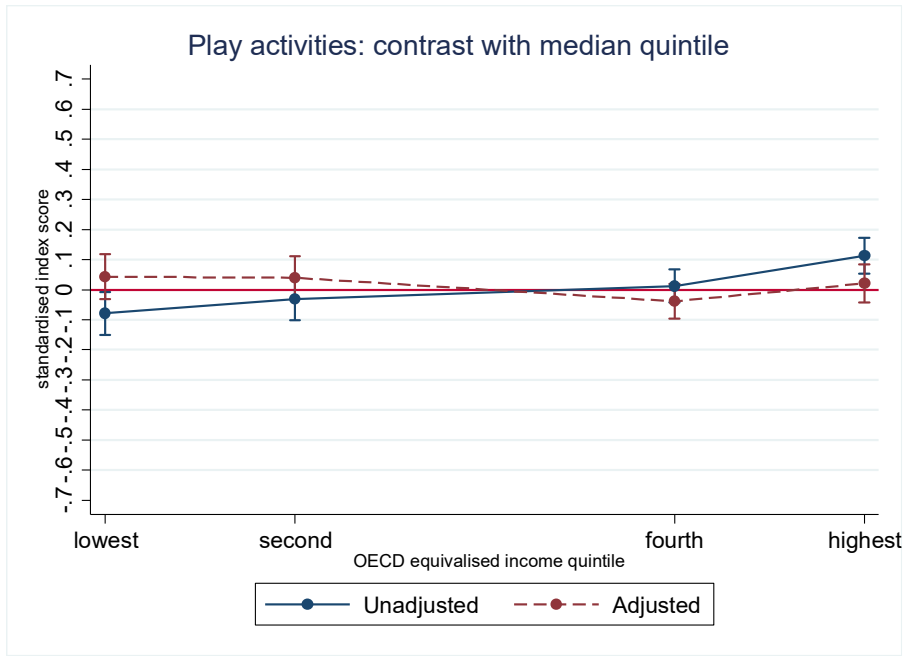
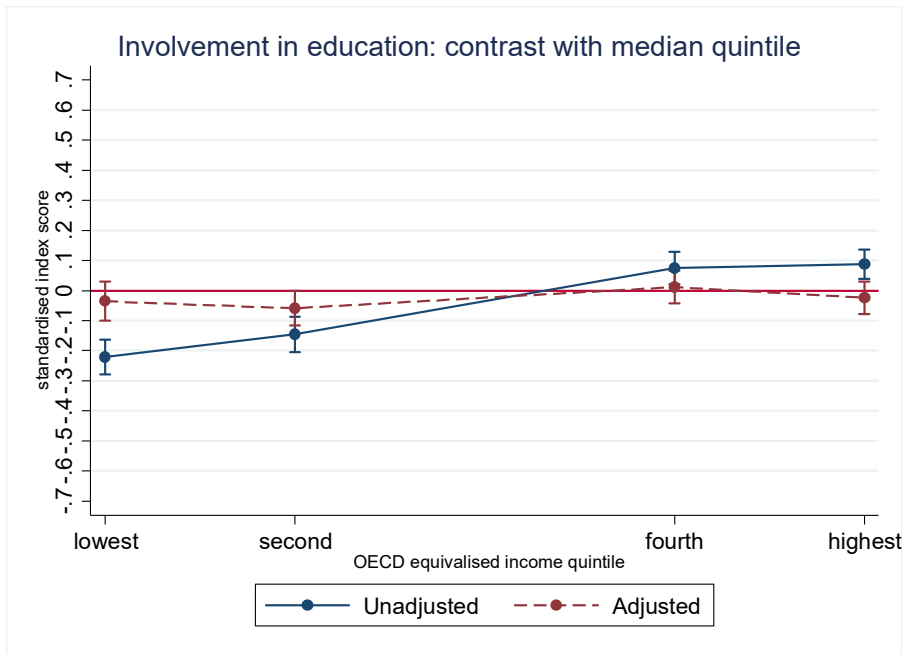


Figure 15



Confidence in parenting

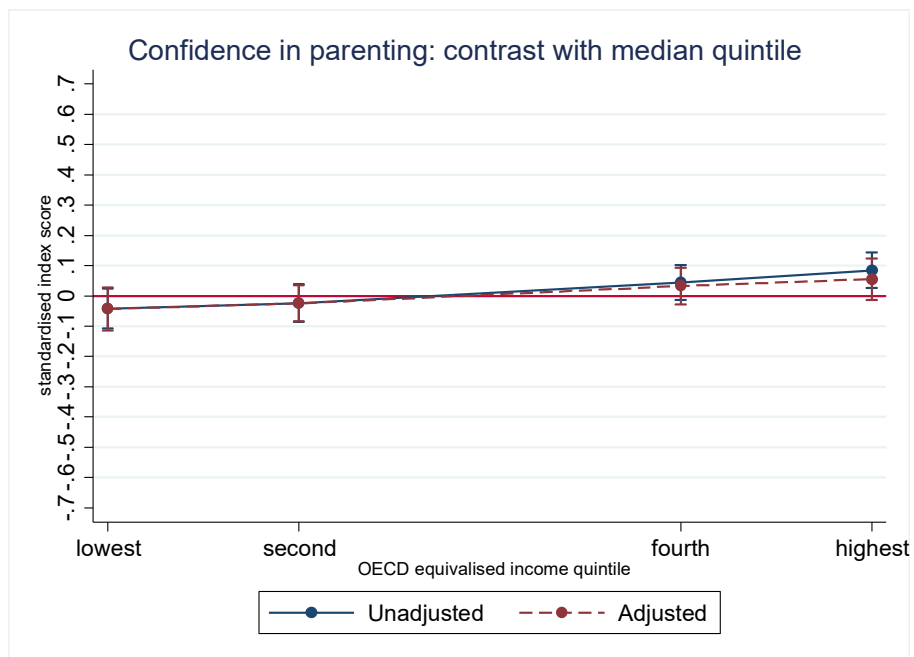
Table 40 Confidence in Parenting Regression Results in MCS wave 3

		Model 1	Model 2
Income quintile	lowest	-0.045 [0.03]	-0.047 [0.04]
	2nd	-0.031 [0.03]	-0.032 [0.03]
	4th	0.045 [0.03]	0.034 [0.03]
	highest	0.087 [0.03]	0.058 [0.03]
Maternal age	25 to 34		-0.011 [0.05]
	35 to 44		0.012 [0.05]
	45 plus		-0.127 [0.07]
Maternal education	NVQ level 1		-0.075 [0.05]
	NVQ level 2		-0.029 [0.04]
	NVQ level 3		-0.003 [0.04]
	NVQ level 4		0.059 [0.04]
	NVQ level 5		-0.021 [0.05]
Siblings	one		-0.09 [0.03] **
	two		-0.128 [0.03] ***
	three or more		-0.085 [0.04] *
Family composition	One parent/carer		-0.084 [0.03] *
Ethnicity	Mixed		0.11 [0.10]
	Indian		0.256 [0.07] ***
	Pakistani		0.364 [0.08] ***
	Bangladeshi		0.63 [0.10] ***
	Black Caribbean		0.247 [0.13]
	Black African		0.405 [0.11] ***
	Other Ethnic group		0.387 [0.08] ***
Maternal work status	working < 35 hours		-0.038 [0.03]
	working 35 hours+		-0.079 [0.03] *
	Constant	-0.039 [0.02]	0.069 [0.06]
	R-squared	0.002	0.017
	N	13515	13515

* p<0.05, ** p<0.01, *** p<0.001

Finally, mothers' confidence in their parenting ability was not found to be significantly associated with income; only the highest income quintile was significantly different from the median in the first model but once controls were added there was no difference in how good a parent respondents felt they were, by income quintile. The main explanatory factor for this measure was mother's ethnic group: mothers from most ethnic groups other than white on average had greater confidence in their parenting ability. To a lesser extent, having more than one child, working full time and being a lone parent was associated with lower levels of confidence in parenting ability.

Figure 16



5.8 Discussion

Table 41 summarises the overall results from the regressions with parenting indices. Once other explanatory factors were added there was not a significant difference between parents in the lowest and median income quintile for measures of the parent-child relationship (how close they felt to their child), the frequency of play activities and involvement in education and confidence in parenting (although as described above, some of the individual items of these indices were significantly different, including more frequent games, and help with writing and maths reported by parents in the lowest income quintile).

These results are difficult to compare to previous research as often measures have been grouped differently. I am not aware of previous studies that have analysed play activities separately for example. However some of these findings do stand out as being quite different from the existing literature. For example Kiernan and Huerta (2008) found that economic deprivation (measured as a combination of income poverty, financial difficulties and housing tenure) was significantly related to parent-child relations (measured at MCS wave 2 using the Pianta scale). These different findings could be for a number of reasons. Firstly for this analysis only one measure of parent-child relationship is available, which is not as comprehensive a measure as the Pianta scale.

Secondly, this analysis has only measured income; results may be different when different measures of hardship are used (as will be explored in the next chapter). Nevertheless these findings show that once potential explanatory factors are taken into account there is not a significant difference in how close parents feel to their child, when comparing parents in the lowest and median income quintile.

Finally, another important difference to note between this analysis and others is the use of parents in the median income group as the reference category; as argued previously, this is a more appropriate group for

comparison rather than all non-poor parents. This may explain some of the significant differences found in previous research that are not replicated here as this may be due to an exaggeration of differences between parents on low incomes and others when the comparison group includes those with the highest incomes.

Table 41 Summarising regression results for each parenting index measure in MCS wave 3

Parenting Measure	Significant bivariate results?	Significantly different from median in adjusted model?	Distinct or gradient?	Direction expected?
1. Physical needs	Yes	Yes	Gradient	Yes
2. Parent-child relationship	Yes	No	n/a	n/a
3.A. Authoritative discipline	Yes (only lowest)	Yes	Distinct	Yes
3.B. Harsh and permissive discipline	Yes (only lowest)	Yes	Distinct	Opposite
3.C. Routine	Yes	Yes	Gradient	Yes
4.A. Trips out	Yes	Yes	Gradient	Yes
4.B. TV hours	Yes	Yes	Gradient	Yes
4.C. Play activities	No	No	n/a	n/a
4.D. Involvement in education	Yes	No	n/a	n/a
5. Confidence in parenting	No	No	n/a	n/a

Of the measures where there remained a significant difference between parents in the lowest and median income quintile, most of these differences were part of a broader gradient. Parents in the lowest income quintile did score lower than parents in the median income group for meeting the child's physical needs (driven by frequency of breakfast and portions of fruit), had less routine (driven by less regular bed times), experienced fewer trips out and watched more hours of television. However, for all these measures parents in the median income quintile were also scoring less well than parents in the highest quintile. This suggests that for these types of parenting behaviours there is not something specific about having low income, but that these behaviours are influenced by income in general. It is easy to see how that would be the case with measures of trips out (and by association hours of television); trips out cost money, therefore the more money available to parents, the greater their ability to afford more trips out for their children. This measure also showed the largest difference between parents in the lowest and median income quintile, and therefore seems to be where income has the strongest relationship. The other measures, meeting physical needs and routine, are less straightforwardly explained as the mechanisms that explain these relationships are not as obvious. Importantly though, they show that low income parents are not uniquely different from other parents.

The only parenting measures for which parents in the lowest income quintile were found to be uniquely different are the two measures of discipline: authoritative and harsh or permissive. Parents in the lowest income quintile used less authoritative discipline (driven by telling off their child less frequently when naughty and making sure their child obeys instructions less often), compared with median income parents. Similarly, parents in the lowest income group reported using harsh or permissive discipline practices *less* frequently than parents in the median income group. These results were driven by low income parents smacking, shouting at and bribing their child less frequently when naughty. As

mentioned in the results these findings are at odds with the US literature, but they are in-line with previous analysis from the MCS: Jones (2010) finds in her analysis of the MCS second wave when children are aged around three years, that having family income below the poverty level is associated with less frequent harsh discipline (measured as smacking, shouting, bribing, ignoring and telling off). That these findings come from another wave suggest they are not an anomaly of the wave 3 data.

Still, given that these findings are counter-intuitive it is important to consider what might be explaining these differences rather than taking the results at face value. There are a couple of possible explanations. Firstly, it might be that parents in the lowest income quintile report using harsh or permissive discipline less because they just tell their child off less overall. However, additional analysis, carried out in order to factor out the naughtiness of the child (a problem due to the wording of the discipline questions), found that when proportions of discipline behaviours were measured instead, (i.e. of all discipline used, whether frequent or not, what proportion was harsh/permissive and what proportion was authoritative), this did not explain away these results (see Appendix 9). In the unadjusted model there was no significant difference between parents in the lowest and median income quintile, for the proportions of discipline behaviours used that are harsh or permissive and the proportion that are authoritative. In the adjusted model there was a small significant difference: of all their discipline behaviours, for parents in the lowest income group a slightly *smaller* proportion of discipline used was harsh/permissive discipline and thereby a slightly higher proportion was authoritative, compared with median income parents. This suggests these results cannot be explained by low income parents using both types of discipline strategies less frequently over all, but still opting for harsh or permissive discipline behaviours more than authoritative behaviours: parents in the lowest income quintile still report using a smaller proportion of harsh or permissive discipline techniques (of overall discipline used) than parents in the median quintile.

A second potential explanation could be that these results (and Jones' result from MCS wave 2) could be due to measurement error: although harsh discipline behaviours are likely to be underreported by most respondents it may be that due to greater fear of involvement of social services, parents in the lowest income quintile underreport these behaviours even more than parents on higher incomes. Previous qualitative research has shown that fear of state intervention on behalf of the child is an issue that causes anxiety for some lower income parents (e.g. Bostock, 2002: 278; Lareau, 2003: 218, 230). However, the questions regarding discipline strategies are completed using the electronic survey anonymously rather than answering directly to the interviewer which should go some way towards reducing this problem.

Thirdly, these results may be due to the measure of hardship used. In the next chapter I will be analysing different types of hardship, including debt and material deprivation which may show patterns with harsh discipline more in-line with the US literature, because of the more prominent link with these types of hardship and stress.

The role of other explanatory factors

Although not the main focus of this research, it is worth discussing briefly the role of other explanatory factors for differences in parenting behaviours (see Appendix 10 for a summary table of overall results for these factors).

Mother's age

The age of the mother was significant for all but three of the parenting measures, although interestingly in most cases the differences were negative for older mothers. Mothers aged 45 and over scored lower than the youngest mothers (18-24) on meeting children's physical needs and providing routine. Mothers in the two highest age categories (35 to 44 and 45 and over) used less authoritative discipline and all age groups took part in play activities less frequently with their child than the youngest mothers (aged 18 – 24). For only two parenting measures did having an older mother appear to confer an advantage: mothers who were 45 and over used less harsh or permissive discipline than the youngest mothers and mothers who were aged 35 to 44 had children who experienced more trips out. Mother's age was not significant for involvement in education, hours of television/computer games and confidence in parenting.

On the surface this is against expectations but it also makes sense that the advantage of having an older mother is likely to be driven by socioeconomic factors – once controlling for income, education and work status, overall older mothers do less well than the youngest mothers. This is also in-line with findings that despite young mothers getting a bad reputation the difference in outcomes of children with older mothers is largely explained by socioeconomic factors also (Hawkes and Joshi, 2012). These findings reinforce that and suggest that not only are young mothers not doing badly on most measures, but also that they are doing comparatively well on many compared with much older mothers. This may be because younger mothers have more energy to take part in activities

with their child and because, perhaps unlike mothers who have postponed childbearing until later possibly for career reasons, for young mothers their child may be their primary or sole focus.

Mother's education

In-line with existing literature (Gutman and Feinstein, 2007; Burgess et al, 2006), higher levels of maternal education are associated with better parenting scores on all but two measures which are not significant (use of harsh or permissive discipline and confidence in parenting ability). Mothers with higher levels of education score higher on meeting their children's physical needs, feeling close to their child, using authoritative discipline, having routine for their child, taking part in play activities with their child, being involved in their child's education and for their child experiencing more trips out. For mothers with an NVQ level of 3 or higher their child also spent fewer hours watching television and on the computer.

Possible reasons for the advantage of having a more highly educated mother, aside from the related socioeconomic factors that are included in the model such as income and work status, include mothers with more education being more exposed to professional guidance on parenting and more aware of for example nutritional guidelines. Mothers with higher levels of education themselves are also more likely to be equipped with the knowledge and skills required to be involved in their child's educational activities, such as help with reading and writing and going to parents evenings.

Number of siblings

Having siblings was a significant factor for all parenting measures apart from hours spent watching television or on the computer. Having a greater number of siblings was associated with lower scores for meeting physical needs, feeling close with the child, play activities with the child and involvement in their education, as well as fewer trips out for children with

more than one sibling. Having more siblings was also associated with lower confidence in parenting ability and greater use of harsh or permissive discipline techniques. More positively having more siblings was also associated with greater use of authoritative discipline strategies and more routine for the child.

It seems clear that the mechanisms explaining these results are likely to be the relative amount of time, attention and personal resources that a parent is able to give, given that these are being shared across more children. This may be particularly relevant for the measure of play activities and educational involvement. The higher score for routine is unsurprising in this sense, given that routine is likely to be key in dealing with meeting multiple children's needs. The stress associated with having more children may also explain some of these results, for example the more frequent use of harsh or permissive discipline. The results for trips out are also unsurprising; trips out for more than two children are not only more expensive but are also likely to require more effort and organisation. Perhaps one positive mechanism may explain the lower levels of mothers taking part in play activities with their children – this may in part be due to their child playing with their siblings.

Living with one parent

Living in a one parent household was significant for all measures apart from how close the mother felt to her child, the levels of routine, and the hours spent watching television or on the computer. Mostly living with one parent rather than two was associated with negative differences: lower scores on meeting physical needs, more harsh or permissive discipline, lower levels of involvement in education and play activities and lower levels of confidence in parenting. However, living with one rather than two parents is also associated with more authoritative discipline and more trips out, although perhaps this latter finding is related to activities during weekend visits to the parent who does not live at home.

These findings make sense given that parents who do not live with the child's father or with their partner are likely to face pressures of time, as the majority of parenting responsibilities falls on them alone and they do not have the support of a live-in partner, and this is likely to be even worse for single mothers who work. Mothers' mental health is also likely to explain some of these differences in parenting, as discussed previously (Kiernan and Mensah, 2010). A recent study by Platt and Haux (2015) found that following a separation mothers' confidence in their parenting ability is negatively affected and that this is largely explained by the negative impact of separation on mothers' mental health as well as children's behaviour (Platt, Haux and Rosenberg, 2015).

Ethnicity

The mother's ethnic group is a key factor for differences in parenting and is significant for all but two of the parenting measures. All ethnic groups (other than mixed) score lower than white mothers on meeting children's physical needs, taking part in play activities with their child and for their child experiencing trips out (although there was no significant association between mother's ethnic group and hours spent watching television or on the computer). Mothers who are Indian, Pakistani, Black African or are part of the 'other' ethnic category use less authoritative discipline techniques and feel less close to their child than white mothers. Mothers who are Bangladeshi, Black Caribbean, Black African and from the 'other' ethnic category have less routine for their child than white mothers.

For involvement in education only Indian mothers were significantly different from white mothers and were more involved in their child's education than white mothers.

Interestingly, there were no significant differences in the use of harsh or permissive discipline, by mother's ethnic group.

In terms of how mothers feel about their own parenting, all ethnic groups, (other than mixed which was not significant), had higher levels of confidence in their parenting ability than white mothers.

Some of these findings are in-line with previous literature, such as the findings regarding less frequent play activities as discussed earlier (Brocklebank et al. 2013). Using wave two and three of the MCS, Dearden and Sibieta (2010) find similarly that ethnic minority groups have less routine for their children, and that this difference is important for both cognitive and non-cognitive outcomes. The findings that Indian mothers are more involved in their child's education are not surprising given that Indian (as well as Chinese) children are more likely to achieve the expected educational level than other ethnic groups at all key stages of schooling (Bhattacharyya et al. 2003).

The finding that there are no significant differences in the use of harsh or permissive discipline by mother's ethnic group is surprising and opposite to what we would expect given the US literature which suggests that African Americans are more likely to use physical punishment (Phoenix and Husain, 2007; Brooksgunn and Markman, 2005). However, in-line with the findings here, Jones (2010) finds in her analysis of the second MCS wave when children are aged three, that mothers' (and partners') ethnicity is not significantly associated with the use of harsh discipline (measured as smacking, shouting, bribing, ignoring and telling off).

Given that there is relatively little research on ethnicity and parenting and especially in the UK context (Phoenix and Husain, 2007), there is a lack of literature to compare the rest of the findings to.

There are a number of reasons that might explain these differences in parenting by ethnic group. Firstly there may be some measurement issues. It may be that mothers from different ethnic groups score poorly on some parenting measures partly because of how and what is being measured. For

example it could be that not only are the parenting measures in the MCS biased in favour of middle class parenting but also biased in favour of white parenting. Brooksgunn and Markman (2005) have suggested this is the case with many US measures of parenting where behaviours measured are those typical of white middle-class parents, and other behaviours that are more prevalent in black or Hispanic families are not captured by the measures used. An example of how this might be the case with the MCS can be found in the measures of nutrition for instance, where parents are asked how many portions of fruit their child eats each day. Vegetables or other healthy foods which might be a staple part of some foods typical in different ethnic groups are not captured in this measure. Also the activities with the child that are asked about may not include other culturally specific activities.

Another reason to be cautious of the parenting measures of mothers from minority ethnic groups is that in some cases language barriers may affect the results and the questionnaire may have been translated.

A third reason that may explain part of the differences in parenting by ethnic group is experience of poverty; although income was included as the main independent variable, children of all other ethnic minority groups have a higher risk of being *persistently* poor than white children (Mostafa and Platt, 2014) and this may have a different relationship with parenting than short-term experiences of low income.

Finally, differences in parenting may be explained by cultural differences between different ethnic groups: that parents from ethnic minority groups have higher confidence in their parenting ability may suggest their notion of good parenting does not include exactly the same criteria as that embodied in the MCS measures. Previous research has found that most Asian or Black parents felt they had few parenting practices or values in common with white parents or each other and thought that white parents

'lacked a commitment to parenting' (Beishon et al 1998 in Phoenix and Husain, 2007:24).

Mother's work status

Whether the mother was working was significant for all parenting measures apart from use of authoritative discipline. Most of the differences were found only for mothers who worked full-time (35 hours a week or more). Mothers who worked full-time scored lower on meeting their child's physical needs, providing routine and involvement in educational activities, as well as having less confidence in their parenting abilities and their child spending more time watching television or on the computer, compared with mothers who did not work. This is particularly interesting given the Conservative Government's focus on 'workless households' at the time of writing (Department for Work and Pensions, 2017). More positively however, mothers that worked full-time used less harsh or permissive discipline. Mothers who worked part-time felt closer to their child than mothers who did not work and mothers that worked (part-time or full-time) took part in play activities with their child less, but their child also experienced more trips out.

The most obvious explanation for many of these findings is the time available to parents: parents who work, especially parents who work full-time, have less time available for activities with their child. Lower confidence in their parenting ability may be related to guilt felt by mothers who juggle the demands of working full time and being a mother. These results suggest that once the socioeconomic advantages of the main parent working are accounted for, there may be some negative impacts of mothers working, particularly full-time.

5.9 Summary and concluding thoughts

Overall it was found that whilst almost all parenting index measures were significantly related to income in the unadjusted model, once other explanatory factors were included a number of the measures were no longer associated with income. Specifically, how close the parent feels to the child (the one measure of parent-child relationship), and in terms of behaviours that are cognitively stimulating: frequency of play activities and parents' involvement in their child's education were also not significantly related to income. Some of these insignificant results are due to positive and negative differences cancelling each other out in the overall index score. Differences with previous research that found significant differences for low income parents in these types of measures of parenting are also likely to be due to using the median income parents as the point of reference rather than all other parents. This is a more appropriate reference category and suggests that some previous research may have exaggerated differences in parenting behaviours of low income parents by comparing low income parents to all others (including those at the very top of the income distribution).

Of the remaining indices of parenting behaviours that are still significantly associated with income, most of these were part of an income gradient across all income quintiles. Parents in the lowest quintile were not uniquely different in scoring worse than parents in the median quintile for meeting their child's physical needs, providing routine, providing trips out and the amount of hours spent watching television and on computer games. Rather, scores on these indices got better as incomes increased, so that parents in the median quintile, similarly scored worse than parents in the highest quintile. This is an important part of the story regarding the relationship between income and parenting as it goes against the popular discourse regarding poor parents, and has not been distinguished in previous empirical research which has focused on low income parents only. In terms of the mechanisms that are likely to explain why there is an

income gradient for these types of parenting, the Investment Model seems most plausible; as parents' resources increase they are able to invest in more goods and services for their children. This explanation fits most straightforwardly with the measure of trips outside of the home which also has the steepest income gradient; it is clear that as trips out cost money, parents with higher incomes are able to provide more trips out for their children.

Parents in the lowest quintile were found to be unique in their parenting differences (i.e. these differences were not part of a broader gradient) for only two parenting indices, and these were both related to discipline. Those in the lowest quintile were found to use authoritative discipline techniques less frequently than those in the median quintile. However, parents in the lowest quintile were also less likely to use harsh or permissive discipline. Again this is different to previous findings, and these results need to be interpreted with some caution. This pattern is not explained away by low income parents using less discipline overall, as examining the proportions of types of discipline used showed that for parents in the lowest income quintile, a slightly smaller proportion of their overall discipline behaviours were harsh/permissive compared to median income parents (see Appendix 9). These results are at odds with the US evidence on income and discipline. It will be explored in the next chapter whether different types of hardship, such as debt, show a similar pattern with harsh discipline as is seen in the US literature.

Although the discipline results require further exploration, analysis in part one highlighted that not only is it the case that for some parenting behaviours there is no significant difference by income group, for some measures parents in the low income parents are doing better than parents with median incomes, and many of these positive differences remain after adjusting for other associated factors (see Appendix 11). Aside from the discipline measures, parents in the lowest income group are still more

likely to be overrepresented in the 'ideal' categories for taking their child to the park, doing sport or exercise with their child, drawing or painting, playing indoor games, having someone at home help with maths or writing and having their child spend time with friends outside of school.

Findings from part 1 also highlighted that where there are negative differences in the parenting of low income parents, it is still a small minority of parents within the lowest income quintile that parent in ways considered to be 'poor' rather than just less 'ideal'.

In sum, these results show that when a more appropriate reference category is used for comparison (parents on median incomes) and when all income groups are considered, it becomes clear that poor parents are not an unusual or deviant group that are parenting differently to everyone else. There are not significant differences by income group for all parenting measures and where there are differences mostly this is part of a broader pattern: money makes a difference to all parents. Also, importantly, where there are differences not all of these are negative: for some measures parents in the lowest income group are doing better than median income parents. When we distinguish between differences that indicate 'poor' parenting, where there are differences these are mostly for a small minority of parents only within the lowest income quintile; there may be other factors at play for this smaller group – perhaps they are in more extreme hardship or perhaps stress or mental health problems are explaining these differences in parenting for this minority. Both these potential explanations will be explored in later chapters, first looking at different types of hardship and then considering the role of stress and mental health as a potential mechanism between hardship and differences in parenting behaviour.

Chapter 6

Debt, deprivation and feeling poor; how are different measures of economic hardship related to parenting?

The previous chapter examined the relationship between income and parenting, specifically comparing reported parenting behaviours of parents in the lowest income quintile group with parents in the median income quintile group. It was found that for a number of parenting behaviours there was no significant difference between parents in the lowest and median income quintile group, and that where there were differences these were mostly part of a gradient across all income groups. Just two types of parenting were found to be significantly different for parents in the lowest income groups only, once controlling for other confounding variables, including maternal education: parents in the lowest income group were less likely to use authoritative discipline practices but also less likely to use harsh or permissive discipline. It was also found that when differences in parenting were distinguished between 'poor' and 'ideal' parenting, often it was a small minority within the lowest income group that were behaving differently; it was suggested that this minority may be in more extreme hardship or there may be other factors at play that contribute to their differences in parenting. As a first step to exploring this further, in this chapter I analyse different dimensions of economic hardship, and the relationship between these and the parenting indices developed in the previous chapter, with a view to distinguishing different pathways/mechanisms between hardship and parenting.

There are a number of reasons for doing this. Firstly, the income measure used so far is likely to be of limited accuracy in terms of measuring true income levels. Measures of income are notoriously difficult to capture correctly in surveys, for a number of reasons including respondents

inaccurately reporting their income, not having full knowledge of their income (particularly for those who do not receive a standard salary or wage), and confusion over definitions of different types of income (Moore, Stinson & Welniak, 2000; Hansen and Kneale, 2013). Also because many people's incomes are quite volatile (Jenkins, 2011; Hills et al, 2006), even if income is reported accurately at the time of the survey, snapshot measures are not necessarily a good representation of people's permanent income. The accuracy of income measures is a particularly relevant concern for analysis using the MCS data, as the main income measure used is based on income bands, (although multiple measures are collected in the survey) and so is an approximation rather than a precise figure (Ketende and Joshi, 2008). It has been found that when asked to report their income in bands respondents tend to select the income band below which their income actually falls, because of concern that selecting their actual band might imply that their income is close to the top of the limit (Hansen and Kneale, 2013) (although Micklewright and Schnepf (2010) find that when asked a single question about individual rather than household income, it is possible to get very similar income distributions as when detailed questions are used). Finally, it has been found that income measures tend to be particularly inaccurate for those at the lower end of the income distribution (Brewer and O'Dea, 2012), which is the group of particular interest for this research. For all these reasons the income measures used in the analysis so far may not allow for an accurate comparison between parents in the lowest and median income quintile group, as these groups may not be precisely identified.

Secondly, regardless of the accuracy of income measures, income is still an indirect measure of living standards (Ringen cited in Alcock, 1997: 115) and so may not be the most appropriate way to identify parents experiencing economic hardship. The experiences of families on low incomes differ – not all families on low incomes experience material deprivation for instance; in fact it is well documented in research on multidimensional poverty that

there is not much overlap between different types of hardship and so measuring hardship in different ways leads to identifying different groups as poor (Whelan et al, 2004; Nolan And Whelan, 1996). Using alternative measures of financial hardship, such as debt or deprivation, may identify different respondents as being in economic hardship, than the income measure used so far, which may be too broad a measure and may be not capturing most of the respondents who are experiencing economic hardship.

Thirdly, and most importantly in terms of the focus of this research, different types of hardship may have independent 'effects' or be related to parenting through different mechanisms. For example, living in crowded accommodation may put particular strain on family relationships and parenting. Living in a disadvantaged area or feeling unsafe in the local area may limit the types of activities parents feel able to do with their child. Experiencing problems with debt may cause anxiety or stress which may lead parents to feel preoccupied or less patient with their children, perhaps affecting the types of discipline used. Being unable to afford certain items for children may be associated with feelings of guilt and depression and may impact parents' evaluation of themselves as good parents. If different dimensions of hardship are differentially related to parenting, it may be that some types of hardship are more influential for parenting than others, either in terms of affecting many different parenting behaviours, or in terms of having a particularly strong impact on the parenting behaviours for which there is a significant relationship. It would also suggest that different mechanisms may relate these different types of hardship to parenting. Understanding more about the relationship between different types of hardship and parenting may also help us understand more about the role of income for parenting.

6.1 Research Questions:

1. How are different types of hardship related to income levels?
 - Do the hardship measures identify a subset of the low income respondents? Or do the hardship measures identify different groups of respondents not captured by the low income measure?

2. Does the relationship between different types of hardship and parenting differ compared with the relationship between income and parenting?

3. Are different types of hardship associated with particular types of parenting?
 - Are some types of hardship particularly wide-reaching in their influence on parenting?
 - If so, what can be inferred about the mechanisms that explain these different relationships?

6.2 Data and Methods:

As with the previous chapter this analysis uses the third wave (where children are aged around five years) of the Millennium Cohort Study (MCS). The sample is restricted to singleton births, where the natural mother is the main respondent and has non-missing data on the six possible explanatory factors, introduced previously:

- Mother's education
- Mother's age
- Mother's work status
- Mother's ethnicity
- Number of siblings
- Family composition: whether living with one or two parents/carers.

This leaves a main sample size of 14,376 families. I estimate linear regression (OLS) models to explore the relationship between different measures of hardship (outlined below) and the nine indices representing the four domains of parenting from my conceptual framework (Figure 17).

Figure 17 Conceptual framework for parenting

<p>Meeting children's physical needs e.g. how often eats breakfast, how often does physical activities</p>	<p>The parent-child relationship i.e. how close does the parent feel to the child</p>
<p>Socialising through discipline and structure</p> <ul style="list-style-type: none"> ○ Authoritative discipline ○ Harsh or permissive discipline ○ Routine 	<p>Facilitating learning and cognitive stimulation.</p> <ul style="list-style-type: none"> ○ Trips out ○ Hours spent on electronic entertainment ○ Play activities ○ Involvement in education

Nine measures of hardship are used, these are listed below and then described in more detail:

- Persistent poverty
- Debt
- Material deprivation
- Subjective hardship
- Residential crowding
- Problems with damp housing
- Mother's evaluation of the local area (how good the area is to bring up children and how safe the mother feels in the area)
- Interviewer observations of the area (from wave 2)
- Index of multiple deprivation

Table 42 Hardship measures in MCS wave 3 in original and recoded form

Variable and question	Original categories	Binary variable used in analysis
Poverty: OECD equivalised below 60% median income poverty measure	Above 60% median Below 60% median	Persistent poverty: In poverty in waves 1, 2 and 3
Debt: May I just check, are you up-to-date with the bills on this card or are you behind with any of them?	Behind with the electricity bill Behind with other bills like coal or oil Behind with rates Behind with telephone bill Behind with television/video rental or Behind with other HP payments Behind with credit card payments Behind with bank or loan repayments Not behind with any of these N.B. Slightly different list of bills used for Northern Ireland.	Debt: Behind with one or more bill
Material deprivation: The next questions are about the sorts of things that some families have but that other families do not want or cannot afford. Do you have...	A weatherproof coat for [child]? Two pairs of all-weather shoes for [child]? A small amount of money to spend on yourself weekly, not on the family? A holiday once a year, not staying with relatives? Celebrations on special occasions such as birthdays, Christmas or other religious festivals? 1 We have this 2 We would like to have this, but cannot afford it at the moment 3 We do not want/need this at the moment	Material deprivation: Deprived of two or more items

Variable and question	Original categories	Binary variable used in analysis
Subjective hardship: How well would you say you [^and your husband/wife] are managing financially these days? Would you say you are ...	1 ... living comfortably, 2 doing alright 3 just about getting by, 4 finding it quite difficult, 5 or, finding it very difficult?	Subjective hardship: Finding it quite or very difficult to manage financially
Housing		
Number of rooms: How many rooms do you and your family have here excluding bathrooms, toilets, halls and garages?	Continuous measure Range: 29 Mean: 6	Crowded accommodation: More than one person per room
Damp: How much of a problem do you have with damp or condensation on the walls in your home, apart from in the kitchen or bathroom?	1 No damp 2 Not much of a problem 3 Some problems 4 Great problem	Damp housing: Some or great problems with damp
Local area		
Mother's evaluation of area: Is this a good area to bring up children? Which of these phrases best describes how safe you feel this area is? N.B. 'your area' refers to within about a mile or 20 minutes walk of their home.	1 Excellent 2 Good 3 Average 4 Poor 5 Very poor 1 Very safe 2 Fairly safe 3 Neither safe nor unsafe 4 Fairly unsafe 5 Very unsafe	Mother's negative evaluation of the area: Mother <i>either</i> describes the area as poor or very poor for bringing up children <i>Or</i> Feels fairly or very unsafe in the area

Variable and question	Original categories	Binary variable used in analysis
Interviewer observations How did you feel parking, walking, waiting at the door in the street?	1 Very comfortable, can imagine living/ shopping here 2 Comfortable - a safe and friendly place 3 Fairly safe and comfortable 4 I would be uncomfortable living/ working/shopping here 5 I felt like an outsider, looked on suspiciously 6 I felt afraid for my personal safety N.B. these measures are from wave 2 of the MCS and are only used for families that did not move house between waves 2 and 3.	Negative observation of local area: If interviewer selected any of the worst three categories: would feel uncomfortable there/ felt like an outsider/felt afraid for their personal safety
Indices of Multiple Deprivation (IMD) for England only	A weighted index combining measures of seven different types of deprivation (see fuller description below). Super Output Areas are then ranked according to their overall deprivation score. The IMD 2004 is available already linked to the MCS grouped into tenths of the distribution.	Area is in most deprived decile of the IMD (England)

Poverty

The poverty measure was included in this analysis as an income-based measure of hardship (different to the income quintile measure used in the previous chapter which allowed for using median income families as the reference point), which is a useful comparison to the other non-income based hardship measures. It is also a measure which is commonly used in existing research into hardship and parenting (e.g. Kiernan and Mensah, 2011, Dermott and Pomati, 2015) and so also provides a useful comparison with previous analysis. It is important to include this measure in the

analysis because existing research has found that poverty (particularly persistent poverty) is associated with less favourable parenting practices (Kiernan and Mensah, 2011; Holmes and Kiernan, 2013).

In line with the Government's official estimate published in the Households Below Average Income Statistics (HBAI), the poverty indicator in the MCS counts those with incomes below 60% of the median income as in relative poverty; this is before housing costs and is equivalised to take account of family size (Ketende and Joshi, 2008). A couple of differences between the MCS poverty indicator and the official measure are worth highlighting. Firstly, the measure is based on the banded income measure (assigning families to the mid-point of their band) rather than using the measures obtained from multiple questions regarding different income sources (Bradshaw and Holmes in Hansen et al 2010). The difficulties and problems with inaccuracies when measuring income have already been discussed, but in terms of the impact this has on estimating whether respondents are in poverty or not, Hansen and Kneale (2013) found that when the poverty indicator was based on the single (banded) income measure, this gave a much bigger estimate of the number of families in poverty than when multiple sources of income were used (which is expected to give a more accurate measure of income).

The poverty indicator in the MCS is also different to the HBAI because it takes family rather than household income, which is likely to result in a higher estimate of poverty in the MCS (as there may be other adults earning income in the households but unlike in the Family and Resources Survey (FRS) on which the HBAI estimates are based, this income is not counted in the MCS measure) (Ketende and Joshi, 2008). In addition, the reference point in the MCS is families with a child of the same age (around five years) not all families (Mostafa and Platt, 2014). In fact the poverty estimate for the third wave is higher than the estimate published in the HBAI (Ketende and Joshi, 2008). Despite its lack of comparability with the

official poverty figure, the poverty indicator in wave 3 of the MCS has been found to behave similarly to the official measure in terms of relative patterns between different countries within the UK (Ibid). Whilst we should be cautious about treating the MCS poverty measure as a precise cut off, it is an effective measure for distinguishing 'lower income families at risk of poverty from higher income families at lower risk of poverty', especially when making use of the poverty measures in previous waves (Mostafa and Platt, 2014: 79).

This leads onto another point to note: there is lots of movement of families into and out of poverty and so a number of families experience transitional poverty only, whilst others are persistently poor (Jenkins, 2011; Whelan et al. 2004). The poverty indicator does not distinguish between these different experiences of poverty. A number of studies have used measures of poverty from multiple waves to distinguish those counted as in poverty in just one wave of the survey from those who have a more long-term experience of poverty (e.g. Dickerson and Popli, 2016; Holmes and Kiernan, 2013, Schoon et al, 2013). In line with these studies, I measure persistent poverty, defined here as being in poverty for wave 1, 2 and 3 inclusive. It should be acknowledged that as poverty was only measured at the time of the survey, those counted as in persistent poverty may have moved out of poverty in between survey years, so it is not a perfect measure of persistent poverty. Taking this approach requires observations from each of the three waves from which the poverty measure is used; because of this the sample size is reduced from 14,376 to 12,406 as only respondents with non-missing poverty data in each of the three waves are included. Whilst the reduction in sample size is a trade-off of measuring persistent poverty rather than poverty in wave 3 only, this measure more accurately identifies respondents in long-term income poverty.

Debt

The original measure of debt was recoded into a binary variable, measuring if the respondent was behind with one or more bills (see Table 42 for bills included in this). This included around 15% of the sample. Debt was included in the analysis as it is a form of hardship that is distinct from low income or poverty (it is quite possible to not be in poverty but to have debt and vice versa). A mixed methods study by Ghate and Hazel (2002) found that debt was one of the most common difficulties for parents in their study; some parents felt unable to avoid debt and that the stress caused by long-term debt and dealing with creditors added to the difficulty of trying to bring up a family on low income (Ghate and Hazel, 2002: 70). A number of qualitative studies have found that debt was a common theme in being the cause of a lot of anxiety for parents (Ridge, 2009; Kempson, 1996; Hooper et al. 2007; McKendrick et al. 2003). In terms of other quantitative studies or in particular studies using the MCS data there are none to my knowledge that analyse the relationship between debt and parenting, so it is an interesting measure to explore in relation to the parenting measures.

Material deprivation

Material deprivation can provide a more direct measure of living standards. This type of measure was established by Townsend in his 1979 study *Poverty in the United Kingdom* and further developed by Mack and Lansley in the *Breadline Britain* documentary series, carrying out a national survey of what people saw as necessities and then what necessities they were lacking due to not being able to afford them, counting as poor households those that lacked three or more necessities (Hills, 2004: 41). This measure is still produced from the Poverty and Social Exclusion survey (PSE) and was part of the former official UK child poverty measure. A similar measure, based on 21 necessities is produced by the Family Resources Survey (FRS) and is published in HBAI (HBAI, June 2015), and a subset of the HBAI questions are included in the third wave of the MCS.

These relate to five items or activities deemed as necessities: a weatherproof coat for the child; two pairs of all-weather shoes for the child; a small amount of money for the main parent to spend on themselves weekly; a holiday once a year (not staying with relatives); celebrations on special occasions.

Consistent with the PSE, I take a threshold of lacking two or more items as being materially deprived; 15.5% of the sample are included in this category. As can be seen from the tables below, very few respondents were deprived of more than two items and the items that respondents were most commonly deprived of were an annual holiday and a small amount of money for the mother to spend on herself each week.

To my knowledge there is no research to date on the relationship between material deprivation and parenting, but again there is some qualitative evidence that being unable to afford items, including necessities, has a negative impact on parents, causing stress and feelings of guilt that their child is missing out and can even lead to conflicts between parents and children (Ghate and Hazel, 2003; Beresford et al. 1999; Hooper et al. 2007; McKendrick et al. 2003).

Table 43 Number of items respondents are lacking due to being unable to afford them in MCS wave 3

Total number of items	Frequency	Percent (weighted)	Cumulative percent
0	8,714	61.6%	61.6%
1	3,319	22.9%	84.5%
2	1,862	12.7%	97.2%
3	351	2.4%	99.5%
4	67	0.4%	99.95%
5	10	0.0%	100.0%
Total	14,323		

Table 44 Percentage of respondents lacking each item in MCS wave 3

Item	Cannot afford it
Annual holiday not staying with relatives	29.4%
Small amount of money to spend on self weekly	23.1%
Two pairs of all-weather shoes for child	2.1%
Celebrations for special occasions e.g. birthdays	1.7%
Weather-proof coat for child	1.0%
N= 14323	

Subjective hardship

How people feel about their financial situation is another important dimension of hardship to consider. Feeling like you are not managing well financially may in itself lead to worse parenting, as this may cause feelings of stress, anxiety or inferiority. Relatedly there is a large literature on the theory of relative deprivation, particularly in relation to health, that suggests that the amount of resources you have relative to others is also important; feeling that you have less than others or lower status can have negative effects on both mental and physical health (e.g. Benzeval et al 2014

in relation to health). In the MCS respondents are asked to rate how well they are managing financially, with five response categories from 'living comfortably' to 'finding it very difficult'. Dermott and Pomati (2015) used a similar measure in their research – respondents in the PSE survey were asked whether they consider themselves poor and whether they consider their living standard is below average. They found no significant relationship between these subjective measures of hardship and the relative risk of parents having low engagement (measured as three or fewer days) in parental activities. However, the PSE survey only includes a limited variety of parenting measures. For example, there were no measures of discipline or the parent-child relationship and only a limited measure of meeting children's physical needs (time spent doing sporting activities with the child). Kiernan and Huerta (2008) also made use of the subjective measure of hardship in the MCS (first two waves), although it was not measured separately but included in their latent measure of hardship, in combination with income poverty and housing tenure. They found that economic deprivation (measured as housing tenure, financial difficulties (or what I am calling subjective hardship) and income poverty) was associated with increased risk of maternal depression, and was also associated with less frequent reading activities and less positive mother-child relations, although it was not related to disciplinary practices.

For this analysis respondents are counted as being in subjective hardship if they describe themselves as 'finding it quite difficult' or 'finding it very difficult' to manage financially, in-line with previous analyses of this measure (Bradshaw and Holmes: 2010; Kiernan and Huerta: 2008). 10.5% of the sample fall into these categories.

Crowding

Overcrowded accommodation is a problem some families in hardship face and is documented in some of the qualitative evidence as adding further strain to family relationships, due to the amount of time spent together in a confined space, and lack of privacy for parents (Attree, 2004; Hooper et al., 2007; Ghate and Hazel, 2002).

Schoon et al (2011) find in their analysis of the MCS that crowding is independently associated with children's cognitive outcomes, above and beyond poverty and other related factors. A number of quantitative studies have found that crowding itself can negatively impact parenting behaviours (e.g. Wachs and Camli, 1991). Of particular relevance is a study by Evans et al (2009) which uses the first two waves of the MCS (as well as a smaller US sample) and finds that, controlling for income, mothers in more crowded homes are less responsive to their children and this explains part of the relationship between crowding and children's cognitive development. In their study of inequality in children's educational and psychosocial development, Sacker et al (2002) use crowding, although again it is not measured separately but included in a latent measure of hardship in combination with housing tenure, type of accommodation, claiming benefits and household facilities, using the National Child Development Study (NCDS). They found that the latent hardship measure was significantly associated with both educational and psychosocial outcomes for children. Crowding is therefore an important dimension of hardship to include in the analysis.

In terms of the definition and measurement of crowding, there are different approaches. The US Census Bureau considers having more than one person per room as crowded (Evans et al, 2009). This differs from the UK legal definitions, of which there are two standards: one based on numbers of rooms for people to sleep in (the bedroom standard) and one based on space available in relation to the number of people in the home (the space

standard) (Housing (Crowding) Bill, 2003). Based on the bedroom standard a household should have a separate room to sleep in for each couple, single adult aged 21 or older and two young people of the same sex aged between 10 and 20 years, two people of the same or opposite sex aged under 10 years (Ibid). This definition counts living rooms as rooms that can be slept in, but excludes rooms that are less than 50 square feet (Ibid). Using the space standard, the area of the floor space is calculated and the space considered adequate is as follows: 110 square foot or more for two people; 90 square foot or more (but less than 110 square foot) for 1.5 persons; 70 square foot or more (but less than 90 square foot) for 1 person; and 50 square foot or more (but less than 70 square foot) for half a person. Children aged under five years count as half a person (Ibid).

The measures available in the MCS are number of rooms in the household, excluding bathrooms, halls, toilets and garages, as well as total number of people in the household (Nacsen, 2008). In their study Evans et al (2009) argue that people-per-room definitions have been found to be more consistently related to measures of health and behaviour than definitions based on space; they use the ratio of number of people to number of rooms to create a crowding index. This does not provide a cut off however for being overcrowded. In their analysis of the MCS, Tunstall et al (2011) label households as crowded when there are more than 1.5 persons per room. Whilst this definition might over-estimate the number of cohort children in crowded homes, compared to the UK legal definition, in other ways this may provide quite a conservative estimate: as Tunstall et al. (2011) highlight, we do not have information on the types of rooms in the house: 'A home with three rooms for example, could be a one-bedroom home with a separate living room and kitchen or a two-bedroom home with combined kitchen and living room. A more typical two-bedroom home would have a total of four rooms' (p5). In this analysis I use more than one person per room as a crowding cut-off, in-line with US Census Bureau. Given that the mean number of persons per room is 0.76 in the MCS dataset and 91% of

households have one person per room or less, the cut-off of greater than one persons per room seems reasonable in relation to the number of persons per room the majority of households in the sample have; using this cut-off will identify the most crowded 9% of the sample.

Table 45 Descriptive statistics for number of persons per room in MCS wave 3

Number of persons per room	
Mean	0.76
Median	0.71
Mode	1.00
N	14,326

Problems with damp, as a measure of housing quality

Aside from being problematic for health (Peat, Dickerson and Li, 1998) having problems with damp can be an indication of poor quality housing. Having problems with damp housing may also make some rooms uninhabitable, thereby creating hidden overcrowding. Again the quantitative evidence on the relationship between housing quality and parenting is lacking, but there is qualitative evidence that experiencing problems with low quality housing can add to parents' stress and the energy required for managing on low resources (Ridge, 2009; Hooper et al. 2007; Ghate and Hazel, 2002). Of course damp is just one type of problem with poor quality housing, so this measure will not be identifying all respondents that have poor quality housing in other ways. In the analysis respondents are coded as having problems with damp if they answered that they had 'some' or 'great' problems with damp, which applies to 7.5% of the sample.

Characteristics of the local area

Again, some qualitative research has found that characteristics of the local area can have an important impact on families' lives and directly affect parenting behaviours: for example Power found that for parents living in disadvantaged and often dangerous areas fear was often 'a dominant influence over how parents exercise control' and usually resulted in parents restricting their children to staying indoors in order to protect them, whilst aware that guarding them in this way was in conflict with encouraging them to develop, socialise and gain confidence (Power, 2007: 101). Keeping children cooped up in this way could further agitate relationship problems, especially in crowded housing (Hooper et al. 2007; Attree, 2004).

Two subjective measures of the local area are included in this analysis. Firstly, respondents were asked to rate how good they think their local area is for bringing up children. Secondly, respondents were asked how safe they feel in their local area. For the first measure the worst two categories, describing the area as 'poor' or 'very poor' for bringing up children were combined; these two categories include 6.7% of the sample. Similarly, for the second measure feeling 'fairly unsafe' or 'very unsafe' in the area were combined to form a binary measure; 5.4% of the sample answered with one of these two categories. In combining these two measures, the area was counted as poor or unsafe if the mother reported *either* feeling unsafe *or* described the area as poor for bringing up children (and had non-missing data on both these measures to avoid over-estimating negative cases).¹⁶ 8.8% of the sample described living in an area that was unsafe or poor for bringing up children. A study by Schoon et al, (2013: 42) found that for children who experienced persistent poverty, their parents were significantly more likely to rate their local area as not safe of good areas for

¹⁶ Only 66 respondents had missing data for one of these measures.

bringing up children, but also that these two measures independently associated with child outcomes (p46).

In addition to the self-reported measures of the local area, two other area measures are used. Given that how people feel about their area may be related to a host of other factors, using these two additional measures allows for a more exogenous measure of the local area. The first of these is an observation of the local area from the interviewer at wave 2 of the survey. On each visit to the respondent's address the interviewer answered 11 questions about the local area, including questions about graffiti, traffic, dog mess, vandalism and adults or teenagers in the street drinking, fighting or behaving in a hostile way¹⁷. For this analysis I used the final question as a summary measure of the interviewer's observations of the area: 'How did you feel parking, walking, waiting at the door in the street?' There were six answer categories that ranged from 'Very comfortable...' to 'I felt afraid for my personal safety'. In the analysis I combine the worst three categories: feeling uncomfortable, feeling looked on suspiciously and fearing for their personal safety, which was reported for just under 9% of MCS households. As these observations were recorded every time the interviewer went to the household, for some MCS families there were as many as fifteen sets of observations. I used just one set for each household, taking observations from the first visit only. Although impressions the interviewer has of the area may be affected by the time of day and day of the week on which the visit took place, this should not bias the observations used as I expect the time of day and day of the week that the first visit took place to be random.

These observational measures were recorded in the second wave of the MCS and so for households that have moved since then or for areas that have significantly changed over time the observational measures are less

¹⁷ The neighbourhood assessment form used can be found on the Centre for Longitudinal Studies website at the following address <http://www.cls.ioe.ac.uk/shared/get-file.ashx?id=370&itemtype=document> (accessed 22nd May 2017)

valid. Because of this I restrict the analysis of this measure to respondents who have not moved between waves 2 and 3, which addresses the first of these problems. In terms of whether the area has changed much between waves 2 and 3 this will be discussed further below.

The second exogenous area measure used is the Index of Multiple Deprivation (IMD). This is already available linked to the third wave of the MCS. The IMD provides a *relative* measure of deprivation for 'Super Output Areas' (SOAs), which are small geographical units across England. It comprises seven distinct dimensions of deprivation:

- income deprivation
- employment deprivation
- health deprivation and disability
- education, skills and training deprivation
- barriers to housing and services
- living environment deprivation
- crime

A number of indicators are used for each domain – 37 indicators are used in total (Noble et al, 2004). Indicators are combined and summarised in a single measure under each domain; all domains are aggregated for the overall Index of Multiple Deprivation, although different domains are differentially weighted, giving most weight to income and employment deprivation (see Nobel et al. 2004: 46). These indices (seven for each domain, two supplementary indices for income deprivation affecting children and older people, and the overall IMD) are ranked (the most deprived SOA is given a rank of 1), comparing each of the 32,482 SOAs in England across each domain as well as on their overall IMD score. As the IMD data linked to the MCS is already grouped into deciles I use the most deprived ten percent of areas, as measured by the overall IMD, as a cut off.

There are a couple of caveats to this measure: firstly, the IMD is specific to England (and not comparable to the alternative indices used for Scotland,

Wales and Northern Ireland) and so using this measure reduces the sample to respondents in England only. Secondly, the IMD measures that are linked to the MCS are from the IMD 2004, around 2 years before the wave 3 survey was conducted. Whether there has been much change in the areas during this time is a difficult question to answer. Rankings for the next IMD, published in 2007 are not entirely comparable to the IMD 2004 as there were changes in the indicators used for the income domain due to changes to the social security system¹⁸ (Noble et al., 2008: 14). Also any comparisons can only show changes relative to other LSOAs rather than actual changes in the area. Nevertheless if we look at results from the more recent IMD 2010 they show relatively little change in the rankings compared with the previous IMD 2007, particularly for the most deprived areas: 88% of the most deprived areas were in the same decile for 2007 and 2010 (Communities and Local Government, 2011). This can provide some reassurance that there is unlikely to be a lot of movement in the rankings between 2004 and 2006, and so these measures should still be valid.

¹⁸ Specifically the introduction of Pension Credit, Working Tax Credit and Child Tax Credit.

Table 46 Descriptive statistics for all hardship measures in recoded form in MCS wave 3

Hardship measure	Frequency	Percent (weighted)
Persistent poverty		
not in persistent poverty	10,114	83.9%
in poverty waves 1-3 inclusive	2,292	16.1%
Total	12,406	
Debt		
not behind with any bills	12,174	84.9%
behind with at least one bill	2,129	15.1%
Total	14,303	
Deprived of 2 or more items		
no	12,033	84.5%
yes	2,290	15.5%
Total	14,323	
Subjective hardship		
getting by or living comfortably	12,815	89.5%
finding it quite/very difficult	1,508	10.5%
Total	14,323	
Crowded housing		
no	12,884	91.2%
yes	1,442	8.8%
Total	14,326	
Problems with damp		
no	13,248	92.5%
yes	1,075	7.5%
Total	14,323	
Poor area for children or feel unsafe in area		
no	12,914	91.2%
yes	1,396	8.8%
Total	14,310	
Interviewer felt uncomfortable in local area (wave 2)		
no	10,171	90.7%
yes	1,236	9.3%
Total	11,407	
Area in most deprived decile on IMD (England)		
no	7,514	88.3%
yes	1,502	11.7%
Total	9,016	

6.3 Results

The extent of overlap between different types of hardship

A key question about the alternative hardship measures is whether they are identifying a (perhaps more disadvantaged) sub-set of the low income respondents, or whether they are identifying a different group of respondents that are not captured by the low income measure. Of course how much these measures overlap partly depends on where the cut-offs for each measure are drawn. However, for each alternative measure I have counted those in the worst 16% or less as being in hardship. Although we would expect more overlap with broader cut-offs, the hardship measures used are identifying relatively small groups of the least advantaged respondents on each measure.

As can be seen in Table 47 below, the hardship measures are not simply identifying a sub-set of the low income respondents. Although for each hardship measure the largest proportion of respondents can be found in the lowest income quintile, for all of the non-income based measures this still only accounts for around half of the respondents with each particular hardship. Respondents with each of these non-income-based hardships can be found in all income quintile groups, including the highest, although the proportion of respondents in each income quintile group declines sharply as income increases. These hardship measures do not overlap perfectly with the lowest income quintiles, however, there is a very strong income gradient, with very few people in the highest income quintile experiencing any of the different types of hardship. In fact the number of respondents in the highest quintile experiencing hardship is even smaller than appears at face value, given the overall number of respondents within each of the hardship categories. For example, 3.6% of those who experience crowding are in the top income quintile, but this is of those in crowded accommodation which is only 9% of the overall sample.

Previous research has documented the limited overlap between hardship and income measures: that those identified as being in income poverty are largely not the same respondents found to be in material deprivation (e.g. Nolan and Whelan, 1996) and this is the case even when using longitudinal measures of both poverty and deprivation (Whelan et al 2004). Whilst Table 47 could be interpreted as corroborating these findings, as it shows for instance that around 20% of respondents that report being deprived of two or more items have incomes in the median quintile or above, the steepness of the gradient with which experiences of hardships decline at the higher ends of the income distribution, suggests that whilst not perfect, overall income seems to be a good measure on the whole for identifying respondents experiencing hardship of different kinds. This interpretation is consistent with existing literature: Berthoud and Bryan (2011) find in their analysis that income is still the best predictor of deprivation. Table 47 also shows that focusing on only the lowest income quintile misses around half those who experience each of these different hardships, but the two lowest income quintiles taken together include between 70-80% of those experiencing each hardship, demonstrating that these experiences of hardship are still very related to low income.

Table 47 Percentage with each hardship measure by income quintile, row percentages, in MCS wave 3

Hardship measure	OECD equivalised income quintile					Total	Sample size
	lowest	2nd	3rd	4th	highest		
Persistent poverty	75.0	25.0	0.0	0.0	0.0	100	12406
Debt	47.7	30.1	12.8	5.7	3.8	100	14287
Material deprivation	51.9	27.1	13.3	6.1	1.6	100	14303
Subjective hardship	45.5	24.9	16.9	9.6	3.1	100	14304
Crowded housing	43.9	31.4	14.1	6.9	3.6	100	14308
Damp housing	40.0	27.0	15.7	9.1	8.3	100	14305
Poor/unsafe area	43.9	30.9	13.1	7.8	4.4	100	14292
Negative area observation	47.7	27.7	14.5	6.7	3.3	100	11362
Worst decile Index of Multiple Deprivation	51.7	29.5	11.1	5.0	2.7	100	8970

Table 48 Proportion of overlap between experiences of different hardships in MCS wave 3

	persistent poverty	debt	deprivation	subjective hardship	crowded housing	damp housing	poor/ unsafe area	negative area observation	worst decile IMD
persistent poverty	1	0.36	0.41	0.22	0.22	0.16	0.22	0.28	0.34
debt	0.42	1	0.42	0.31	0.15	0.16	0.20	0.22	0.20
deprivation	0.46	0.41	1	0.35	0.17	0.15	0.19	0.20	0.22
subjective hardship	0.36	0.45	0.52	1	0.14	0.14	0.19	0.16	0.16
crowded housing	0.44	0.26	0.30	0.16	1	0.17	0.19	0.23	0.26
damp housing	0.36	0.32	0.30	0.20	0.20	1	0.22	0.22	0.22
poor/unsafe area	0.44	0.34	0.34	0.23	0.19	0.19	1	0.31	0.38
negative area observation	0.52	0.33	0.32	0.17	0.22	0.18	0.29	1	0.39
worst decile IMD	0.52	0.27	0.30	0.16	0.20	0.15	0.31	0.32	1

Multiple deprivation

Having discussed the relationship between hardship and income, it is also useful to consider the overlap between the different hardship measures with each other. As can be seen from Table 48 there is a moderate amount of overlap between experiencing different hardships. The most closely related types of hardship are persistent poverty, debt, deprivation and subjective hardship. Of those who are in debt, 42% have also experienced persistent poverty and the same proportion are also materially deprived. Of those materially deprived, 46% have experienced persistent poverty and 41% are in debt. Of those who feel they are not managing well financially (subjective hardship) 45% are in debt and 52% are materially deprived. As expected given the relationship between hardship and income, persistent poverty is experienced by a third or more of those who experience any other types of hardship, including measures of living in a disadvantaged area: of those that describe their area negatively (either as poor for bringing up children or feeling unsafe in the area), 44% are in persistent poverty; of those who live in an area with a negative interviewer observation this proportion rises to 52% experiencing persistent poverty, and the same proportion experience persistent poverty of those living in an area ranked in the worst decile for the Index of Multiple Deprivation (IMD). Around 60% of respondents did not have any hardships. Around 21% of respondents reported experiencing two or more of the different hardships, although Table 49 further illustrates the strong income gradient for experiences of hardship: of those with no experience of hardship, just 3% are in the lowest income quintile, compared with over ten times that amount in the highest income quintile. As the number of hardships increase so do the proportion of those in the lowest income quintile. However, whilst experiencing multiple hardships is much more common for respondents in the lowest income quintiles, in terms of the overall sample, only 20% experienced two or more different types of hardship, and as expected the proportion decreases as the number of hardships increases.

Just 3% of respondents reported experiencing four different types of hardship and less than 1 % reported having six, or all seven hardships.

Table 49 Percentage of the sample that report having between the minimum and maximum number of hardships, by income quintile in MCS wave 3

number of hardships	OECD equivalised income quintile					total row percent
	lowest	2nd	3rd	4th	highest	
0	3	13	24	28	32	61
1	23	28	23	16	10	18
2	46	31	14	6	3	10
3	55	31	10	3	1	6
4	68	27	3	2	1	3
5	74	21	3	1	0	1
6	84	15	2	0	0	0
7	85	15	0	0	0	0
N=	12358					

N.B. Hardships included: persistent poverty, debt, material deprivation, subjective hardship, damp housing, crowded housing and subjective measures of living in a disadvantaged area. Interviewer observations of the area and IMD rank was not included.

Does the relationship between different types of hardship and parenting differ compared with the relationship between income and parenting?

The descriptive analysis so far has shown that different experiences of hardship are concentrated more in the lowest income quintiles, although not entirely. It has also shown that there is some correlation between the different experiences of hardship, in particular persistent poverty, debt, deprivation and subjective hardship. In order to test how these different experiences of hardship are related to the different parenting measures, linear regression (OLS) models were estimated. Table 50 below summarises the coefficients from the regression results for the adjusted model for all hardship measures

and all parenting measures (see Appendix 12 for detailed results for each regression). Table 51 provides a simple summary of the direction of significant relationships. Results from the previous chapter, comparing the differences in parenting between mothers in the lowest income quintile and mothers in the median income quintiles, are included for comparison.

Table 50 Comparing different experiences of hardship in MCS wave 3: summary of coefficients from adjusted regressions

	Physical needs		Closeness		Authoritative		Harsh/ Permissive		Routine	
Lowest vs median income	-0.134 [0.04]	***	-0.058 [0.04]		-0.115 [0.03]	***	0.129 [0.03]	***	-0.109 [0.04]	**
Persistent poverty	-0.143 [0.04]	***	-0.103 [0.04]	*	-0.133 [0.03]	***	0.066 [0.04]		-0.134 [0.03]	***
Debt	-0.155 [0.03]	***	-0.052 [0.03]		0.08 [0.03]	**	-0.103 [0.03]	***	-0.184 [0.03]	***
Deprivation	-0.181 [0.03]	***	-0.072 [0.03]	*	0.101 [0.03]	**	-0.085 [0.03]	**	-0.117 [0.03]	***
Subjective hardship	-0.134 [0.03]	***	-0.061 [0.04]		0.127 [0.04]	***	-0.085 [0.04]	*	-0.15 [0.04]	***
Crowded	0.025 [0.04]		-0.183 [0.05]	***	-0.086 [0.04]	*	-0.037 [0.04]		-0.053 [0.04]	
Damp	-0.157 [0.04]	***	-0.154 [0.04]	***	0.043 [0.04]		-0.127 [0.04]	**	-0.127 [0.04]	***
Poor/ unsafe area	-0.174 [0.04]	***	-0.056 [0.04]		0.019 [0.04]		-0.078 [0.04]	*	-0.117 [0.04]	**
Negative area observation	-0.189 [0.04]	***	-0.052 [0.04]		-0.042 [0.04]		0.01 [0.04]		-0.136 [0.04]	**
IMD lowest decile	-0.168 [0.04]	***	-0.019 [0.04]		-0.066 [0.04]		0.038 [0.03]		-0.119 [0.04]	**

Table 50 continued

	Trips out	Play activities	Education	TV/PC hours	Confidence			
Lowest vs median income	-0.322 [0.03]	*** 0.055 [0.04]		-0.024 [0.03]	-0.114 [0.04]	**	-0.047 [0.04]	
Persistent poverty	-0.317 [0.03]	*** 0.008 [0.04]		-0.076 [0.04]	* -0.129 [0.04]	***	0.001 [0.04]	
Debt	-0.163 [0.03]	*** -0.073 [0.03]	**	-0.09 [0.03]	** -0.131 [0.03]	***	-0.195 [0.03]	***
Deprivation	-0.284 [0.02]	*** -0.122 [0.03]	***	-0.13 [0.03]	*** -0.081 [0.03]	**	-0.249 [0.03]	***
Subjective hardship	-0.115 [0.03]	*** -0.11 [0.03]	***	-0.111 [0.03]	*** 0.023 [0.03]		-0.251 [0.04]	***
Crowded	-0.172 [0.04]	*** 0.05 [0.04]		0.033 [0.04]	-0.174 [0.04]	***	-0.103 [0.04]	**
Damp	-0.115 [0.03]	*** -0.155 [0.04]	***	-0.053 [0.04]	-0.12 [0.04]	**	-0.143 [0.04]	***
Poor/ unsafe area	-0.108 [0.03]	*** -0.11 [0.04]	**	-0.085 [0.03]	* -0.12 [0.04]	**	-0.116 [0.04]	**
Negative area observation	-0.221 [0.04]	*** 0.026 [0.05]		-0.064 [0.04]	-0.1 [0.04]	*	-0.131 [0.04]	**
IMD lowest decile	-0.057 [0.03]	0.093 [0.05]	*	0.015 [0.04]	-0.205 [0.04]	***	0.018 [0.04]	

Table 51 Summary of regression results for all hardship measures and all parenting measures in MCS wave 3

Hardship measures	Physical needs	Closeness	Authoritative	Harsh or permissive	Routine	Trips out	Play activities	Educational activities	TV/PC hours	Confidence
Lowest vs median income	worse	n/s	worse	better	worse	worse	n/s	n/s	worse	n/s
Persistent poverty	worse	worse	worse	n/s	worse	worse	n/s	worse	worse	n/s
Debt	worse	n/s	better	worse	worse	worse	worse	worse	worse	worse
Material deprivation	worse	worse	better	worse	worse	worse	worse	worse	worse	worse
Subjective hardship	worse	n/s	better	worse	worse	worse	worse	worse	n/s	worse
Crowded	n/s	worse	worse	n/s	n/s	worse	n/s	n/s	worse	worse
Damp	worse	worse	n/s	worse	worse	worse	worse	n/s	worse	worse
Poor/unsafe area	worse	n/s	n/s	worse	worse	worse	worse	worse	worse	worse
Negative area observation	worse	n/s	n/s	n/s	worse	worse	n/s	n/s	worse	worse
IMD worst decile	worse	n/s	n/s	n/s	worse	n/s	worse	n/s	worse	n/s

N.B. All patterns described are from the adjusted model (controlling for mother's age, education, ethnicity, work status, number of siblings and whether one or two parents/carers in the household) and significant (at 5% level).

It is important to highlight, that unlike in the previous chapter, where the reference group for parents in the lowest income quintile was parents in the median income quintile, for these alternative hardship measures (including persistent income poverty), the reference group is actually all parents who do not fall into the category of each particular hardship, including parents in the highest income groups. As discussed previously, using all other parents as the reference group, rather than median income parents is likely to exaggerate the differences in parenting behaviours of parents in economic hardship. For example, when analysing the relationship between debt and parenting, the aim is actually to distinguish whether parents in debt parent differently to the average (or median income) parent not in debt, rather than differently compared to the rest of the population as a whole. In order to check that results are not just an artefact of using a different (more financially advantaged) reference group, robustness checks were completed, repeating all analysis without the top two income quintiles. When the sample is restricted to the bottom three income quintiles results are very similar to those discussed below (just 6 of the 64 significant relationships are no longer significant – see Appendix 13 for results). This gives some confidence that the significant relationships found for different hardship measures are not driven by an exaggerated difference when using a less appropriate reference category.

Patterns by parenting

Four of the parenting measures were significantly associated with almost all of the hardship measures (eight of the nine) analysed: these were meeting physical needs, routine, trips out and hours of electronic entertainment (television and computer). Experiencing significantly fewer trips out, when almost any type of hardship is experienced is unsurprising given that there is likely to be a direct cost of such activities, but also because area-based measures are relevant for this measure too, as feeling unsafe in the local area or being in an area with fewer places of interest

within an accessible distance are also likely to directly impact the ability of parents to take their children on trips out. For the same reasons, more hours of television and computer games are unsurprising. As meeting children's physical needs includes measures of exercise as well as nutrition, it is easy to see how living in a deprived area, where there may be less access to affordable sports or leisure activities, may impact this, as well as experiencing other types of disadvantage which may make physical activity less of a priority. It is less clear why having routine (regular meal and bedtimes) is so widely associated with alternative types of hardship, though perhaps the role of stress is important here.

Confidence in parenting is next most widely associated with the hardship measures; interestingly neither of the income-based measures are significant for confidence in parenting, but nearly all other hardship measures are. Play activities are significantly associated with two thirds of the hardship measures, followed by the two discipline indices (discussed further below) and involvement in educational activities. How close the mother feels to the child is the least-widely associated with different types of hardship; only persistent poverty, material deprivation, crowded and damp housing are significantly associated with mothers feeling less close to their child.

Where there are significant relationships between different types of hardship and parenting, results are generally consistent across the different hardship measures, as in the relationships are in the same direction; experiencing hardship is related to having worse scores on parenting measures. However, for the two discipline measures – authoritative parenting and harsh or permissive parenting – the results for the income-based poverty measure (and the income measure comparing parents in the lowest and median income quintile as used in the last chapter), are, on the

whole, in the opposite direction to the rest of the hardship measures.¹⁹ These parenting measures were discussed in detail in the previous chapter as they were found to be unique, in that the differences between parents in the lowest and median income quintile for these measures were not part of a broader income gradient; i.e. the differences in these types of parenting behaviours were for low income parents only. Whilst in the previous chapter I found that parents in the lowest income quintile reported using *less* authoritative discipline, but also (more positively) *less* harsh or permissive discipline than parents in the median income quintile, the alternative and arguably more direct measures of hardship are associated with *more* authoritative discipline but also (less positively) *more* harsh/permissive discipline. It may be that parents experiencing more severe hardship than low income only, tell their children off more overall, and in doing so they use both positive and negative discipline strategies more often. It may also be that the mechanisms that explain the relationship between hardship and parenting are different for these alternative hardship measures, for example perhaps stress is more prevalent for respondents experiencing these types of hardships (debt, material deprivation and subjective hardship), and stress may reduce parents' patience and lead to more frequent discipline of all types, including harsh discipline.

These differences between the income-based measures and the other measures of hardship are also apparent in the measures of confidence in parenting and play activities, where the income-based measures are not significant but a number of the alternative measures (including debt, deprivation and subjective hardship) are. As discussed previously, these alternative hardship measures are not simply identifying a more deprived

¹⁹ When contemporaneous poverty is used the results for discipline are the same as the income measure, but with the persistent poverty measure the relationship with harsh or permissive discipline is no longer significant, although the coefficient is in the same direction (positive).

subset of the low income group, or a completely different group altogether (there is a clear overlap between these measures), therefore one explanation for these differences in the associations with parenting behaviours may be that parenting is influenced in different ways when alternative types of hardship are experienced. Another explanation is that the hardship measures are more precise or direct measures of hardship than the income measures.

If we compare the two income based measures (respondents in the lowest vs median income quintile group and the persistent poverty measure), results are the same for all parenting measures apart from the measures of how close the mother feels to her child, and involvement in educational activities, which is not significantly associated with being in the lowest rather than median income quintile group, but mothers in persistent poverty report feeling less close to their child and being less involved in educational activities. Also harsh or permissive discipline is not significantly associated with persistent poverty (although the coefficient is in the same direction).

The difference in reference group may account for some of these different results, as discussed above given the finding that for some parenting behaviours there was an income-gradient: when using the persistent poverty measure rather than income quintile measure, I am comparing respondents in persistent poverty with all respondents who have not experienced persistent poverty (as recorded in the first three waves of the MCS), including the very richest and so using the persistent poverty measure instead is more likely to get significant results, as differences in parenting may be bigger when including mothers in the highest income groups. However the robustness check described above, when limiting the sample to the lowest three income quintiles, suggests this may only be the case for the results for involvement in educational activities; when the top two quintiles are removed the relationship between persistent poverty and

educational activities is no longer significant, in-line with the income results. However, all other persistent poverty results remain the same (see Appendix 13). The differences in results for harsh/permissive discipline and closeness therefore seem to reflect an actual difference between mothers with low income at wave 3 and mothers who have experienced poverty in each of the first three waves. In using persistent poverty rather than income at wave 3 only, this not only reduces measurement error by more accurately identifying respondents who are experiencing poverty (see earlier discussion on accuracy of income measures and poverty measures in the MCS), but also isolates a more deprived subset of the low-income group – we know that those who experience persistent poverty as opposed to shorter periods of poverty, are more likely to experience material hardship (Whelan et al, 2003) and that persistent poverty is more detrimental to children’s outcomes (Kiernan and Mensah, 2011). It has also been found that some parenting behaviours significantly differ between parents experiencing one or two spells of poverty as recorded in first three waves of the MCS, and experiencing poverty in all three waves, in terms of observational measures of positive interactions between the parent and child, and in terms of routine (Holmes and Kiernan, 2013).

Are different types of hardship differentially related to parenting?

Overall then, all of the hardship measures are relevant for a range of parenting behaviours, although different types of hardship do appear to be differentially related to parenting, though the differences are subtle. The absence of more marked differences in the relationships between different hardship measures and parenting is not surprising given how related to income all measures are, but has shown that even where income was not found to be significant, experience of particular hardships can still make a difference to parenting.

Material deprivation is the most wide-reaching in being significantly associated with worse parenting in all domains (other than authoritative

discipline). It may be that this measure is isolating the most deprived respondents and so it may be the severity of the disadvantage experienced which explains its pervasive influence on parenting. However as shown in Table 47 this measure included respondents in all income categories. An alternative explanation therefore is that it may be something about specifically not being able to afford necessities which is important for parenting. It is easy to see how being unable to afford necessities would also render trips out unaffordable (and by association perhaps a greater number of hours spent with more electronic entertainment as inevitable), as well as having a negative impact on physical activities and nutrition. Beyond these more direct links, as suggested in qualitative evidence (Beresford et al, 1999; Hooper et al, 2007), being unable to afford things can impact parents' evaluations of themselves as a parent, with feelings of guilt leading to harsher evaluations, captured here by the measure of parenting confidence. Similarly qualitative evidence that being deprived can put strain on the relationship with the child (Ridge, 2009), perhaps is borne out in the finding that materially deprived parents feel less close to their child. It is also intuitive that the mental work and preoccupation of managing without essentials might translate into a lower priority given to routine, play activities and educational activities. The stress of managing in this way might plausibly result in shorter tempers and more frequent discipline.

Debt and subjective hardship are the next most wide-reaching types of hardship in terms of their association with parenting; the former is associated with nine and the latter with eight of the ten parenting indices. Being behind with payments of bills and feeling like you are not managing well financially are both likely to be associated with feelings of anxiety and stress. Arguably stress can impact a range of behaviours, again from lessening the perceived priority of some of these parenting domains, such as play activities, routine and educational activities, to more frequent use of discipline. Interestingly neither of these types of hardship are significantly

associated with how close the parent feels to their child (and subjective hardship is not associated with hours of television and computers either). As described above, closeness with their child is the least responsive/sensitive to experiences of hardship.

The housing measures (living in crowded accommodation or damp housing) were significant for closeness with the child, trips out, hours of electronic entertainment and confidence in parenting. As discussed previously it is not unexpected that crowding could impact relationships between parents and children, and perhaps this is related to confidence in parenting. We might expect poor quality or overcrowded housing to be related to living in a poor area which would could impact the feasibility of taking the child on trips outside of the home and relatedly the number of hours the child spends watching TV and playing computer games,. Experiencing damp was more widely associated with different types of parenting than experiencing crowding; perhaps the experience of damp housing is more disruptive to parents than overcrowding.

As expected the measures of the local area (one based on the respondent's own opinions of the area, one based on an interviewer observation and one based on the IMD), are associated with more hours of TV and computer games, less routine and lower scores on meeting physical needs. Again, perhaps the physical activity component of the physical needs measure is related to access to leisure centres, sports clubs or outdoors space which may be lacking in disadvantaged areas. Two of the three area measures are also associated with fewer trips out, less play activities and lower confidence in parenting. On the whole measures of the local area were not related to closeness with the child, types of discipline used (for both measures of authoritative and harsh/permissive), or educational activities.

Comparing income with alternative measures of hardship

How do these hardship results compare with the results for parents in the lowest and median income quintile? Firstly, the four types of parenting that

were not significantly related to income – closeness, play activities, educational activities and confidence – are significantly associated with a number of different hardship measures. Secondly, where there are significant differences for parenting between parents in the lowest and median income quintile, the strength of the relationship tends to be weaker on the whole with income, rather than other types of hardship (see Table 50). This weaker relationship between income and parenting may be due to the accuracy of the income measure, as discussed previously, rather than due to the importance of income itself. This conclusion is supported by the fact that when persistent poverty is used instead (based on the same income measure but restricted to those with income below 60% of the median at all three waves), the relationship with parenting is stronger. We would expect the persistent poverty measure to be more accurately capturing the low income group, as well as capturing a more disadvantaged low income group. There is one exception to the rule that low income tends to have a weaker relationship with parenting than other measures of hardship: low income (and persistent poverty) are more strongly associated with the child experiencing fewer trips out, compared with other types of hardship. For children in the lowest income quintile, their experience of trips out is 32% of a standard deviation lower than children in the median income. For other hardship measures the difference ranges from 11% to 28% of a standard deviation.

Do these different types of hardship have an independent relationship with parenting or are they driven by income?

As discussed previously, it is clear from Table 47 that there is a strong income gradient to these different experiences of hardship. In order to test that these results are not mostly driven by income, all regressions were repeated, controlling for income quintile (see Appendix 14 for summary of

results).²⁰ Overall results remain the same once income is controlled for (there are just 6 exceptions out of the 57 significant relationships that are no longer significant once income is included in the model). For six of the parenting behaviours, including income in the regression model reduces the size of the coefficient slightly, i.e. the relationship between different hardships and these types of parenting is slightly weakened once income is accounted for. For some of the parenting measures the relationship with different hardships actually strengthens once income is included: this is the case for authoritative discipline, harsh/permissive discipline, play activities and educational activities (although for educational activities this is the case for debt and deprivation only).

Overall this shows we can be confident the main results are not simply being driven by income, despite the association between income and different experiences of hardship. This suggests experiences of hardship are associated with parenting, independently of income.

Is the relationship between hardship and parenting the same regardless of income level?

Whilst we can be confident that the results are not driven by income, it is less clear whether the impact of different hardships on parenting is the same for parents with higher or lower incomes. Again Table 47 demonstrates that parents experiencing hardship are concentrated at the lower end of the income distribution, but there are some parents, albeit a small minority, experiencing hardship in the highest income groups. We might expect that whilst experiencing debt can be stressful for anyone, the impact of debt on parents may be less for parents that have higher incomes. Conversely, perhaps experiencing material deprivation, though unlikely, is even more stigmatising for parents with higher incomes. Existing research does not shed light on this question. The various pieces of qualitative

²⁰ The regressions for persistent poverty were not repeated, controlling for income, as they are based on the same income measure.

research discussed in relation to experiences of different hardship have tended to focus on low income individuals only. They are therefore analysing the effect of debt or material deprivation in the context of low income, or how debt and material deprivation can make managing on low incomes even harder.

This question is not straightforward to answer: the very small numbers of individuals who are both in the highest income quintile and experiencing types of hardship, make it difficult to estimate whether there is an interaction effect between income and hardship (whether the impact of hardship is different depending on the level of income a parent has).

To test if there is any evidence that the relationship between hardship and parenting differs for parents at different levels of income, interaction effects between income and hardship were added to the models for three of the hardship measures: deprivation, debt and subjective hardship (Appendix 15). Overall results show little evidence that income can make a difference to the impact of these hardships, contrary to expectations. However, this is likely to be due to the very large standard errors that result from having few high income respondents in hardship.

For deprivation there were only interactions with income in the case of two parenting behaviours: routine and trips out. For routine, deprivation had a negative impact on all parents apart from those in the highest income quintile. For trips out deprivation was only significant for parents in the lowest two income quintiles. For debt, interactions with income are found for meeting physical needs and involvement in educational activities, although some of these results are counter-intuitive. For example for meeting children's physical needs debt is not important for parents in the lowest income quintile. For educational activities, being in debt is associated with more involvement in educational activities for parents in the highest income quintile. In the case of debt these unusual results may partly be due to the measure used to capture debt. The measure of debt in

the MCS is quite specific to the types of debt experienced by people on low income, such as being behind with bills, although it does include credit card repayments and bank or loan repayments. 15% of the sample are in debt in terms of being behind with any of the items listed.

For subjective hardship there are significant interaction effects for authoritative discipline and play activities. Parents in the highest income quintile who feel they are not managing well financially use more authoritative discipline and parents in the lowest income quintile who feel poor score lower on play activities.

Overall there is not a coherent story that these hardships – material deprivation, debt and subjective hardship- have a different impact depending on the income of the respondent. There is no clear pattern in the results and some results are unusual. These results may be because there is genuinely no interaction between income and hardship, or may be because so few respondents with higher incomes experience hardship that it is not possible to precisely estimate interaction effects. This latter point might raise questions about the utility of estimating interaction effects in the first place, if it is largely the case that hardship is experienced on the whole by people with low income.

Robustness checks

Two of the robustness checks have already been discussed: we can be confident that results are not due to using a different and less appropriate reference category as results are almost identical when the sample is restricted to the lowest three income quintiles (Appendix 13). We can also be confident that results are not driven by income, as again results are largely unchanged when income is included in the regression model (Appendix 14). A third robustness check was conducted, using the most restricted sample. This is because some measures, such as the Index of Multiple Deprivation (IMD) which is for England only, interviewer observations of the area at wave 2 (for non-movers) and persistent poverty

(in poverty for waves 1, 2 and 3) relate to only a subset of the overall sample used in the analysis with all other measures. Therefore to check the robustness of the findings, all regressions were repeated, limiting the sample to England only, with respondents that had not moved between wave two and three, and had non-missing poverty measures for all three of the first waves (Appendix 16).

When the most restricted sample is used (with a sample size of 6,670), the majority of results remain unchanged, but 27% (17 of the previously significant 64) lose significance. Some of these results seem to be collected around the discipline measures: authoritative and harsh/permissive discipline, where almost all of the previously significant results are no longer significant (4 of the 5). Some of this seems to be due to the restriction to England only²¹, as when this restriction is removed the results for harsh/permissive discipline are almost unchanged from the original.

6.4 Discussion

In analysing a broader range of hardship measures, this chapter has revealed more about the relationship between hardship and parenting as well as the relationship between income and different experiences of hardship. In terms of the relationship between income and hardship it was found that there is a strong income gradient in experiences of hardship and in this sense confirms that income is a useful measure for identifying those in hardship. However, it also made clear that focusing on the lowest income quintile only, as in the previous chapter, misses around half of those experiencing each of the different hardships examined here.

When comparing results, on the whole there are more significant relationships between experiences of other hardships and parenting than there are between income and parenting, and these relationships tend to be

²¹ This is the most restrictive of the three measures in terms of sample size as the sample size for England is 9,016.

stronger for the hardship measures than income. The results are largely unchanged even when restricting the sample to the lowest three income quintiles, so they are not an artefact of including higher income groups in the reference categories (something which was specifically avoided in the income and parenting analysis).

The greater number and stronger significant relationships between hardship and parenting compared to income may be due in part to the more precise identification of those experiencing hardship than those on low income. However results also show that these different types of hardship have independent associations with parenting, beyond income. It may also be the case therefore that experiencing a particular hardship is more detrimental to parenting than low income.

Analysing different hardship measures also sheds some light on the relationship between income and discipline, which was contrary to expectations. Whilst low income parents tend to report using less authoritative discipline but also less harsh or permissive discipline than median income parents, for parents experiencing other types of hardship the results are the opposite: more authoritative and more harsh or permissive discipline. That the multiple hardship measures have results consistent with each other lends some confidence to these findings, although the differences with the income findings are not straightforward to explain; it might be that the experience of low income in itself is associated with less discipline but that when other hardships are experienced, parents are under more stress and this impacts the frequency with which they discipline their child, resulting in more frequent rather than less frequent discipline behaviours.

Beyond the comparisons with income and parenting, the findings related to different types of hardship are interesting in themselves. Whilst all types of hardship analysed matter for parenting, there is some subtle differentiation between the different types of hardship: material deprivation, feeling poor

and debt are most widely associated with parenting (i.e. significant for all or nearly all parenting measures). The influence of housing and area-based measures tend to cluster around particular types of parenting, such as hours of television or computer games, trips out and confidence in parenting.

In terms of broader conclusions, analysing different types of hardship has shown that it is not just low income that matters for parents: we should be concerned about other types of hardship parents are experiencing, which on the whole tends to impact a greater number of parenting behaviours and make a bigger difference to those parenting behaviours. The analysis also shows that some types of hardship are particularly wide-reaching in terms of their influence on parenting behaviours, but that experiencing *any* type of hardship (of those considered here) can be negative for parenting. The subtle differentiation in types of parenting behaviours affected by different hardship types hint at the possibility of different pathways between different experiences of hardship and parenting. This will be explored in the next chapter which will focus on the mechanisms that explain these relationships, such as maternal mental health.

Chapter 7

What are the mechanisms through which economic hardship is related to parenting? Is there support for the Family Stress Model in the UK context?

The preceding empirical chapters have analysed the relationship between income and parenting as well as the relationship between a range of other measures of hardship, such as debt, material deprivation and subjective hardship, and parenting.

Having found economic hardship is related to parenting, albeit not straightforwardly, with experiences of hardship being associated with worse parenting scores across each of the four parenting domains, this chapter examines the possible mechanisms that explain these relationships. There are two prominent theories: 'The Investment Model' and 'The Family Stress Model'. These are discussed more fully in the literature review but also summarised briefly here.

The Investment Model, (also known as 'household production theory') suggests that parents' financial resources affect their ability to invest in goods and services that promote their child's healthy development (Duncan et al, 2017: 7-8; Duncan et al, 2014: 104-5). As parents' financial resources increase they are able to invest more in good quality housing, educational toys, and extracurricular activities.

The second theory, The Family Stress Model, suggests that having low financial resources negatively impacts parents' mental wellbeing and relationship conflict (between parents), which in turn affects their behaviour towards their children (Conger et al 2000). For example, being unable to pay bills leads to stress which then means parents are less patient or controlled with their children. These two theories are not mutually

exclusive and there is evidence that these mechanisms interact (Yeung et al. 2002). As discussed previously there are also likely to be other pathways that explain the relationship between economic hardship and parenting (for example, time, effort and energy, as well as attention as suggested by Scarcity Theory). However, whilst acknowledging both these points, this analysis will focus on testing The Family Stress Model mechanisms, for two reasons. Firstly, this is the most prominent theory in the literature with strong evidence from the US (Cooper and Stewart, 2013), although there is yet to be a detailed analysis of these mechanisms in the UK. Secondly, the other potential pathways, such as attention which is the focus of Scarcity theory, are difficult to capture in survey measures and are not included in the MCS data I am analysing. By contrast, the Family Stress Model can be operationalised in the MCS data which includes a number of measures of mothers' mental health and relationship satisfaction (if with a partner).²²

It might plausibly be the case that different mechanisms are more or less relevant for different parenting behaviours. Early findings from chapter six, the first empirical chapter, demonstrated that for a number of parenting behaviours, where there were differences in parenting by income group these differences were part of an income gradient that extended all the way up the income distribution. This was the case for meeting the child's physical needs (nutrition and exercise); routine meal and bed times; trips outside of the home and hours of television and computer games. For these types of parenting that improve as income increases we might expect that the Investment Model is more relevant than the Family Stress Model in explaining these relationships.

²² Although multiple measures relevant to the Family Stress Model are available in the MCS data it is worth acknowledging that there is no direct measure of stress itself – stress is the assumed link by which economic hardship is related to mothers' mental health and relationship satisfaction. However, it could be the case that economic hardship is related to mothers' mental health for other reasons aside from stress. For example, not being able to buy goods for their child may have a negative impact on mothers' sense of self-worth.

Ideally Investment Model variables would be incorporated in this study but there are not the required measures in the MCS dataset. Still this model has been incorporated to an extent, (although will not be explicitly tested as an alternative pathway); chapter seven includes different hardship measures related to the Investment Model, such as material deprivation, crowding and damp housing and characteristics of the local area. One of the parenting measures – trips outside of the home – is arguably one operationalisation of investment. Other parenting measures such as meeting physical needs (which includes nutrition and exercise) are also likely to be linked to the ability to invest in goods for children's development. Therefore the Investment Model is not entirely absent from this analysis, although it is not focussed on explicitly due to the limits of the data.

As discussed in chapter two, there are a large number of studies providing evidence for the Family Stress Model although these are mostly from the US where the theory originates from. There is strong US evidence that financial resources affect mothers' mental health (Boyd-Swan et al, 2016; Milligan and Stabile, 2011; Evans and Garthwaite, 2010; Dearing et al, 2004; Gennetian and Miller, 2002). There is also a large body of evidence from the US which uses structural equation modelling to test the significance of indirect 'effects' of hardship via Family Stress Model mechanisms (see Cooper and Stewart, 2013 pp38-44 for a summary of studies that use this approach). Overall these studies provide evidence that there is a significant indirect relationship between hardship and children's outcomes, through the negative association between hardship and parental mental health and parenting behaviours (Ponnet et al, 2043; Lee et al, 2011; Mistry et al, 2004). For parents in a relationship financial stress has also been found to negatively affect how they interact with their partner, which then has a detrimental influence on their parenting and on child outcomes (Parke et al, 2004; Skinner et al, 1992).

The mechanisms between hardship and parenting may not be the same in the UK, which has more of a social safety net than the US. However, there is some evidence from the UK for the Family Stress Model. In their study of the relationship between income and children's cognitive and behavioural outcomes, using the MCS, Violato et al (2011) incorporate Family Stress Model variables (measured as parental depression and parenting) and Investment Model variables as control variables to test for possible mediation through these pathways. They find that the association between income and children's outcomes is weakened when these factors are included in the model. This is useful in indicating the Family Stress Model is relevant to the UK, though including the variables as covariates does not give a precise analysis of the various pathways. Furthermore, both two-parent and one-parent families are analysed separately and the role of parents' relationship satisfaction is not incorporated.

Schoon et al (2013) also use MCS data to analyse the relationship between poverty and child cognitive and behavioural outcomes, as well as associated risk factors and potentially protective factors. Whilst the work incorporates a number of research questions and is not focussed specifically on testing the Family Stress Model they do find evidence for the relevance of Family Stress Model mechanisms in explaining the relationship between poverty (and other risk factors) and child outcomes. They find that children who are in poverty are more likely to have mothers who were depressed, showed lower levels of warmth, less routine meal and bedtime and were less likely to take their child to a library (p42). The authors also found *positive* maternal mental health and parenting behaviours to be promotive factors that were associated with better child outcomes (p55).

One study uses the Growing Up in Scotland longitudinal birth cohort to analyse the relationship between financial vulnerability and children's emotional and behavioural outcomes, testing if mothers' emotional distress

mediates this relationship, using structural equation modelling (Treanor, 2015). Treanor does not explicitly situate this work in relation to the Family Stress Model but nevertheless the work does provide some supportive evidence for the theory, finding a significant indirect 'effect' via mother's emotional distress, as well as a remaining direct 'effect' (Ibid). Parenting (and relationship satisfaction) is not included in the model but this provides evidence for part of the Family Stress Model.

There are two UK studies which are most relevant to this research: A study by Schoon et al (2010) using structural equation modelling with the MCS, combines both Investment Model and Family Stress Model pathways in a model that tests the direct and indirect relationship between hardship (measured as an index based on low income, receipt of income support access to a car, home ownership and overcrowding at ages nine months and three years) and children's school readiness and behavioural problems (with a separate model for each of the two child outcomes). The mediators included are maternal emotional distress measured at nine months (Rutter Malaise Inventory) and three years (Kessler Score) and the parent child relationship (Pianta scale) at age three; both these measures operationalise the Family Stress Model. The Investment Model is measured as an index of cognitively stimulating activities (made up of five binary variables e.g. whether the child was read to at least once a week). The authors find that for both types of child outcome direct and indirect pathways are significant and that cognitively stimulating activities (which the authors conceptualise as a construct of the Investment Model) are more important for school readiness and the parent-child relationship (Family Stress Model construct) is more important for behavioural problems, in-line with findings from previous studies. However, the authors have consciously combined the Family Stress Model and Investment Model pathways, with maternal emotional distress mediating the relationship between hardship and both of the parenting measures (cognitive stimulation and parent-child relationship). This study does not focus on identifying the relative

strengths of different pathways and so does not provide a results table to make explicit the direct, indirect and total effects and the proportion of the relationship between hardship and child outcomes which is direct and indirect, or the relative strengths of the different indirect paths relating to the two models (Family Stress and Investment). The contributions of this research include taking into account persistent experiences of hardship and maternal depression, taking a broader understanding of hardship rather than restricting this measure to income or income poverty and this is one of just two UK studies to my knowledge which estimates the relationship between hardship, maternal mental distress and parenting (as well as child outcomes).

Kiernan and Huerta (2008) use full structural equation modelling, incorporating measurement models (factor analysis) with the first two waves of the MCS, to test the indirect relationship between economic deprivation (a latent variable based on income poverty, financial difficulties and housing tenure) when the child is nine months old and children's cognitive and behavioural outcomes at age three years. They include maternal depression (a latent measure based on the Malaise score, doctor diagnosed depression and the mother feeling low or sad for 2 weeks since birth) and parenting (reading, mother-child relations and discipline all measured as latent variables) at nine months and similarly frame their model in terms of both Family Stress and Investment (investment is operationalised as reading activities only). As in Schoon et al (2010), the authors combine pathways from both models, by allowing maternal depression to mediate the relationship between economic deprivation and each of the parenting measures, including reading activities (Investment Model). However, they also allow for and comment on the relative importance of direct pathways between economic deprivation and each of the parenting measures and in this way their model is closer to the one I will be estimating, including direct and indirect effects between hardship and parenting. They find that maternal depression mediates the

relationship between hardship and children's behavioural but not cognitive outcomes and that parenting explains over half of the relationship between economic deprivation and cognitive development and around 40% of the relationship between economic deprivation and behaviour problems (Ibid). Parenting also partly accounts for the influence of maternal depression on children's behavioural outcomes (Ibid). These last two studies provide the most complete evidence that the Family Stress Model mechanisms are relevant to the UK, though the analysis from this chapter will build on these findings in two main ways. Firstly, the authors of both papers acknowledge that there may be other factors that are important but are not included in the model, such as relationship conflict (Ibid); this analysis will include relationship satisfaction as one of the potential mechanisms for mothers who are in a relationship. Other evidence from the UK suggests that parents' relationship quality is important for parent-child relations and children's outcomes at age three and five (Garriga and Kiernan, 2014). Secondly, this chapter extends these analyses by taking a more comprehensive and theoretically justified approach to measuring parenting across different domains (meeting physical needs; parent-child relationship; cognitive stimulation and control/discipline).

7.1 Research questions

- 1) Is there evidence that the Family Stress Model is relevant to the UK; specifically is the relationship between economic hardship and parenting partly mediated through parental mental health (and in the case of couples, relationship satisfaction)?
- 2) If so, how much of the relationship between hardship and parenting is indirect through these mechanisms and how much is direct (or not explained by the mechanisms in the model)?
- 3) Does this model explain the relationship with hardship equally well for all parenting behaviours?

7.2 Methods

This chapter uses the third wave of the MCS, as in the two preceding empirical chapters, where the cohort children are aged around five years. The same restrictions are applied on the sample (natural mothers only, excluding twins and triplets and excluding respondents with missing data on any of the explanatory variables) and the maximum sample size is still 14,376 (although this varies in line with the parenting and mediator measure used). Characteristics of the data will be re-visited at the end of this section when discussing the statistical assumptions of the method used.

Why use SEM?

The method employed in this empirical chapter is structural equation modelling (SEM). This method was chosen because it allows for estimation of both direct and indirect pathways between variables, and therefore enables me to test whether mothers' mental wellbeing and relationship satisfaction (mechanisms of the Family Stress Model) are mediators of the relationship between economic hardship and parenting.

SEM can be thought of as estimating multiple regressions simultaneously and thereby distinguishing how much of the relationship between the main independent and dependent variable is mediated through other variables included in the model and how much of the relationship is direct (not explained by the variables included). It is able to test the role of potentially mediating variables in a more sophisticated way than can be achieved by estimating OLS regressions both with and without the potentially mediating variables, as in SEM coefficients are estimated for each individual pathway from the main independent variable to the main dependent variable, and it is therefore possible to distinguish more precisely the role of particular mediating variables. SEM is well-suited to testing well-developed theories, estimating how well these theorised relationships between variables fit the data. The use of path diagrams

(these will be discussed below) which illustrate the theory being tested and can be used for displaying the results, allow for a clear translation of the theoretical relationships that are being examined. It is likely that it is for these reasons that SEM is typically used in the existing literature on the Family Stress Model.

What is SEM?

‘Structural equation modelling’ is a broad term that encompasses many different methods of the same family rather than one particular statistical technique (Kline, 2011). It takes a ‘confirmatory’ approach, starting with a theoretical model and testing whether this is supported by the data (Ibid).

The specific type of SEM I will be estimating is a structural regression model (Kline, 2011) also commonly referred to as a (full) ‘structural equation model’ (Kaplan, 2012). This has two components: a measurement model for the latent variables (factor analysis) and a structural model (path analysis (Kaplan, 2012)) which is the theoretical model which explains the relationship between the variables, both latent and manifest (observed) and can be represented in a path diagram.

Latent variables measure concepts that are not observed directly e.g. political attitudes, but are instead captured through a set of observed variables or ‘indicators’ (e.g. answers to questions about the role of the state in the case of political attitudes), which are thought to be related to each other via this underlying latent concept.

As can be seen from the diagrams below, latent variables are commonly represented by ovals with arrows pointing towards the indicators or manifest (observed) variables that capture the latent construct. The manifest variables are represented by rectangles. Arrow-headed paths indicate the relationships between variables.

Figure 18 Example measurement model diagram

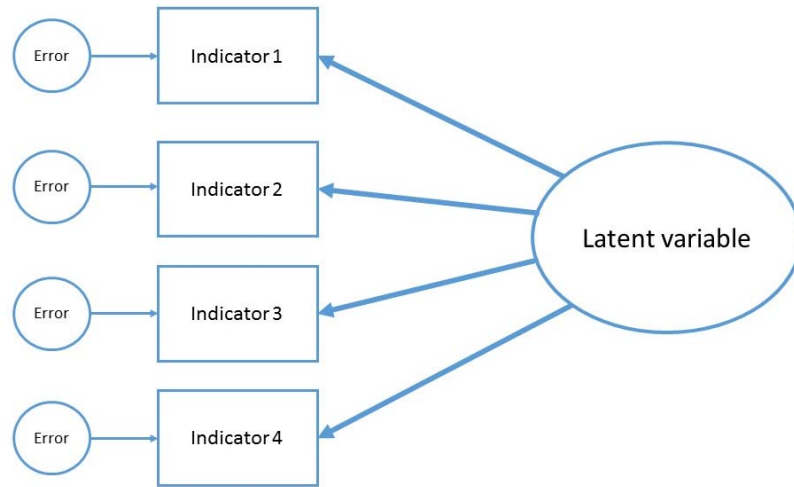


Figure 19 Example path analysis (structural model) diagram

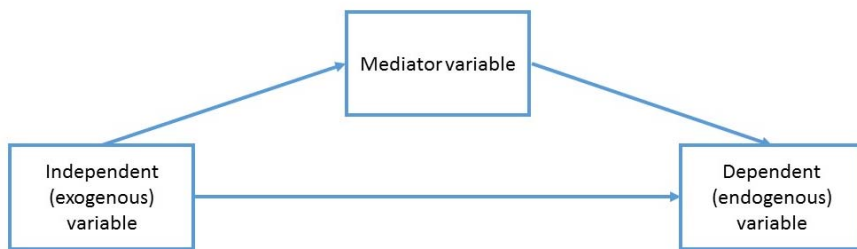
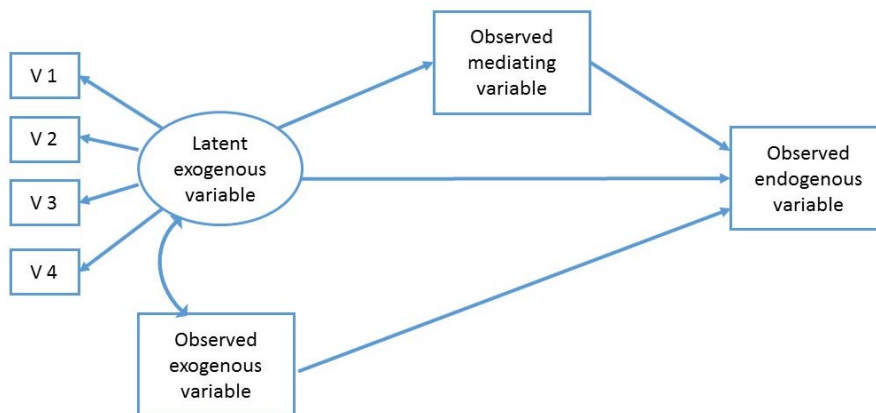


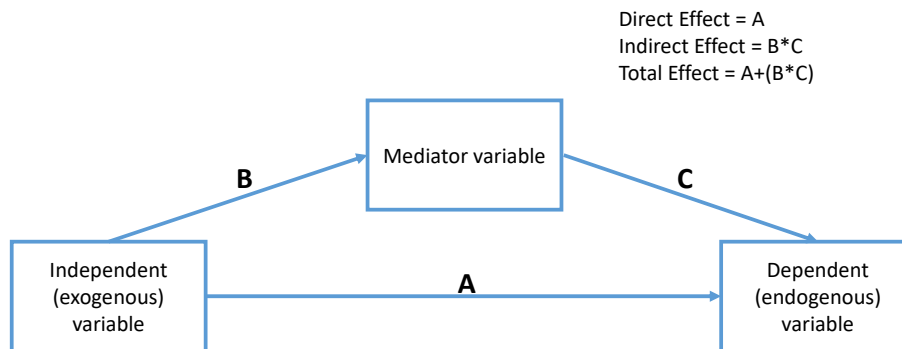
Figure 20 Example structural regression model diagram (combining measurement model and structural model)



Direct, indirect and total effects

Once the structural regression model is estimated the path coefficients can be interpreted as regression coefficients. From SEMs it is possible to separately calculate direct effects, indirect effects and total effects. Direct effects are demonstrated by one arrow going directly from one variable to another. Indirect effects are when pathways go via another variable which is a mediator (Figure 19). Indirect effects are calculated by multiplying the multiple paths that lead from the independent (exogenous) variable to the dependent (endogenous) variable (Kline, 2011). Total effects are calculated by summing all pathways between the variables of interest, including direct and indirect effects (Ibid) (Figure 21). It is also possible for variables to co-vary (denoted by doubled headed arrows) as show in Figure 20.

Figure 21 Diagram showing calculation of direct, indirect and total effect



Identification

In order to estimate an SEM, the model needs to be identified. Identification relates to the model not the data. Kline describes two necessary but insufficient prerequisites for identification. The first, known as 'the counting rule', relates to the number of degrees of freedom (difference between the number of observations and the number of parameters) which must be at least zero²³ (Kline, 2011). The number of observations are $v(v+1)/2$ where v denotes the number of variables. A model with more parameters than observations is under-identified and is not possible to estimate; a model with an equal number of parameters and observations

²³ In other words the number of parameters estimated needs to be equal to or less than the number of observations.

(therefore zero degrees of freedom) is just-identified; and a model with fewer parameters than observations is over-identified (Kline, 2011). Whilst both just-identified and over-identified models meet the requirement of identification and can therefore both be estimated, it is not possible to get goodness of fit statistics for just-identified models (or rather goodness of fit indices such as the Chi-square statistic, RMSEA and CFI (discussed later) will suggest perfect fit) (Acock, 2013). Therefore only over-identified models can be evaluated for how well they fit the data (Ibid).

Importantly, whether a model is identified can be calculated before the model is even estimated. The counting rule for identification applies to both the measurement model (in this case factor analysis) and the structural model, although both components can then be estimated simultaneously (Kaplan, 2012).

The second rule of identification relates to the measurement model only: every latent variable must be assigned a scale (Kline, 2011). This can be achieved either by fixing the path from one of the observed items to 1 or by fixing the latent variable to 1. The latter choice standardizes the factor so that the path coefficients are measured in standard deviations (Ibid).

Both these rules will be re-visited when describing the final measurement models used in the analysis.

A note on language and causality

Whilst the language of SEM includes direct and indirect 'effects' it is important to highlight that SEM is not a causal method but a method for testing how well theory fits the data; Kline describes it as a 'disconfirmatory technique' as it can be used to reject models that do not fit the data (Kline, 2011: 14). When using the terms 'direct-', 'indirect-' and 'total effect' in this chapter, this does not denote a causal relationship between the variables, but distinguishes the direct and indirect pathways whereby my measures of interest (economic hardship and parenting) are

related to each other. The analysis in this chapter is not therefore testing the causal effect of hardship on mothers' mental wellbeing and parenting, but is testing whether the indirect relationship between hardship and parenting, proposed by the Family Stress Model, fits the data.

Estimation and Model assumptions

The default estimation method for SEM is Maximum Likelihood (ML), one of the assumptions of which is multivariate normality of the endogenous (dependent and mediator) variables (Kline, 2011). A number of simulation studies from the 1980's to 1990's suggest that whilst non-normality does not affect parameter estimates it can lead to standard errors being underestimated (Kaplan, 2012).

A second assumption of SEM is that the data are complete (non-missing) and any missing data are missing completely at random (MCAR). A third important assumption is that of correct model specification (i.e. relevant variables are not excluded from the model) (Kaplan, 2012). Finally, Kline suggests during the data screening stage, before the model is estimated, collinearity and outliers should also be checked (Kline, 2011). How far the data meets these assumptions will be discussed below.

Software packages for SEM

As with the previous empirical chapters, all analyses are conducted in Stata 14. Other software packages such as M-Plus are commonly used in SEM analysis which they are tailored specifically for. However, Stata 14 has improved features for SEM which makes it fit for the purposes of this analysis and has allowed for the data to be kept in Stata format, as with previous chapters.

Measures available

In order to test the Family Stress Model, measures of mothers' mental wellbeing (and relationship satisfaction for mothers with partners) are required in addition to hardship and parenting measures. The MCS

includes measures of all of these. Unfortunately there are no measures which can be used to operationalise the other potential pathways hypothesised in the conceptual framework: attention, time, energy and investment in goods and services. The latter pathway relating to the other dominant theory, the Investment Model, is difficult to disentangle from some of the hardship measures already analysed (for example, material deprivation measures which capture lack of items due to an inability to afford them). This theory is therefore partly incorporated.

Table 52 below shows the measures available to operationalise The Family Stress Model mechanisms, as well as the hardship measures and parenting indices. These measures are then described in more detail below.

Table 52 Measures available for testing the Family Stress Model in MCS wave 3

Hardship measures / independent (exogenous) variables
<p>Financial: 1. income poverty 2. debt 3. material deprivation 4. subjective hardship</p> <p>Housing: 5. damp 6. crowding</p> <p>Local area: 7. how safe feel/whether child-friendly 8. interviewer felt uncomfortable (wave 2)</p> <p>9. IMD worst 10%</p>
'Family Stress Model' / Mediating variables
<p>Self-reported maternal mental health – Kessler scale</p> <p>In past 30 days how often felt</p> <ul style="list-style-type: none"> - Depressed - Hopeless - Restless/fidgety - Everything an effort - Worthless - Nervous <p>Clinical depression</p> <p>Whether mother <i>ever</i> been diagnosed with depression (and if so whether being treated for depression)</p> <p>Life satisfaction</p> <p>1-10 scale of how satisfied mother is with 'how life has turned out so far'</p> <p>Relationship quality – subset from Golombok Rust Inventory of Marital State</p> <p>1-5 scale of how much agree/disagree:</p> <ul style="list-style-type: none"> - My partner is usually sensitive to and aware of my needs - My partner doesn't seem to listen to me - I sometimes feel lonely even when I am with my partner - I suspect we may be on the brink of separation <p>Other relationship questions:</p> <ul style="list-style-type: none"> - How often disagree over issues related to child - How often go out together without children - Scale 1-7 how happy with relationship - Whether partner has ever used force on them for any reason
Parenting measures / dependent (endogenous) variables (all standardized scores)
<p>Physical needs</p> <p>1. index measure of nutrition and physical activity</p> <p>Parent child relationship</p> <p>2. how close feel to child</p> <p>Discipline and control</p> <p>3. index of authoritative discipline</p> <p>4. index of harsh or permissive discipline</p> <p>5. index of routine</p> <p>Cognitive stimulation</p> <p>6. index of trips out</p> <p>7. index of hours of TV/computer</p> <p>8. index of play activities</p> <p>9. index of involvement in education</p>

Screening the data for SEM

From screening the data (see Appendix 17) it is clear that the data do not meet the assumption of multivariate normality: not all variables are continuous but for those variables that are continuous it is clear from analysing univariate distributions of the data that variables are not normally distributed. Additionally a number of variables of interest have 5% or more missing values. Collinearity is not a problem with these data.

Violating the assumption of multivariate normality means the default estimation method of maximum likelihood (ML) is not the most appropriate. This is not straightforward to resolve because of other complications with the data. For non-normal data there are options in Stata to use bootstrapping, but because I am using survey data with the appropriate weights, this method is not possible. A second option is to use the asymptotic distribution free (ADF) estimation method which does not assume normality, but I am unable to use this either because of the use of survey weights. Other options such as WLMSV estimator are not available in Stata. Therefore I will continue to use the standard ML estimation method, although because it is known that whilst the parameter estimates will not be affected by the non-normal distribution of the data, the standard errors may be under-estimated (Kline, 2011), I will therefore use a more conservative criteria for statistical significance of 1% rather than 5%.

A second complication is that some of the variables are not continuous. To accommodate these variables, it is possible to use the Stata GSEM command rather than SEM (which is linear), to take account of the level of measurement of each variable in the model. However, when using the GSEM command it is not possible to automatically compute direct and indirect effects, which is of crucial importance to my research questions. Furthermore, with GSEM it is not possible to obtain goodness of fit statistics related to the fit of the model in absolute terms (i.e. it is only possible to compare the relative fit of one model with another using

statistics AIC and BIC). For these reasons I have decided to use the linear SEM in Stata, and have re-coded categorical variables to make this possible (see table below). For most variables this meant treating ordinal variables as continuous. For two measures that were binary or recoded as binary (number of parents in the household and mothers' ethnicity), this is the equivalent of estimating a linear probit model for these paths where they are endogenous (dependent or mediator) variables. As all of the categorical variables are control variables rather dependent or mediator variables, treating them as continuous or binary is unlikely to affect the results of the model.²⁴

Table 53 MCS wave 3 categorical variables used in the SEMs

Variable	Level of measurement	Solution
Mother's age	Ordinal	Use continuous measure of actual years of age.
Mother's education level	Ordinal	Treat as continuous.
Number of siblings	Ordinal	Use continuous measure rather than grouped.
One or two parent household	Binary	Treat as linear probit.
Mother's ethnic group	Categorical	Recoded as binary measure of 'white' and 'other ethnic group' and then treat as linear probit.
Mother's work status	Ordinal	Use continuous measure of hours worked.

²⁴ I was unable to do a robustness test re-estimating the models using the GSEM command (taking into account the different level of measurement of the two binary variables) because it is not possible to allow exogenous variables (in the case of this model the independent and control variables) to co-vary, so it is not possible to replicate the same model to test. If differences were found it would not be clear whether these differences are due to accounting for the different levels of measurement or due to the independent and control variables not being allowed to covary.

Two further complications with the data require some discussion; for some of the variables of interest there are a large number of missing values (see Appendix 3). Kline (2011) suggests missing values are a concern when there are more than 5% of the sample missing, and this is the case for three of the parenting measures (how close the mother feels to the child, and the two discipline measures, authoritative and harsh or permissive) and all of the mediating variables (the Kessler scale, life satisfaction scale, GRIMS scale and relationship satisfaction scale). There is an estimation method in Stata which deals with missing values (MLMV) but this makes an even stronger assumption of multivariate normality than the standard maximum likelihood method and is therefore not appropriate. The missing values are a limitation of the data that need to be taken into account when drawing conclusions about the sample. As a robustness check I re-run the models with the most restricted sample²⁵ (see Appendix 20).

A final issue with the data for this SEM analysis is the use of survey weights. In addition to making bootstrapping an unsuitable way of dealing with the non-normal data, the survey weights preclude the use of many of the goodness of fit statistics that are commonly reported for SEM. Even if it were possible to estimate the usual goodness of fit statistics (Chi-square, comparative fit index (CFI), Tucker-Lewis index (TLI), and Root Mean Squared Error (RMSEA) (Acock, 2013)), in Stata there is disagreement about whether these fit indices are reliable when survey weights are used (Bollen, Tueller and Obserki, 2013). I therefore use the two fit indices that are available in Stata when using survey weights: the standardised root mean squared residual (SRMR) (which Hu and Bentler, 1999 suggest should be chosen as one of the fit indices reported anyway), and the coefficient of determination (CD). These will be discussed in more detail when evaluating the results.

²⁵ Also see earlier discussion in chapter 5 and Appendix 3 regarding any differences between respondents with missing data compared with the overall sample.

Main Exogenous (independent) variable: Economic hardship

A number of different options were considered for how best to include a measure of economic hardship in the SEM. As explored in the previous chapter there are eleven available measures of economic hardship:

1. Income (measured in quintiles)
2. Poverty (or persistent poverty) i.e. having income below 60% of median income
3. Debt (whether behind with bills)
4. Material deprivation (being deprived of items because you cannot afford them)
5. Feeling poor (how well you feel you are managing financially)
6. Residential crowding
7. Problems with damp housing
8. Mother's evaluation of how good the area is to bring up children
9. How safe the mother feels in the area
10. Interviewer observations of the area (completed in the second wave of the MCS)
11. Indices of multiple deprivation

In the previous chapter these were mostly measured as binary variables and the two variables related to the mother's evaluation of the local area were combined. In order to avoid dramatically reducing the sample size (as the default setting in SEM is listwise deletion for missing data), I decided to exclude the interviewer observations (as this restricts the sample to respondents who didn't move between wave 2 and 3) and the index of multiple deprivation (which reduces the sample to England only).

Rather than run a separate SEM for each hardship measure (with each parenting measure) I decided to create a combined measure (excluding income/poverty as analysis from the previous chapter demonstrated that the income measure behaves differently and in the case of the discipline measures in the opposite direction, from all other hardship measures).

Analysis of different types of hardship in chapter 7 suggest that it is experiencing a form of hardship, rather than the specific type of hardship, that is important for parenting.

One option for combining the measures is to do a simple sum of the each of the binary variables, to create an additive index. A clear advantage of measuring hardship in this way is that the results of the SEM are easier to interpret, as an increase in one unit equates to experiencing one additional type of hardship.

Yet there are a number of problems with this approach. Firstly, each hardship is equally weighted which assumes that each hardship is equivalent, when it may plausibly be the case that experiencing some hardships are worse than others. Secondly, this measure assumes a linear relationship between the number of hardships experienced and maternal stress and parenting, i.e. that any increase in the number of hardships experienced has equal effect whether the increase is from no hardships to one hardship or from three hardships to four hardships. However, it is plausible to assume that the effect is not simply additive; for example, it could be the case that experiencing an additional hardship when previously no hardship has been experienced might have a greater impact on mental health and parenting than for a mother who was already experiencing one form of hardship and then experiences some additional hardship. Alternatively, it is also plausible that when a mother is already experiencing some form of hardship an additional experience of hardship might compound the impact on mental health (and parenting).

For these reasons I decided it was more appropriate to combine the measures to create a latent variable using factor analysis. It also makes theoretical sense to conceptualise the hardship itself rather than a specific indicator of hardship as being important for parenting. In order to estimate a standard factor analysis I used the variables in their original continuous or ordinal form so the variables could be treated as continuous (see Table

54). For each of the hardship measures a higher score is indicative of more severe hardship.

Table 54 Continuous and ordinal hardship measures in MCS wave 3 used in the measurement model

Hardship measure	Frequency	Percent (weighted)
Number of bills behind with		
0	12,170	84.96%
1	1,160	8.02%
2	582	4.20%
3	218	1.57%
4	99	0.68%
5	32	0.28%
6	26	0.22%
7	7	0.05%
8	1	0.01%
10	2	0.01%
11	1	0.01%
Total	14,298	100
Number of items deprived of		
0	8,709	61.62%
1	3,319	22.86%
2	1,862	12.67%
3	351	2.37%
4	67	0.43%
5	10	0.05%
Total	14,318	100
How well managing financially		
1. Living comfortably,	3,323	23.96%
2. Doing alright	5,461	37.70%
3. Just about getting by	4,026	27.82%
4. Finding it quite difficult	1,114	7.69%
5. Finding it very difficult	394	2.83%
Total	14,318	100
Problems with damp		
1. No damp	12,442	86.95%
2. Not much of a problem	801	5.54%
3. Some problems	770	5.37%
4. Great problem	305	2.14%
Total	14,318	100

Hardship measure	Frequency	Percent (weighted)
Whether the area is good for raising children		
1. Excellent	4,317	31.70%
2. Good	5,770	40.63%
3. Average	3,147	20.91%
4. Poor	765	4.77%
5. Very poor	310	1.99%
Total	14,309	100
How safe mother feels in local area		
1. Very safe	4,891	33.50%
2. Fairly safe	7,390	52.87%
3. Safe nor unsafe	1,194	8.19%
4. Fairly unsafe	634	4.14%
5. Very unsafe	205	1.29%
Total	14,314	100
Residential crowding		
Number of people per room		
Mean	0.77	
Median	0.71	
Total observations	14,516	

To begin with I used exploratory factor analysis in order to identify if there is more than one dimension to the latent variable 'Hardship' (details of the analysis can be found in Appendix 18). Whilst there could plausibly be up to three factors, because there appear to be three potential groups of hardship measures relating to (1) finances (debt, deprivation, managing financially), (2) housing quality (crowding and damp) and (3) local area (for bring up children, and feeling safe), when a three factor model was estimated this resulted in a Heywood Case (when the unique variance is 0 or even negative for some observed variables or the communality is greater than 1; rather than indicating that the observed variable is a perfect measure of the factor it usually suggests that the model has too many common factors). Therefore, a one factor model and two factor model were

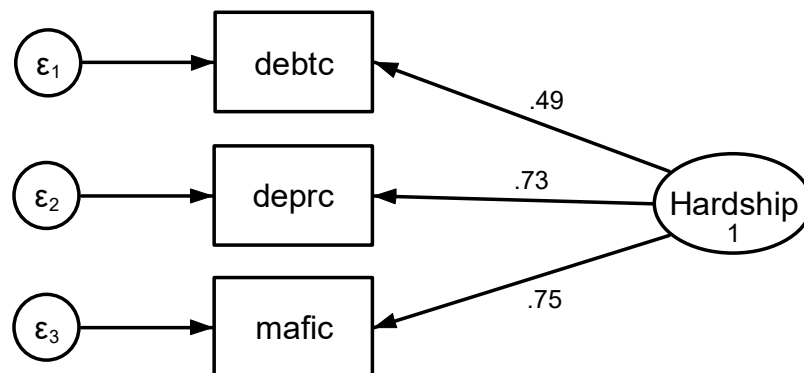
compared. The measure of residential crowding and problems with damp had very low factor loadings and high values of uniqueness (variance not explained by the factor), meaning these items are not very well represented by the latent variable 'Hardship'. This was not unexpected given that it was clear from the correlation matrix that these two measures are not very highly correlated with the other hardship measures, and factor analysis captures latent variables via the communalities between related items. I therefore removed these two hardship measures from the analysis. It was now no longer possible to estimate a two factor model without again finding a Heywood case. I therefore estimated a one factor model with the remaining items, however the two area-based measures now had high levels of uniqueness. I removed these items also and estimated a one factor model with debt, deprivation and managing financially and both the AIC and BIC were a lot smaller indicating this model better fits the data than the one factor model which included the area based measures.

Having evaluated different possible models with EFA I then estimated a confirmatory factor analysis (CFA), which is the measurement model incorporated into the structural regression model. Because only three items are used for this one factor model the model is just-identified which means it is not possible to obtain absolute goodness of fit statistics. However, the relatively high factor loadings (particularly for deprivation and managing financially) suggest this is a meaningful measure of the latent variable 'Hardship' and according to the comparative fit indices from the EFA this was the best model.

In terms of how to scale the factor I decided to fix the factor to 1, rather than one of the factor loadings, as this standardises the latent variable measure. The numbers on the arrow paths from the latent variable to the observed items are the factor loadings. These describe the relationship between the latent variable 'Hardship' and each of its indicators and can be interpreted in a similar way to regression coefficients; because the latent

variable is standardised they can be interpreted as a one unit increase in the latent variable 'Hardship' is associated with 0.49 standard deviation increase in debt ('debtc'), 0.73 standard deviations increase in deprivation ('deprc') and 0.75 standard deviations increase in feeling poor ('mafic').

Figure 22 Path diagram for measurement model of 'Hardship'



A deviation in this work from the original formulation of the Family Stress Model, is that the original theoretical model includes 'economic pressure' as a *mediator* between economic hardship and parent's psychological wellbeing (Conger et al, 1994: 544). 'Economic pressure' refers to the difficulties that result from economic hardship, such as inability to pay bills (debt), having to cut back on spending and having to give up 'necessary expenditures' (Ibid: 543). The three variables that are combined in the factor analysis here therefore, would be mediators in the original formulation of the theoretical model, rather than exogenous variables, and the exogenous measure of hardship or 'adverse economic conditions' would be operationalised by measures of 'low income, high debt relative to assets, job disruptions, or income loss' (Ibid). An alternative specification more in-line with the original theory therefore would be to include low income as the exogenous variable measuring economic hardship and these three measures: debt, deprivation and feeling poor, as measures of economic pressure, mediating the relationship between hardship and mothers' mental health and life satisfaction. I decided against using low

income in these structural equation models because previous analysis demonstrated that the income measure gave different results compared with other hardship measures which were consistent with each other, and these differences are likely to be due in part to measurement error. Still, even restricting the measures of hardship to debt, material deprivation and subjective hardship (feeling poor) there is still a case to be made for including subjective hardship as a separate mediator, as being behind with bills and being unable to afford essential items is likely to lead to feelings of not managing well financially. An equally valid alternative specification of the model then could be to separate these three hardship measures out, allowing for this additional pathway via subjective hardship as an additional mediator. Though this approach is in-line with the original theory and makes plausible theoretical sense, I decided to keep the three items in one latent measure for this analysis (with only two measures the model would be under-identified), following on from the previous chapter where these measures are all conceptualised as experiences of hardship rather than mediators. This approach is also in-line with other UK studies which have examined the Family Stress Model (Schoon et al, 2010; Kiernan and Huerta, 2008). The down-side to this approach is the loss of information in not separating out this additional path/mechanism, but in this case this is outweighed by having the necessary number of items to measure hardship as a latent variable. This additional pathway/mechanism in the structural model would be interesting to explore in future research.

Measurement of mechanisms or mediating variables

As outlined above multiple measures of possible Family Stress Model mechanisms are available in the data. These are described below in two groups. The first ‘mental wellbeing variables’ are used in analysis of the whole sample. The second, ‘relationship satisfaction variables’ are used in analysis of mothers who have a partner at the time of the survey.

(1) Mental wellbeing variables

Two measures are used to measure mothers’ mental wellbeing.²⁶ It was decided to keep these measures separate as they are measuring different phenomena. The first measure is the 6 item Kessler scale which is a widely used measure of psychological distress (Kessler et al., 2002) and is available as a derived variable in the MCS (Johnson, 2012). This scale is based on the answers to the following questions:

‘During the last 30 days, about how often did you feel...’

- ..so depressed that nothing could cheer you up?
- ..hopeless?
- ..restless or fidgety?
- ..that everything was an effort?
- ..worthless?
- ..nervous?

²⁶ A third measure could have been incorporated which was whether the mother had *ever* been diagnosed with anxiety or depression and if so whether being treated for depression. This measure is binary and therefore difficult to incorporate into the SEM and is a much more blunt measure of maternal mental health than the Kessler scale. For these reasons it was decided it was not worth the necessary adjustments to incorporate it in the model.

Possible answers were:

1. all of the time
2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time
6. Can't say

The scale used is a reverse-coded sum of these six questions, which ranges from 0 to 24, where higher scores indicate greater levels of psychological distress. The following cut-offs have been used (Roberts and Ketende, 2008).

- 0-3 'no or low distress'
- 4-12 'medium'
- 13 or over 'high'

Figure 23 Histogram showing distribution of mothers' Kessler score

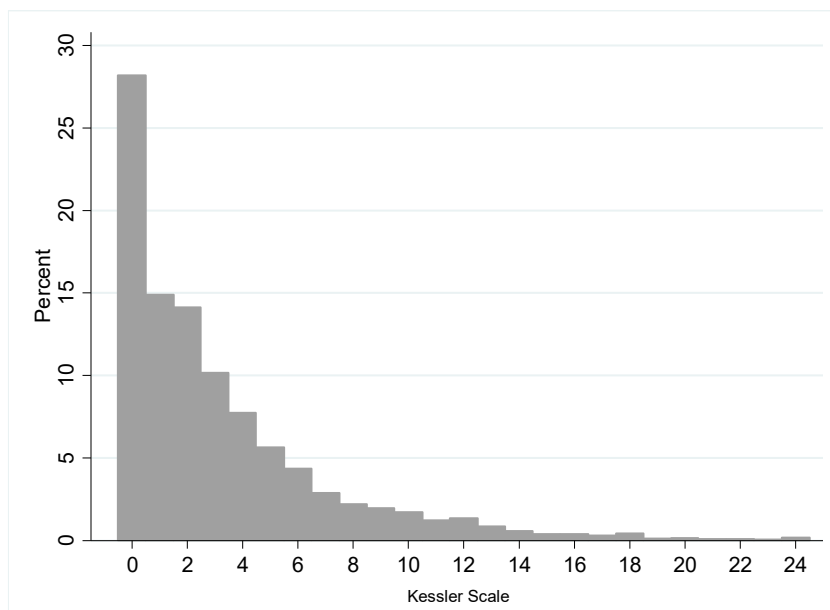


Table 55 Distribution of Kessler scale categories in MCS wave 3

Kessler scale categories	Frequency	Percent (weighted)
no distress	9,145	68%
medium distress	3,925	29%
high distress	483	3%
Total	13,553	1

As can be seen from Figure 23 and Table 55, the majority of mothers' Kessler score indicates they are in the 'no distress' range but around one third of mothers have scores in the medium to high distress range. As can be seen from Table 56 there is a clear income gradient to the Kessler score categories; mothers in the lowest income quintile are more likely to have Kessler scores that indicate medium or high distress than mothers in the highest income quintile (38% and 8% for the lowest income quintile group and 19% and 1% for the highest). These descriptive results are consistent with the theory that mothers' mental health may be a mechanism between hardship and parenting.

Table 56 Distribution of Kessler score by income quintile (weighted) in MCS wave 3

income quintile	Kessler scale scores			Total
	no distress 0-3	medium distress 4-12	high distress 13+	
lowest	53%	38%	8%	100
2nd	61%	34%	5%	100
3rd	69%	30%	2%	100
4th	74%	24%	2%	100
highest	80%	19%	1%	100
Total	68%	29%	3%	100

The second measure of mental wellbeing is a measure of general life satisfaction. Respondents were presented with the following question:

'Here is a scale from 1-10 where '1' means that you are completely dissatisfied and '10' means that you are completely satisfied. Please enter the number which corresponds with how satisfied or dissatisfied you are about the way your life has turned out so far.'

In 2007 the mean rating in England for life satisfaction was 7 out of 10 (Roberts and Ketende, 2008). Roberts and Ketende suggest a cut off of 7 as indicating high life satisfaction (the same cut off used in initial findings from wave two). As can be seen from Table 57 a greater proportion of mothers from the highest income quintile gave a high rating (7 or more) for their life satisfaction, than mothers in the lowest income quintile group (around 89% and 57% respectively).

Figure 24 Histogram showing distribution for mothers' life satisfaction

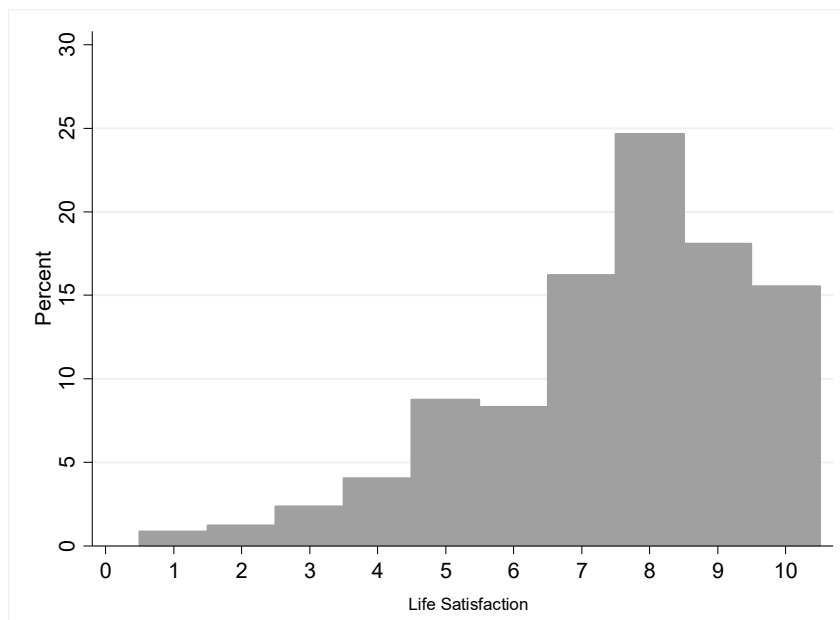


Table 57 Life satisfaction score by income quintile (weighted) in MCS wave 3

income quintile	life satisfaction score		Total
	<7	7+	
lowest	1,129 43.4%	1,548 56.6%	2,677 100.0%
2nd	887 31.9%	1,903 68.1%	2,790 100.0%
3rd	640 23.5%	2,084 76.5%	2,724 100.0%
4th	477 18.3%	2,227 81.7%	2,704 100.0%
highest	282 11.1%	2,233 88.9%	2,515 100.0%
Total	3,415 25.1%	9,995 74.9%	13,410 100.0%

Relationship satisfaction measures

The analysis of relationship mechanisms focuses on a subsample of mothers who are in a relationship (where their partner is full-time resident) at the time of the wave three interview. This brings the sample size down to 11,501 (with the same restrictions applied as in the first part of the analysis: natural mothers of singleton births, with non-missing data on the potential explanatory variables included as controls).

In terms of how this subsample may differ from the main sample, as discussed in chapter six, those in two-parent households are less likely to have low incomes than single parent households. We also know from research that single parents are more likely to have worse mental health than parents in a couple (Kiernan and Mensah, 2010), so we expect this subsample to be relatively more advantaged both in terms of their experiences of hardship and in terms of their mental health, one of the

Family Stress Model mechanisms. However, there are also likely to be consequences on relationships of experiencing hardship, which may translate into parenting. Kiernan and Huerta (2008) find similar indirect relationships between hardship and child outcomes in both two-parent and single-mother families (although a slightly stronger association between maternal depression and parenting practices in single parent families).

Two measures of relationship quality were used. The first is the Golombok Rust Inventory Marital State (GRIMS) subscale (Rust et al., 1990). The subscale in the MCS is comprised of four items. Mothers answered how far they agree or disagree with the following statements (on a five point scale from 'strongly agree' to 'strongly disagree'):

- My [partner] is usually sensitive to and aware of my needs
- My [partner] doesn't seem to listen to me
- I sometimes feel lonely even when I am with my [partner]
- I suspect we may be on the brink of separation

The first item was reverse-coded so that, in line with the other three items, higher scores indicate greater relationship satisfaction. As in Garriga and Kiernan's (2014) paper the four items were summed to have a scale from 0 – 16. As can be seen from Figure 25 and Table 58 the majority of mothers scored highly on relationship satisfaction; the mean score is 12.

Figure 25 Histogram for GRIMS score

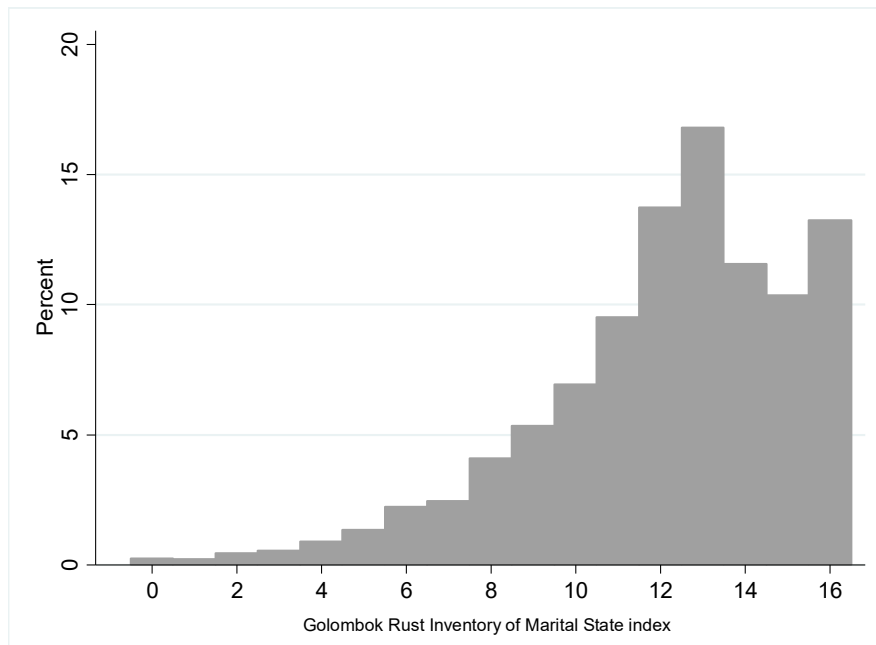


Table 58 Sample distribution for the GRIMS score in MCS wave 3

GRIMS score	Frequency	Percent (weighted)
0	25	0.2%
1	23	0.2%
2	48	0.4%
3	59	0.6%
4	95	0.9%
5	144	1.4%
6	236	2.3%
7	261	2.6%
8	436	4.3%
9	569	5.6%
10	740	6.8%
11	1,014	9.7%
12	1,464	13.5%
13	1,791	17.2%
14	1,231	11.6%
15	1,104	10.2%
16	1,412	12.6%
Total	10,652	100
Mean	12.1	
standard deviation	3.1	

The second measure of relationship quality is an overall score of relationship satisfaction. Respondents were asked to score how happy or unhappy they are with their relationship, all things considered. The scale is from 1 (very unhappy) to 7 (very happy). As can be seen from the descriptive statistics the vast majority of mothers rated their relationship satisfaction highly (just under 70% scored their satisfaction level as 6 or 7, the two highest scores available).

Figure 26 Histogram for relationship satisfaction

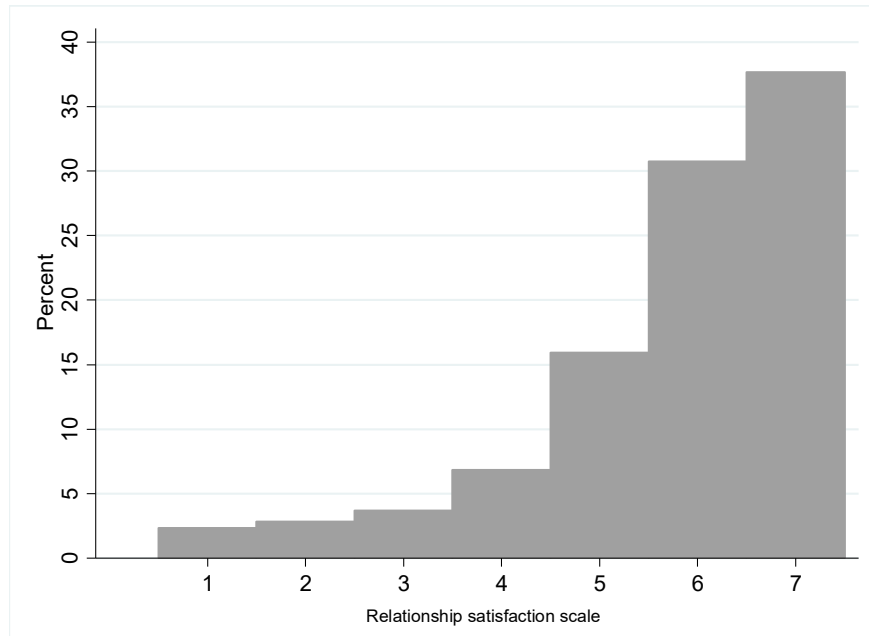


Table 59 Sample distribution of relationship satisfaction score in MCS wave 3

Relationship satisfaction	Frequency	Percent (weighted)
1	251	2.3%
2	302	2.9%
3	399	3.8%
4	740	7.0%
5	1,721	15.9%
6	3,323	31.1%
7	4,074	37.0%
Total	10,810	100

Three additional measures of relationship satisfaction were available in the MCS (see Table 52) including a measure of whether their partner had ever used force. Whilst this last measure is particularly relevant to the Family Stress Model (Lucero et al, 2016) it is highly under-reported and there is very little variation for this variable in the sample. I decided to use the most validated measure of relationship satisfaction – the GRIMS scale, as well as the overall relationship satisfaction scale.

Testing the Family Stress Model

In order to test relevance of The Family Stress Model in the UK context, the path models were estimated for each of the nine parenting measures. The same covariates are included as with the regressions in previous chapters, meaning that mother's age, education, work status, ethnicity, number of siblings and whether the child lives in a one or two parent household, will be taken into account in the model, although these paths will not be shown, for simplicity. For the same reason, in the results diagrams only significant paths are shown.

The model for the whole sample includes a direct path from the latent measure of hardship (which has three items: debt, deprivation and how well managing financially) to the parenting outcome as well as indirect paths via the two measures of mother's mental wellbeing (her score on the Kessler scale and general life satisfaction score). The direct path is included because there may be other mechanisms not included in the model (and not measured in the dataset), which also explain part of the relationship.

Including the direct path allows for testing how much of the relationship between hardship and parenting is explained by the Family Stress Model variables and how much remains unexplained by the model.

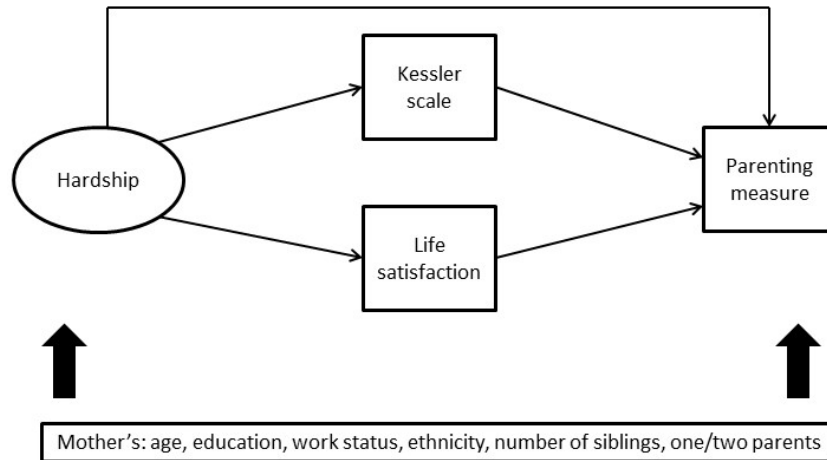
Survey weights are used in all analyses, as is appropriate given the complex survey design. The two mediating variables – the Kessler scale and life satisfaction - are allowed to covary as they are correlated see Table 60. The double headed arrows that represent covariance are not included in the diagram for simplicity.

Table 60 Pearson correlations for all mediating variables in MCS wave 3 for subsample of mothers in a relationship

	Kessler	Life satisfaction	GRIMS	Relationship satisfaction
Kessler	1			
Life satisfaction	-0.42	1		
GRIMS	-0.39	0.47	1	
Relationship satisfaction	-0.32	0.53	0.56	1
observations	10,537			

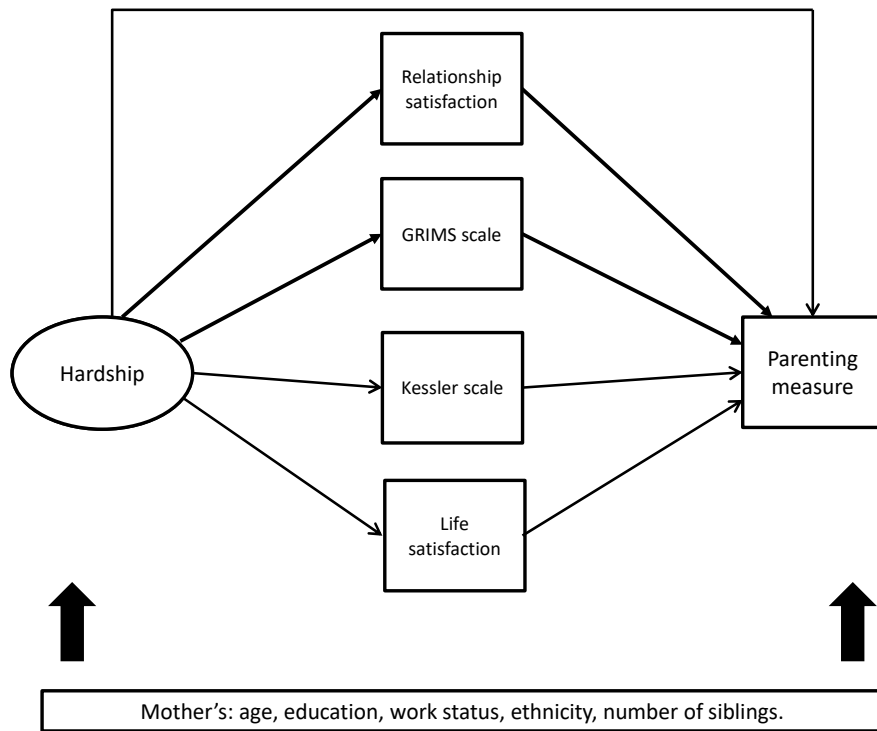
Overall I expect to find that the measures of mothers' mental wellbeing (and for mothers in a relationship, relationship satisfaction) explain at least some of the relationship between hardship and parenting. Existing evidence has not included such distinct domains of parenting as in this analysis so there is no specific evidence to suggest that these mechanisms will explain more of the relationship for some parenting measures than others. Nevertheless, we may expect maternal mental health to be more relevant to more emotionally driven parenting behaviours such as discipline (both authoritative and harsh/permissive), closeness to the child and play activities. These mechanisms may be less relevant for other types of parenting, such as meeting children's physical needs.

Figure 27 Structural model for full sample: Testing the role of mother's mental wellbeing



For the subsample of mothers living with a partner the model is the same, but with two additional mechanisms added: the GRIMS score and overall relationship satisfaction. Again these relationship satisfaction measures are allowed to covary with each other as well as with the measure of mental health (Kessler score) and life satisfaction. As discussed earlier these four measures are correlated with each other.

Figure 28 Structural model for subsample of mothers in a relationship:
testing the role of relationship satisfaction



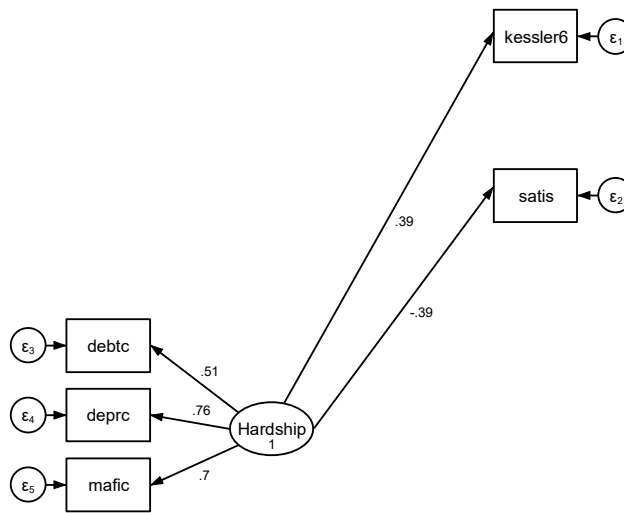
7.3 Results Part One: the Relationship between Hardship and Mother's Mental Wellbeing

Both standardised and un-standardised results are shown in the results tables²⁷ and standardised coefficients are shown on the path diagrams. Where path coefficients were not significant at the level of 1% the paths have been omitted from the path diagrams. For full details of results see Appendix 21.

The first part of the model is identical for each of the different parenting measures analysed: the latent measure of hardship is significantly associated with both of the measures of the mother's mental wellbeing: experiencing hardship is significantly associated with having higher scores on the Kessler scale (indicating greater mental distress), and is negatively associated with the mother's general life satisfaction score. The standardised coefficients are of exactly the same size, so the size of the effect of hardship is similar for both mental distress and life satisfaction. These relationships are all in the expected direction and are in-line with the hypothesis that the mother's mental wellbeing may be a mechanism that explains some of the relationship between hardship and parenting.

²⁷ It is advised to report both (MacDonald, 2016: 10; Acock, 2013: 18); the unstandardised results provide the p-values for the path coefficients, while the standardised results are clearer to interpret.

Figure 29 Path diagram of the relationship between hardship, mothers' Kessler score and mothers' life satisfaction



How well does the model fit the data?

As the same model is repeated for each parenting measure, the model fit is almost identical for each and therefore the overall model fit is described here, rather than separately for each parenting measure. The majority of goodness of fit statistics commonly used are not available when survey weights are applied, as in this analysis. Of the two available goodness of fit statistics, both suggest the model fits the data well.

The Standardised root mean squared residual (SRMR) is a measure of the average difference between the observed correlations and the model implied correlations, with values closer to 0 indicating the model fits the data well. Hu and Bentler (1999) suggest values of 0.08 or lower as a cut off. The SRMR for this model is around 0.01 for all parenting measures. This suggests a small difference between the observed and model implied correlations and therefore that the model fits the data well.

The Coefficient of determination (CD) which can be thought of as an overall R^2 for the model, describing how much of the variation is explained by the model, varies between 0.73 and 0.77. In this case a good fit is

indicated by this statistic being closer to 1, so a CD of this level suggest again a good fit. However, it should be highlighted that although this measure is an overall R^2 for all endogenous variables, it is not particularly focused on the goodness of fit of the structural model itself and can be easily manipulated by adding more potential explanatory variables. It is therefore of limited utility.

In the absence of more commonly used goodness of fit statistics, it is arguably of more relevance that many of the results discussed below are consistent with existing related evidence and make intuitive sense in terms of the theoretical model.

Table 61 Goodness of fit statistics for full sample SEM analyses for MCS wave 3

	SRMR (<0.08)	CD (overall R^2)
Meeting physical needs	0.02	0.75
Closeness	0.01	0.73
Authoritative discipline	0.01	0.74
Harsh/permissive discipline	0.01	0.73
Routine	0.01	0.73
Trips out	0.01	0.77
Play activities	0.01	0.74
Educational activities	0.01	0.73
TV/PC hours	0.01	0.73

Table 62 Goodness of fit statistics for SEM analyses for subsample of mothers in a relationship in MCS wave 3

	SRMR (<0.08)	CD (overall R^2)
Meeting physical needs	0.02	0.75
Closeness	0.01	0.73
Authoritative discipline	0.01	0.74
Harsh/permissive discipline	0.01	0.73
Routine	0.01	0.73
Trips out	0.01	0.77
Play activities	0.01	0.74
Educational activities	0.01	0.73
TV/PC hours	0.01	0.73

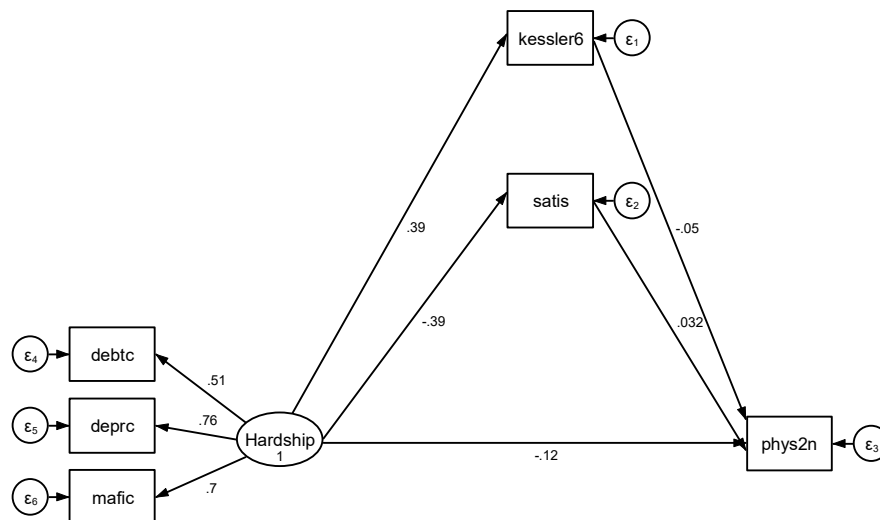
As can be seen from tables 45 and 46 the Family Stress Model fit the data to a greater or lesser extent depending on the type of parenting measure.

Results for each parenting measure are described below followed by an overall summary. In part two the same format is then followed for results on testing the role of mothers' relationship satisfaction, for the subsample of mothers with a partner.

1) Meeting physical needs

As can be seen from the Figure 30 there is a significant direct relationship between the latent variable 'hardship' and the mother's index score for meeting the child's physical needs. There are also significant indirect effects with the mother's Kessler score and life satisfaction score mediating this relationship: higher scores on the Kessler scale (indicating greater mental distress) are associated with worse scores on meeting the child's physical needs; higher scores on life satisfaction are associated with better scores on meeting the child's physical needs.

Figure 30 path diagram for meeting physical needs



The standardised path coefficients for both the Kessler scale and life satisfaction are of a similar size: an increase in one standard deviation on the Kessler score is associated with a decrease in meeting the child's physical needs of around 5% of a standard deviation; an increase of one standard deviation of life satisfaction is associated with an improvement in meeting the child's physical needs of around 3% of a standard deviation. The total indirect effect of mental distress as measured by the Kessler scale and life satisfaction can be calculated for each by multiplying the paths. For the Kessler this equates to an indirect effect from an increase of one

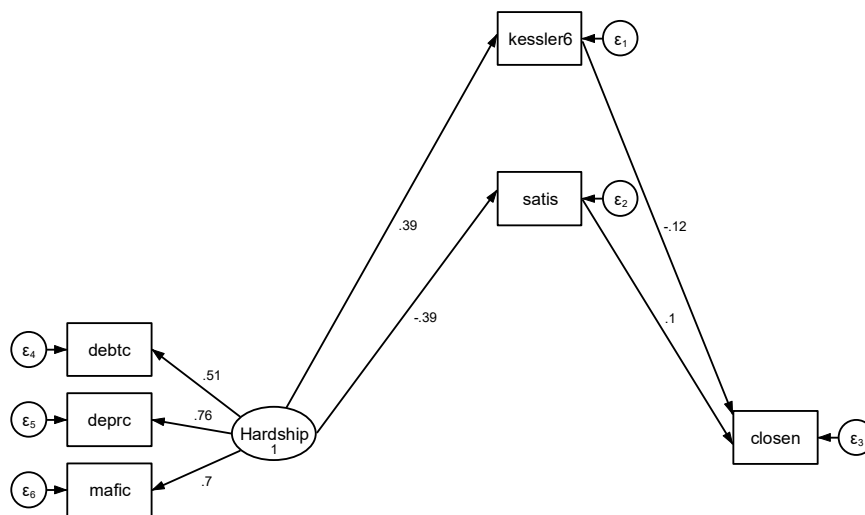
standard deviation on the measure of hardship to a decrease in meeting the child's physical needs of 2% of a standard deviation. The total indirect effect through life satisfaction is similar – because an increase in hardship is associated with a decrease in life satisfaction this leads to a decrease in meeting the child's physical needs of around 1% of a standard deviation. It is clear then that although these Family Stress Model mechanisms do play a role in the relationship between hardship and meeting the child's physical needs, the direct effect is still much bigger than the indirect effect (which even combining all indirect pathways is only associated with around 3% of a standard deviation decrease in meeting the child's physical needs). The direct effect of hardship is a reduction in meeting the child's physical needs of around 12% of a standard deviation. A much larger direct effect remains (80% of the total effect) which is not explained by the variables included in the model. For physical needs then there are perhaps other mechanisms aside from the Family Stress Model which are important. The measure of physical needs includes measures of nutrition but also physical activities and exercise; other research suggests that both the cost of activities (and healthy foods) and characteristics of the local area can be a barrier to physical activity for families with low incomes.

Importantly, when compared with the other possible explanatory factors (mother's age, education, number of siblings etc) the total effect of hardship is almost the greatest: second only to mother's education and followed by the mother being white rather than any other ethnic group.

2) Closeness to the child

For how close the mother feels to the child, the direct effect of hardship is no longer significant once the Family Stress Model mechanisms are included in the model, (and interestingly the coefficient for the direct effect is positive). This means that all of the relationship between hardship and closeness to the child is explained by the mediating variables: an increase in hardship of one standard deviation is associated with a decrease in closeness of 9% of a standard deviation via both indirect effects combined. This is roughly evenly split between the two mechanisms with 5% via the Kessler score and the other 4% via life satisfaction.

Figure 31 Path diagram for how close the mother feels to her child

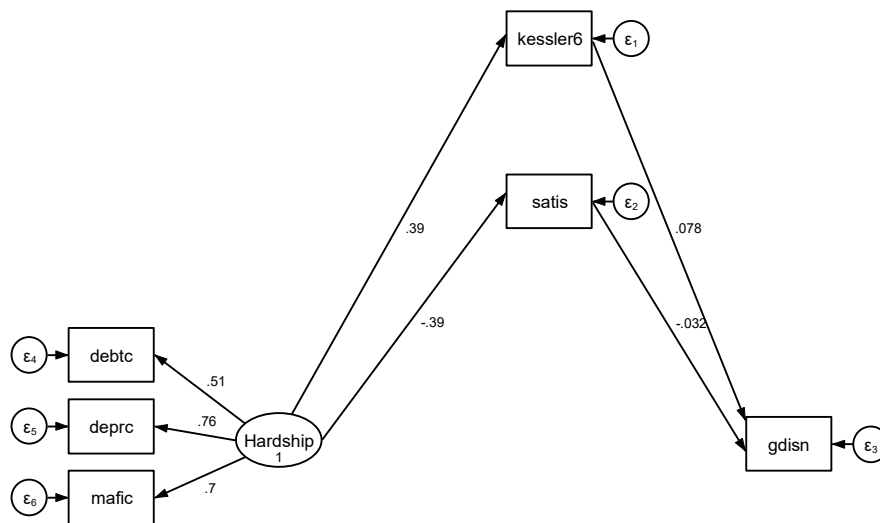


These results are intuitive; it is quite expected that mother's own mental wellbeing is important for their relationship with their child, and is in-line with previous research on maternal depression (Kiernan and Huerta, 2008).

3) Authoritative discipline

For the measure of authoritative discipline, again only indirect effects of hardship are significant and these are positive, in-line with previous analyses: experiencing hardship is associated with an increase in the use of authoritative discipline via increased mental distress (Kessler score) and decreased life satisfaction. These results are in-line with the regression results from the previous chapter, where debt, deprivation and subjective hardship are associated with an increase in the frequency of authoritative discipline. As discussed previously although authoritative discipline is a measure of ‘good’ parenting, because of the way the question is asked, it may be that this measure is actually picking up on how frequently the child is told off, regardless of the discipline style. In that case these results may suggest an increase in hardship is associated with an increase in the frequency with which the mother tells off the child.

Figure 32 Path diagram for authoritative discipline



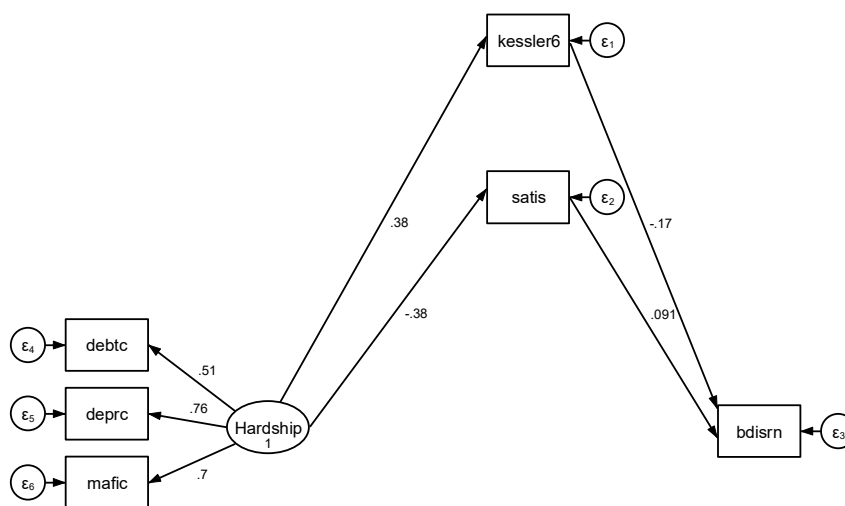
The indirect effect via mothers’ mental health (Kessler score) is three times the size of the indirect effect via life satisfaction: an increase in hardship of one standard deviation is associated with an increased in authoritative discipline of 3% of a standard deviation via mother’s Kessler score and 1%

of a standard deviation via life satisfaction. It is not surprising that discipline, in this case authoritative discipline, is associated with mother's mental health, but the significant effect via life satisfaction is perhaps less expected.

4) Harsh or permissive discipline

As can be seen from the path diagram, again only the indirect effects via mother's mental distress and life satisfaction are significant. Again the Kessler score is the more important of the two mechanisms; the indirect effect through mother's mental distress is around double the size of the indirect effect through the relationship between hardship and life satisfaction. The relationships are in the expected direction: higher scores of mental distress are associated with more frequent harsh or permissive discipline and higher levels of life satisfaction are associated with less frequent harsh or permissive discipline. These results are in-line with expectations and what is already known from existing research: higher levels of mental distress are associated with more punitive discipline styles (Kiernan and Huerta, 2008).

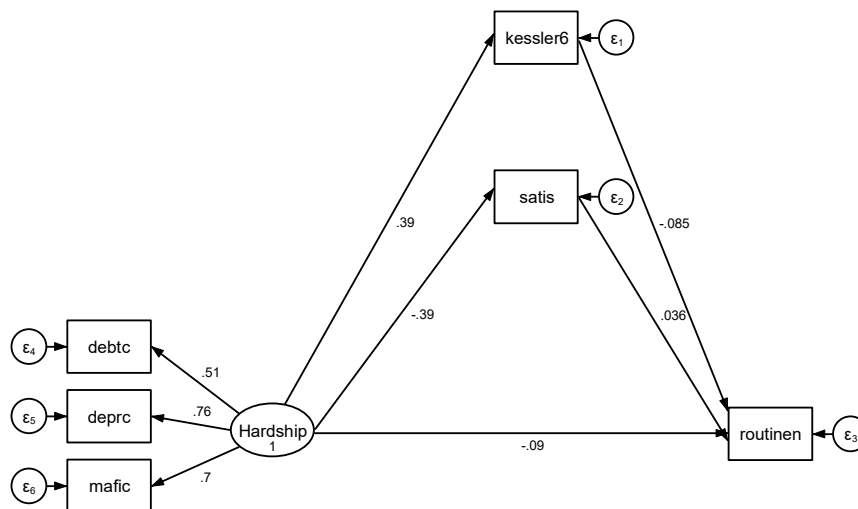
Figure 33 Path diagram for harsh or permissive discipline



5) Routine

Both indirect and direct effects are significant for the measure of routine. All relationships are in the expected direction: an increase in mother's mental distress (Kessler scale) is associated with a decrease in routine for the child. Greater life satisfaction is associated with more routine. The direct effect is also negative – in other words experiencing an additional hardship is still associated with a decrease in routine that is not explained away by the mediating variables included in the model. Again mother's mental distress appears to be the more important of the two significant mechanisms, explaining around three quarters of the indirect effect. The direct effect is still bigger than the indirect effect: around 65% of the total effect of hardship on routine is direct, as in not explained by the mechanisms included in this model.

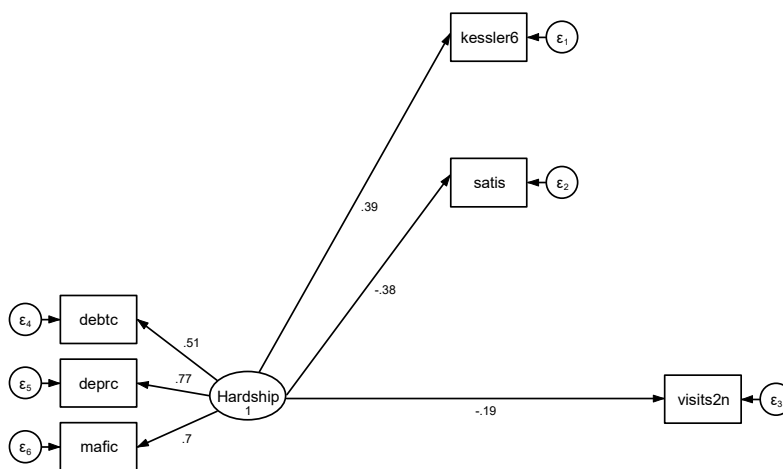
Figure 34 Path diagram for routine



6) Trips out

For the child's experiences of trips outside of the home, none of the mediating variables are significant; the effect is entirely direct, or in other words not explained by the variables included in the model. The association between hardship and trips out is therefore not explained by the Family Stress Model mechanisms of mothers' mental wellbeing. This results is not surprising, given the direct costs often involved in trips out, Regardless of mothers' mental wellbeing the financial resources a family has still affects the likelihood of taking children to visit places. As mentioned previously this is one parenting measure which could be conceptualised as capturing Investment Model mechanisms – pathways between hardship and children's outcomes that relate to parents' ability to afford and invest in particular goods and services, rather than the stress pathway from hardship to children's outcomes. This interpretation fits with results from chapter 6 which found there is an income gradient in the number of trips out children experience. This is also the parenting measure for which hardship has the strongest association: experiencing hardship is associated with a decrease in trips out of almost 20% of a standard deviation.

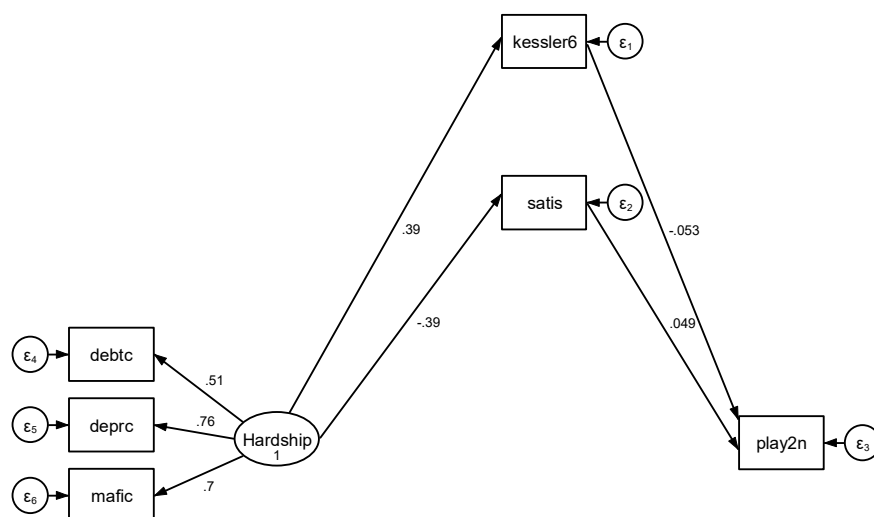
Figure 35 Path diagram for trips out



7) Play activities

For play activities the direct effect is no longer significant (at 1% level of significance although it is marginal as $p=0.02$ and has a larger path coefficient than the indirect effects combined); the association between hardship and play activities are fully explained by the mediating variables. As expected, an increase in mother's mental distress (Kessler score) and a decrease in life satisfaction is associated with a decrease in the frequency of play activities with the child. Both indirect effects are of equal size (with a one standard deviation increase in hardship associated with a reduction in play activities of around 2% of a standard deviation via each pathway). It is not surprising that the relationship between hardship and play activities are indirect and that the Family Stress Model variables do appear to be mechanisms of this relationship; playing with their child may not always require physical resources but it is likely to require emotional resources and energy, both of which may be depleted when the mother's mental wellbeing is compromised.

Figure 36 Path diagram for play activities

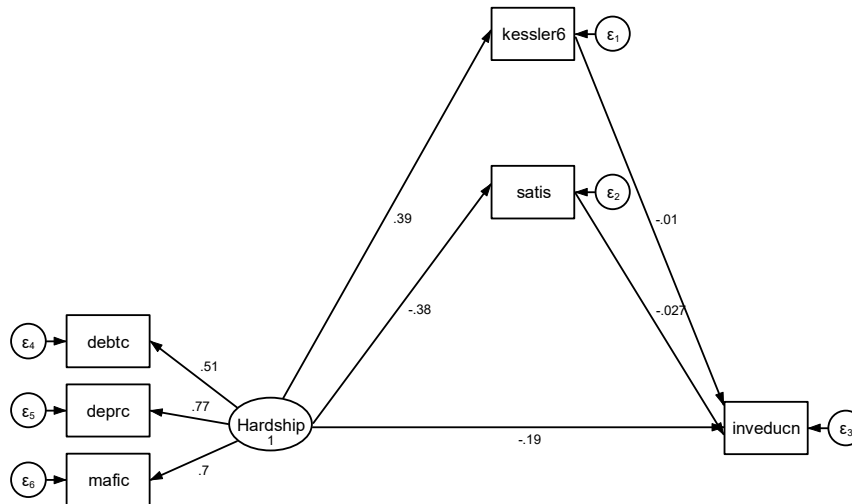


8) Educational activities

Both the direct and indirect effects are significant for educational activities, although the direct effect is larger (around 60% of the total effect). A one standard deviation increase in hardship is associated with a decrease in educational activities of 5% of a standard deviation directly, with small indirect effects of 1 % of a standard deviation via the mother's mental distress and 2% of a standard deviation via the mother's life satisfaction.

Less than half of the total effect of hardship on educational activities is indirect, suggesting there are other mechanisms not captured in the model which explain the rest of this relationship. This is perhaps an area where Investment Model mechanisms (for example educational toys, books and other learning materials) have more explanatory power.

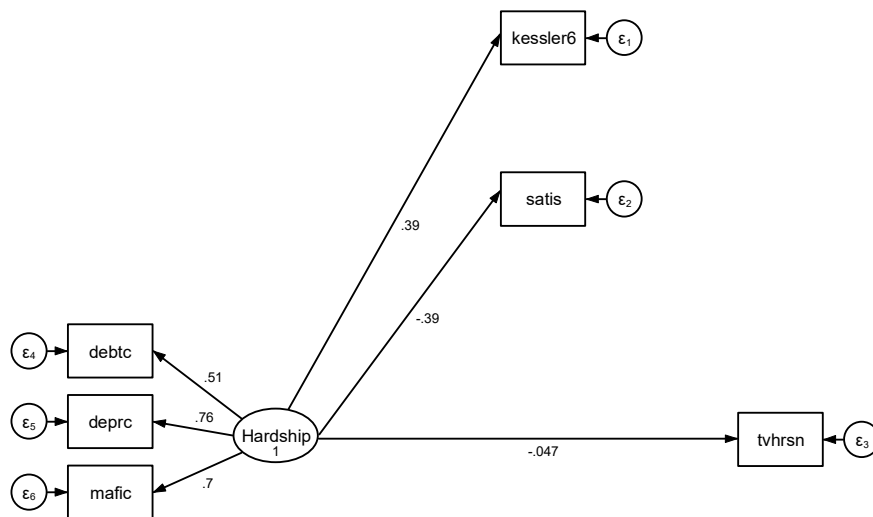
Figure 37 Path diagram for educational activities



9) Hours of TV and computer

For hours of television and computer games, only a direct effect is significant. A one standard deviation increase in experiencing hardship is associated with a 5% of a standard deviation increase in the amount of television watched by the child (this parenting measure is reverse-coded so that higher values indicate fewer hours of television). This is unsurprising given the results for trips out as time spent watching television is likely to be related to time spent doing other activities including visiting places outside of the home. As with trips out and meeting the child's physical needs, perhaps Investment Model type variables, which are not captured in the model, have some explanatory power here, as Family Stress model measures do not appear to be important for this type of parenting. Again this interpretation is in-line with the findings of an income gradient for this parenting measure that extends across the income distribution.

Figure 38 Path analysis for hours of television



Overall summary of results

Parenting measures that are *fully* mediated by mothers' mental wellbeing

For some of the parenting measures the relationship between hardship and parenting was fully mediated by the Family Stress Model mechanisms, as in only the indirect effects were significant. This was the case for how close the mother feels to the child, authoritative discipline, harsh or permissive discipline and play activities. Experiencing more hardship was associated with worse mental health (higher Kessler score) and life satisfaction and this was associated with the mother feeling less close to her child, more frequent discipline of both kinds (authoritative and harsh/permissive), and less play activities with the child. For these parenting measures therefore there is evidence that the Family Stress Model mechanisms explain fully the relationship between hardship and parenting. These types of parenting measures may be emotionally driven so it is unsurprising that mother's mental wellbeing plays such a strong role in explaining how they are affected by hardship. In all cases apart from play activities, where both the mother's Kessler score and life satisfaction have standardised coefficients of equal values, mother's Kessler score plays a slightly greater role in explaining the indirect relationship.

Table 63 Summary of standardised SEM results for all parenting measures in MCS wave 3

Parenting measure	Direct effect	Indirect via Kessler	Indirect via life satisfaction	Total indirect effect	Total effect	Summary
Meeting physical needs	-0.12	-0.02	-0.01	-0.03	-0.15	partially mediated
Closeness	n/s	-0.05	-0.04	-0.09	-0.07	fully mediated
Authoritative discipline	n/s	0.03	0.01	0.04	0.07	fully mediated
Harsh/permissive discipline	n/s	-0.06	-0.03	-0.10	-0.07	fully mediated
Routine	-0.09	-0.03	-0.01	-0.05	-0.14	partially mediated
Trips out	-0.19	n/s	marginal	n/s	-0.19	no mediation
Play activities	marginal	-0.02	-0.02	-0.04	-0.08	fully mediated
Educational activities	-0.05	-0.01	-0.02	-0.03	-0.08	partially mediated
TV/PC hours	-0.05	n/s	n/s	n/s	-0.06	no mediation

Note: M indicates results were marginally significant. n/s indicates results were not statistically significant at 1%.

Parenting measures that are partially mediated by mothers' mental wellbeing

For meeting the child's physical needs, routine meal and bedtimes and educational activities, mothers' mental health and life satisfaction partially explains this relationship, although the direct effect of hardship on parenting is still significant. The relationships are all in the expected direction: experiencing more hardship is associated with a lower score on meeting the child's physical needs, less routine and less frequent educational activities, both directly and via the negative association between hardship and mothers' increased mental distress and decreased life satisfaction.

In order to quantify how much of the relationship between hardship is indirectly explained through mother's Kessler score and life satisfaction

and how much of the relationship is direct (not explained by the mechanisms included in the model) proportions of mediation can be calculated (as in Cunliffe, 2016: 113). As can be seen from *Table 64* more than 50% of the relationship is still direct (not explained by the mechanisms included in the model) – for meeting the child’s physical needs the indirect effect is 21% of the total effect²⁸ of hardship on parenting, with the mother’s mental health (Kessler score) playing a slightly stronger role than life satisfaction. For meeting the child’s physical needs then still around 80% of the association with hardship is not explained by the mechanisms included in the model. Because the measure of physical needs relates to nutrition and exercise, there are likely to be other factors such as local area including access to affordable leisure facilities and parks for exercise and access to affordable food shops for nutrition.

For routine meal and bedtimes around 34% of the association between hardship and parenting is explained by mothers’ mental wellbeing and around two thirds of this indirect effect is via mother’s mental distress as measured by the Kessler score.

Experiencing hardship is associated with less frequent educational activities. Around 37% of this relationship is explained by the indirect relationship through mothers’ mental health and life satisfaction, the latter of which playing a slightly stronger role.

²⁸ The total effect is the sum of the direct and indirect effect. The first two columns of table 48 therefore add to make 1. The indirect effect is then broken down further in the next two columns, distinguishing how much of the total effect is via mothers’ Kessler score and life satisfaction respectively.

Table 64 Proportions of mediation from SEMs for parenting measures that are partially mediated by mothers' mental health and life satisfaction in MCS wave 3

Parenting measure	Direct effect	Total indirect effect	Indirect via Kessler	Indirect via life satisfaction
Physical needs	0.79	0.21	0.13	0.08
Routine	0.66	0.34	0.24	0.1
Educ.activities	0.63	0.37	0.17	0.2

Parenting measures for which mothers' mental wellbeing does not mediate the relationship with hardship

For two of the parenting measures mothers' mental health and life satisfaction does not explain any of the relationship with hardship, only the direct effect is significant. Experiencing hardship was associated with fewer trips outside of the home and more hours spent watching television or playing computer games. Again these results are intuitive; regardless of mothers' mental health it may be that the direct relationship with hardship is explained by the prohibitively expensive cost of trips outside of the home and travel to get there. As discussed above these results are in-line with the income gradient found for these parenting measures in chapter 6, giving further reason to infer that the Investment Model may be more relevant for explaining the relationship between these parenting measures and experiences of hardship.

Overall then there is evidence of the Family Stress Model mechanisms explaining the relationship between experiencing hardship and parenting although this depends on the type of parenting measured. The negative relationships between experiencing hardship, and how close the mother feels to her child, frequency of discipline (both authoritative and harsh/permissive) and play activities are *entirely* explained by the Family Stress Model mechanisms: mothers' mental health and life satisfaction. For meeting the child's physical needs, routine and educational activities,

mothers' mental wellbeing explains less than half of the negative association with hardship. Finally for trips outside of the home and hours of television, mothers' mental wellbeing does not explain any of the relationship; the effect is entirely direct, that is to say that it is not explained by the factors included in the model.

The role of the two mediating variables

Mother's emotional distress as measured by the Kessler scale was found to be a mediating variable, explaining part of the relationship between hardship and all but two of the parenting measures (it was not significant for hours of television and visits outside of the home). Mental distress as measured by the Kessler scale often played the biggest role as a mechanism for parenting measures where indirect effects were significant. The standardised path coefficient from hardship to the Kessler scale is 0.39 suggesting that an increase of one standard deviation of experiencing hardship is associated with an increase on the Kessler scale of emotional distress of almost 40% of a standard deviation. For almost all of the parenting measures the increase in maternal distress which is associated with an increase in hardship, is then negatively associated with parenting i.e. higher mental distress for mothers is associated with worse scores on the parenting indices. There is just one exception to this: for authoritative discipline an increase in mothers' mental distress is associated with an increase in the use of authoritative discipline; but, as discussed above, this may be because higher stress leads to an increased frequency of discipline of any kind. The positive association between mothers' mental distress and the frequency of harsh or permissive discipline suggests this may be the case.

Life satisfaction is a mediating variable for almost all of the parenting measures, again with hours of television and trips out as the exception, although it played a smaller role than mental distress (Kessler scale). An increase of one standard deviation of experiencing hardship is associated

with a decrease in life satisfaction of around 40% of a standard deviation, so a similar effect size to that of the Kessler scale. Where life satisfaction is a mediating variable it is positively associated with parenting measures, so that an increase in life satisfaction is associated with better scores on the parenting measures. Again this is not the case for authoritative discipline where an increase in life satisfaction is associated with a decrease in the use of authoritative discipline. Again this is likely to be capturing the frequency of discipline as a whole and suggests that mothers who have greater life satisfaction discipline their children less frequently.

The size of the effect

Although the path analyses show a number of significant direct and indirect effects from hardship to parenting, the size of the effects are small. The size of the total effects (that is the direct and indirect effects combined) range from -0.03 to -0.19 % of a standard deviation²⁹ – as in previous chapters the strongest relationship is between hardship and trips out, which is one of the parenting measures where the Family Stress Model mechanisms are not significant. In his discussion of power analysis Cohen suggests that an effect size of 0.10 is small, that is to say ‘noticeably smaller than medium but not so small as to be trivial...’ (1992: 156). By this definition the effect sizes for the relationship between hardship and parenting are small, though significant (and typically not ‘trivial’). It is worth noting however that these effects are despite including a large number of potential explanatory variables: mother’s education, mother’s age, mother’s work status, mother’s ethnicity, number of siblings and whether the child lives in a one or two parent household. We would expect all of these factors to also be driving parenting behaviours as well as being associated with hardship.

²⁹ In relation to a one unit increase in experiencing hardship; as the latent hardship measure is standardised this corresponds to an increase in experiencing hardship of one standard deviation.

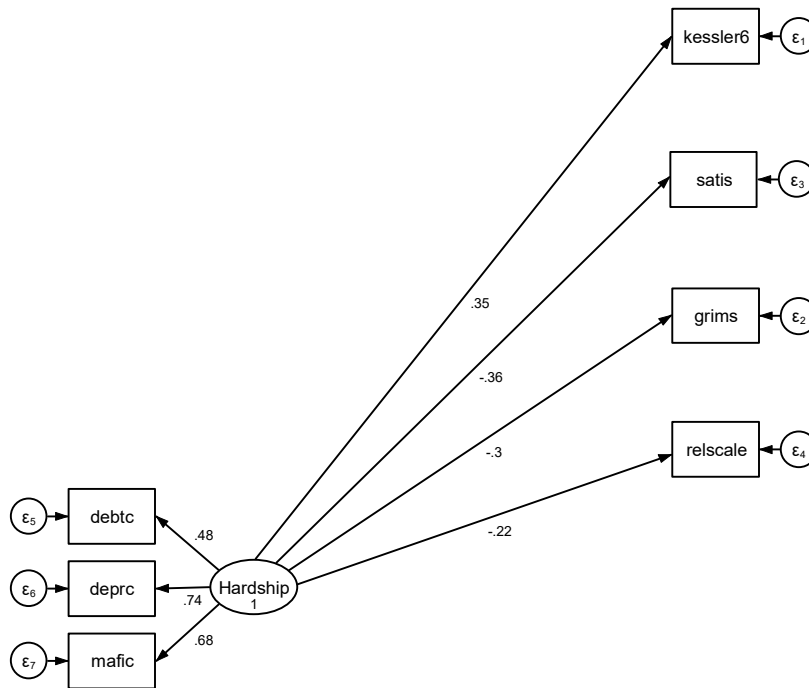
7.4 Results Part Two – the Role of Relationship Quality

For the mothers living with a partner at the time of the interview the analysis was repeated, this time including the two measures of relationship satisfaction: the GRIMS scale and the overall satisfaction scale. For both measures higher scores denote a more positive relationship satisfaction. In-line with the Family Stress Model we would expect both measures of relationship satisfaction to be positively correlated with parenting measures, so that greater levels of satisfaction with their relationship are associated with better scores on the parenting measures. Hardship is expected to be negatively associated with relationship satisfaction, another channel through which hardship is negatively associated with parenting.

The relationship between hardship and measures of relationship satisfaction

As can be seen from experiencing hardship was significantly associated with the two measures of relationship satisfaction in the expected direction: an increase in experiencing hardship is associated with a decrease in GRIMS score (measuring relationship quality) and a decrease in overall relationship satisfaction. The size of the path coefficients are slightly smaller than for the Kessler score and life satisfaction. A one unit increase in experiencing hardship is associated with a decrease in GRIMS score of 30% of a standard deviation and a decrease in overall relationship satisfaction of around 22% of a standard deviation.

Figure 39 Path diagram for hardship, GRIMS score and relationship satisfaction

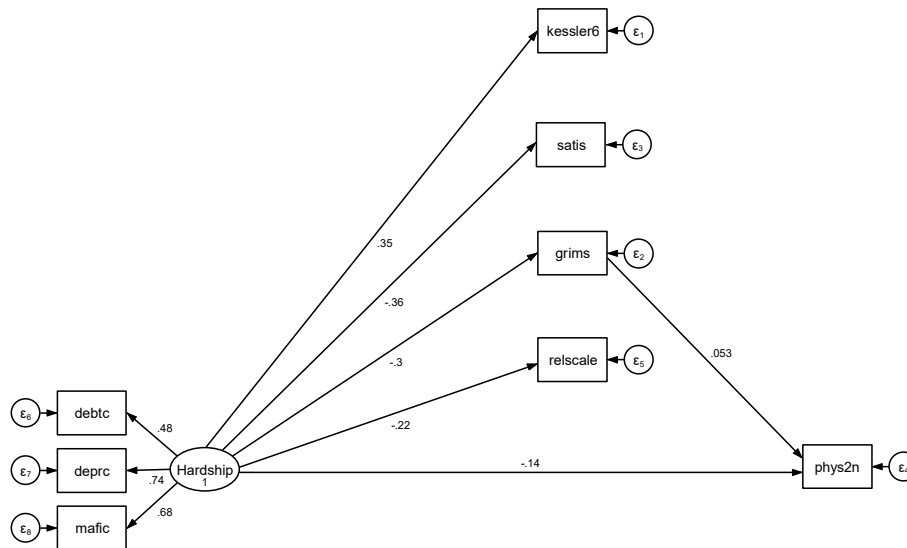


1) Meeting the child's physical needs

For meeting the child's physical needs the only indirect effect is through the GRIMS score of relationship quality. Higher scores of relationship quality are associated with better scores of meeting their child's physical needs. The indirect effect of experiencing hardship, via relationship quality (GRIMS), is associated with a decrease in meeting the child's physical needs of around 5% of a standard deviation, less than half the size of the direct effect that remains unexplained by the model.

It is interesting that there are no indirect effects via mothers' mental health and life satisfaction. As discussed earlier there is some correlation between these measures and the GRIMS score which is accounted for in the model.

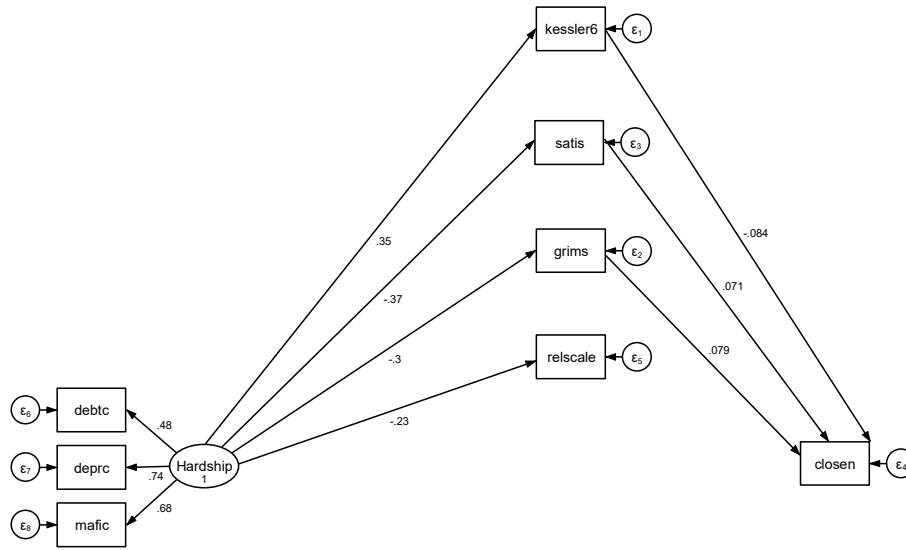
Figure 40 Path diagram for meeting physical needs for mothers living with a partner



2) Closeness to the child

For how close the mother feels to the child, the GRIMS score is a significant mediator alongside mothers' mental health and life satisfaction. As with previous results of the full sample the direct relationship is no longer significant. Each of the indirect effects are of roughly equal size and again correlations between the mechanisms are taken into account in the model. This suggests that each of these factors, mental health, relationship quality and life satisfaction, independently contributes to how close the mother feels to the child. The effect is in the expected direction: experiencing hardship is associated with mothers feeling less close to their child, via worse mental health, lower life satisfaction and lower relationship quality.

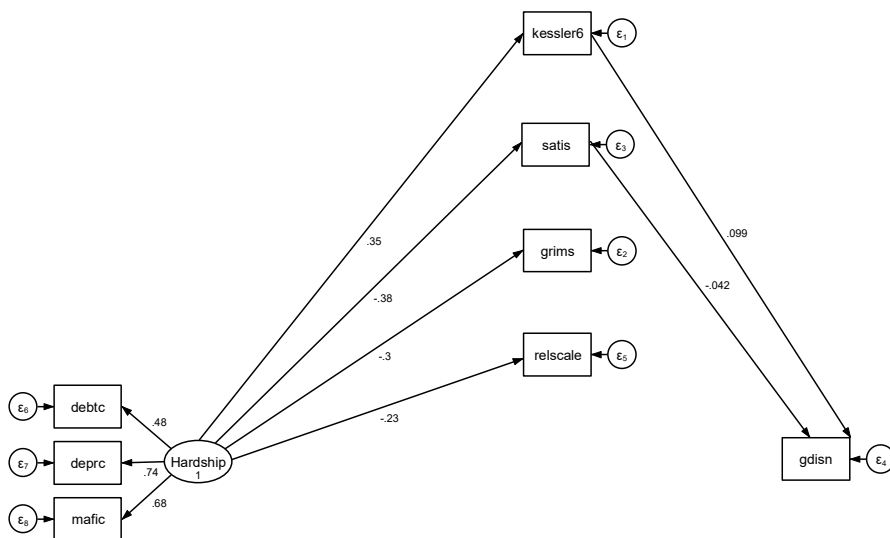
Figure 41 Path diagram for closeness for mothers living with a partner



3) Authoritative discipline

For authoritative discipline, neither relationship quality (GRIMS) nor overall relationship satisfaction play a role in explaining the relationship with hardship. There is no direct effect but the relationship is fully mediated by mothers' mental health and life satisfaction.

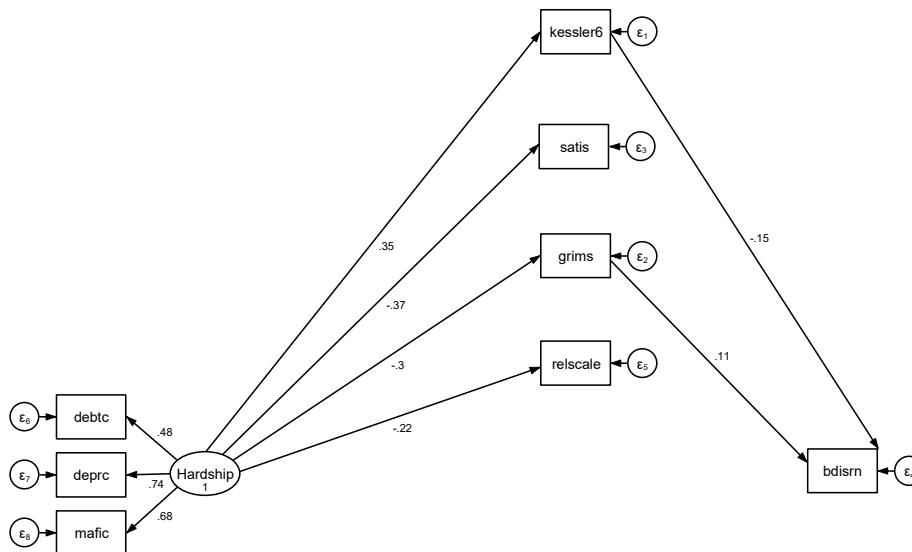
Figure 42 Path diagram for authoritative discipline for mothers living with a partner



4) Harsh or permissive discipline

For the second measure of discipline the relationship with hardship is again fully mediated, with indirect effects through GRIMS score and mothers' mental health. Life satisfaction and overall relationship satisfaction are only marginally significant ($p=0.02$). Worse mental health and lower relationship quality are associated with more frequent harsh or permissive discipline.

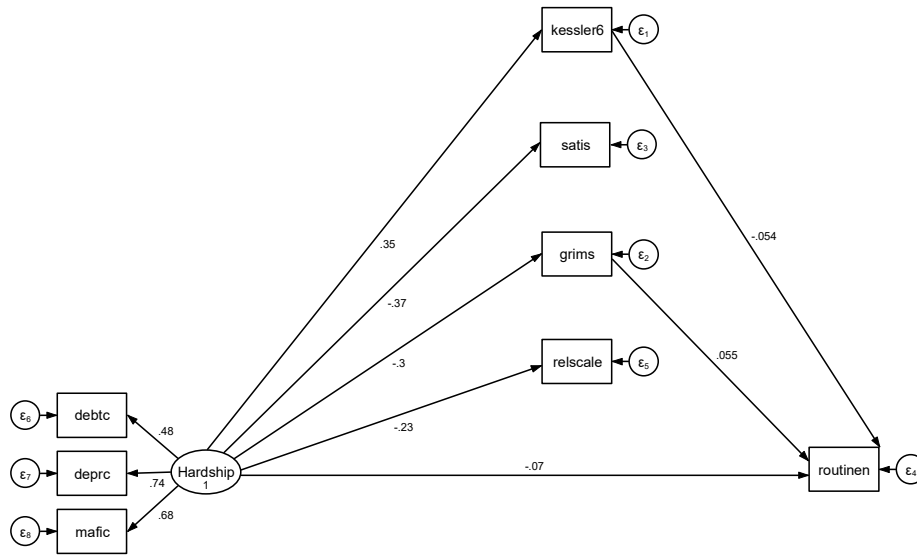
Figure 43 Path diagram for harsh or permissive discipline for mothers living with a partner



5) Routine

The relationship between hardship and routine is partially mediated through the GRIMS score as well as mothers' mental health. Worse mental health and relationship quality is associated with less routine. Just over half of the effect is direct and therefore not explained by the variables in the model.

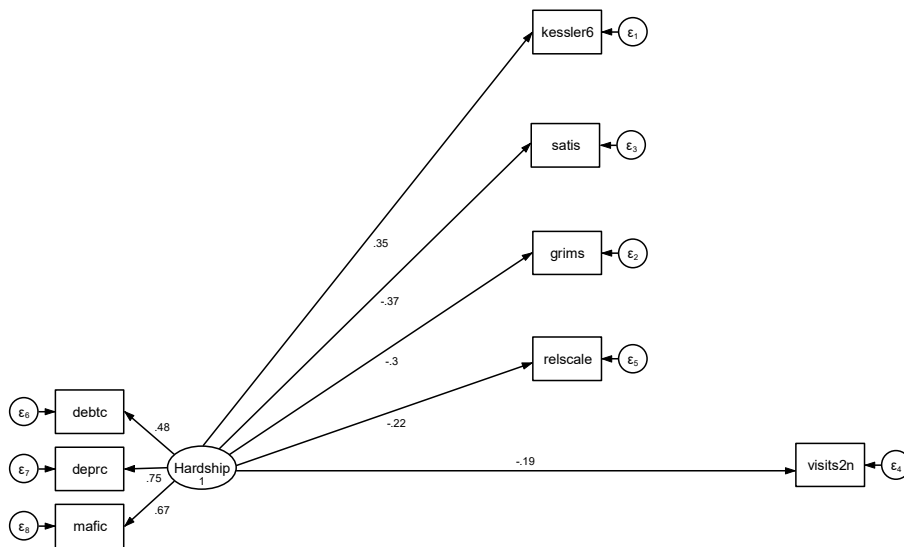
Figure 44 Path diagram for routine for mothers living with a partner



6) Trips out

As with the full sample analysis, for trips out only the direct effect is significant. It is likely that other factors not included in the model, such as Investment Model variables explain some of this relationship.

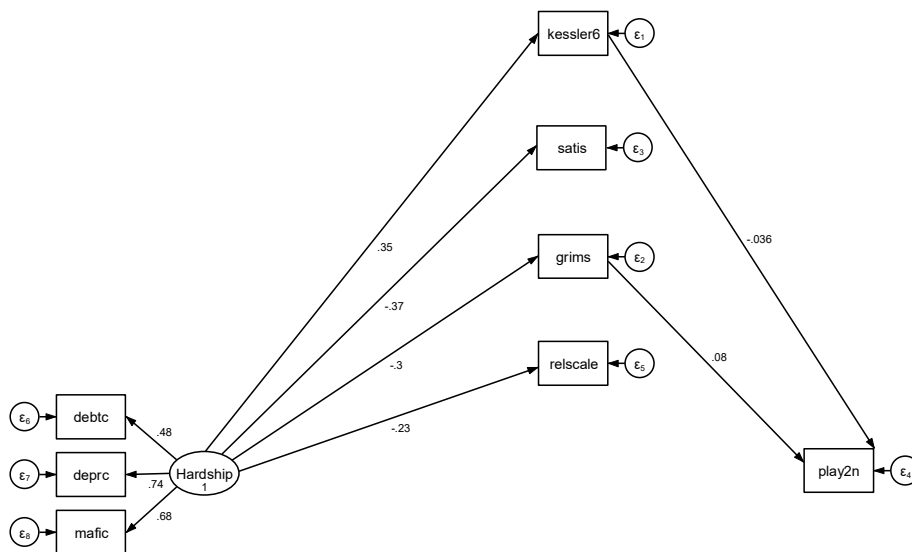
Figure 45 Path diagram for trips out for mothers living with a partner



7) Play activities

The relationship between hardship and frequency of play activities is fully mediated by indirect effects through mothers' mental health and relationship quality (although the direct effect is marginally significant with a p-value of 0.04). Both indirect effects are small, with the GRIMS score playing a slightly stronger role: an increase in experiencing hardship of one standard deviation is associated with a decrease in play activities of 2% of a standard deviation through mothers' relationship quality (GRIMS) and 1% of a standard deviation through mothers' mental health (Kessler). These results are in-line with expectations as engaging in play activities requires emotional resources which are likely to be affected not only by mental health but also by mothers' experiences of their relationship with their partner.

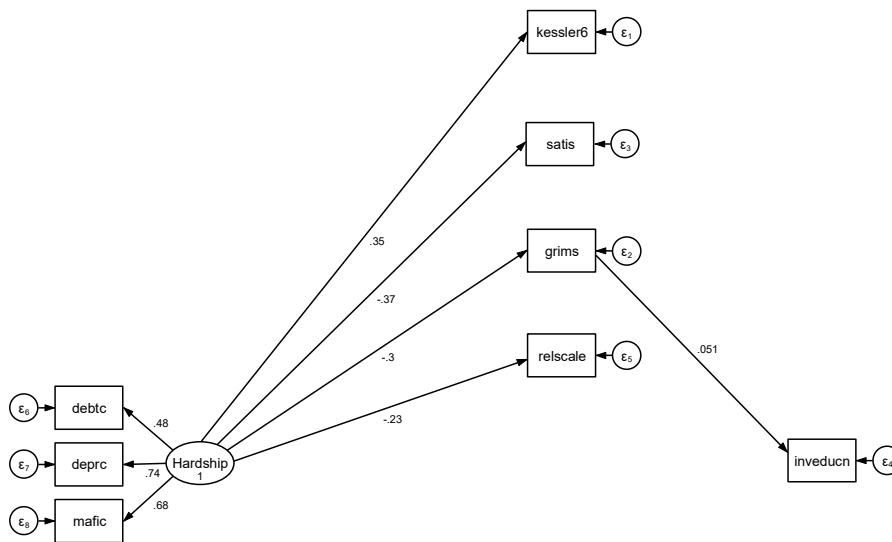
Figure 46 Path diagram for play activities for mothers living with a partner



8) Educational activities

The relationship between hardship and frequency of educational activities is fully mediated through mothers' relationship quality (GRIMS) only (although again the direct effect is marginally significant with a p-value of 0.04). For mothers in a relationship then, once the GRIMS score is included in the model, mental health and life satisfaction are no longer significant.

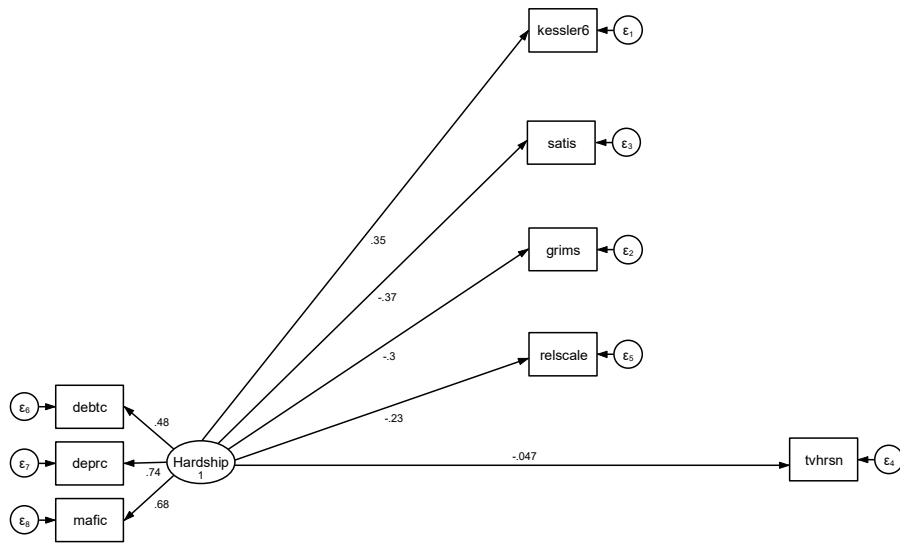
Figure 47 Path diagram for educational activities for mothers living with a partner



9) Hours of TV and computer

As in the main analysis only the direct effect between hardship and hours of television and computer games is significant, although an indirect effect via relationship quality as measured by the GRIMS score is marginally significant ($p=0.02$).

Figure 48 Path diagram for hours of television for mothers living with a partner



The role of the two relationship measures

The GRIMS measure of relationship quality was a significant mediator for all but three of the parenting measures (not significantly associated with authoritative discipline, trips out, and only marginally significant for TV hours). However, the overall measure of relationship satisfaction was not significantly associated with any of the parenting measures and so is not a mediator of the relationship between hardship and parenting.

Table 65 Summary of SEM results for all parenting measures in MCS wave 3 for sub-sample of mothers in a relationship

Parenting measure	Direct effect	Indirect via GRIMS	Indirect via rel. satis.	Indirect via Kessler	Indirect via life satis.	Total indirect effect	Total effect	Summary
Physical needs	-0.14	-0.02	n/s	n/s	n/s	-0.03	-0.17	partially mediated
Closeness	n/s	-0.02	n/s	-0.03	-0.03	-0.08	-0.06	fully mediated
Authoritative discipline	n/s	n/s	n/s	0.04	0.02	0.05	0.05	fully mediated
Harsh/ permissive discipline	M	-0.03	M	-0.05	n/s	-0.1	-0.05	fully mediated
Routine	-0.07	-0.02	n/s	-0.02	n/s	-0.05	-0.12	partially mediated
Trips out	-0.19	n/s	n/s	n/s	n/s	n/s	-0.18	no mediation
Play activities	M	-0.02	n/s	-0.01	n/s	-0.04	-0.07	fully mediated
Educational activities	n/s	-0.02	n/s	n/s	n/s	-0.03	-0.06	fully mediated
TV/PC hours	-0.05	M	n/s	n/s	n/s	n/s	-0.06	no mediation

Note n/s indicates not statistically significant and M indicates marginally significant

Table 66 Proportions of mediation for partially mediated relationships between hardship and parenting for subsample of mothers in a relationship in MCS wave 3

Parenting measure	Direct effect	Total indirect effect	Indirect via GRIMS	Indirect via relation. satisfact	Indirect via Kessler	Indirect via life satisfact
Meeting physical needs	0.83	0.17	0.09	0	(0.05)	(0.02)
Routine	0.6	0.4	0.14	0	0.16	(0.09)

N.B. coefficients in brackets are not significant at 1%.

For meeting the child's physical needs and educational activities the GRIMS measure is the only significant mediator; it partially mediates the relationship between hardship and meeting physical needs, though the direct effect is much bigger and accounts for 83% of the relationship between hardship and meeting physical needs. It fully mediates the relationship between hardship and educational activities although the coefficient is still small: an increase in hardship of one standard deviation is associated with a decrease in relationship quality as measured by GRIMS of 2% of a standard deviation.

For how close the mother feels to the child, harsh or permissive discipline, routine and play activities there is a significant indirect effect of hardship through the GRIMS score, in addition to the indirect effect via mothers' mental health (Kessler score) (and in the case of closeness to the child, life satisfaction also).

The effect of hardship on closeness, harsh or permissive discipline and play activities is fully mediated, as in there is no significant direct effect. Routine is only partially mediated by relationship satisfaction (GRIMS) and mothers' mental health (Kessler score), with indirect effects of equal size for each pathway. The direct effect is still bigger and accounts for 60% of the relationship between hardship and routine.

Again for trips out and TV hours, there is no mediation – only the direct effect is significant. There may be other factors that explain these relationships that are not included in the model.

For authoritative discipline the relationship with hardship is fully mediated although neither of the measures of relationship satisfaction are mechanisms, it is fully explained by mothers' mental health and life satisfaction.

Comparing these results to the full sample results, the main differences are that for the subsample of mothers living with partners, when including relationship satisfaction in the model, mothers' Kessler score and life satisfaction is no longer a significant mediator of the relationship between hardship and meeting the child's physical needs or educational activities and life satisfaction is no longer a significant mediator for harsh or permissive discipline, routine and play activities.

Summary of results for mothers living with a partner

Overall the second set of Family Stress Model mechanisms, measuring relationship quality (GRIMS) and satisfaction, do add some explanatory power. Overall relationship satisfaction as measured by a simple scale was not significantly associated with any of the parenting measures. However, the GRIMS score which includes four items measuring the perceived sensitivity of their partner to their needs, whether they feel listened to by their partner, whether they feel lonely sometimes even when with their partner and whether they suspect they are on the brink of separation, does mediate the relationship between hardship and all but three of the parenting measures. Experiencing hardship was associated with a lower GRIMS score, indicating worse relationship quality, which in turn was associated with worse parenting, although the size of the indirect effects via the GRIMS score is small, ranging between 2-3% of a standard deviation.

In the case of meeting the child's physical needs (nutrition and exercise) and frequency of educational activities, the GRIMS score was the only significant Family Stress Model mechanism. That relationship quality plays such a large role for these types of parenting is quite surprising, though it should be noted that this does not mean that mothers' mental health is not

relevant for these types of parenting for mothers in a relationship; the mental health measures were allowed to covary with the relationship satisfaction measures, so mothers' mental health may still be important, but may be operating through its association with relationship quality.

7.5 Discussion

The findings from this chapter show that the Family Stress Model is relevant to the UK. Building on the one existing study that has explored this in the UK context (Kiernan and Huerta, 2008), it was found that mothers' mental health and life satisfaction explained more or less of the relationship between hardship and parenting, depending on the type of parenting behaviour. For closeness with the child, discipline (of both kinds) and play activities, mothers' mental health and life satisfaction *fully* mediated the relationship with hardship. For meeting the child's physical needs, routine and educational activities the Family Stress Model explained part of the relationship (between around 20 and 40%), but the direct relationship remained significant, indicating that other factors as well as mothers' mental health is likely to be important for why hardship matters for these parenting behaviours. The Family Stress Model mechanisms were not significant for trips out and hours of television and computer games; these are perhaps behaviours where the Investment Model is more relevant. This interpretation is compatible with the income gradient found for these parenting measures in chapter 6.

This analysis also builds on previous UK evidence in exploring the role of relationship satisfaction. For mothers living with a partner it was found that relationship quality (as measured by the GRIMS score but not the overall relationship satisfaction rating) also explained part of the relationship between hardship and parenting (apart from for authoritative discipline and the two parenting measures where only a direct significant relationship was found: trips out and hours of television). Hardship was associated with worse relationship quality which in turn was associated

with worse parenting. Results were similar to the full sample analysis, with a couple of exceptions: the relationship between hardship and educational activities is fully mediated by relationship satisfaction only. Also the indirect effect of hardship on meeting children's physical needs is only significant via relationship satisfaction. Whilst the mothers' mental distress (Kessler score) and overall life satisfaction are no longer significant for these parenting measures once relationship quality is included in the model this does not mean that mothers' mental wellbeing are not important for these parenting behaviours, although they no longer have independent 'effects'. Because mothers' mental wellbeing is allowed to covary with mothers' relationship quality, it may be that for these parenting behaviours the effect of mothers' mental health takes place via its association with relationship quality.

Chapter 8

How are changes in hardship related to changes in maternal mental health and parenting?

In previous chapters it has been shown that there are some differences in parenting by hardship status, and that mothers' mental health is important in explaining some of these differences. So far all analyses have made use of just one wave of data and so provide a snapshot of hardship and parenting at the time of the survey when children are aged around five years. Despite taking into account a number of potential explanatory variables³⁰, this cross-sectional relationship might still be due to other factors. In this chapter the relationships between changes in hardship experiences (becoming worse off or better off) and changes in mothers' mental wellbeing and parenting behaviours are explored. This chapter will not be able to test whether the relationship between hardship and parenting behaviours is causal; there still may be unobserved heterogeneity (both time variant and invariant) driving the association and it will not be possible to unpick the direction of the relationship as hardship and parenting are still measured at the same time points. Nevertheless, it will allow for a more confident assessment of the relationship i.e. that the association between hardship and parenting is amenable to change and is not the outcome of some stable characteristic or differences in parents from different economic backgrounds, such as cultural differences or differences in personality.

Evidence related to the Family Stress Model (FSM) discussed in the previous chapter demonstrates that decreases in income or increases in

³⁰ The following variables were included as covariates: mother's education, age, ethnicity, work status, number of siblings in the household and whether there are one or two parents/carers in the household.

economic hardship such as material deprivation, are associated with a worsening of parental mental health and parenting behaviours (such as more frequent harsh discipline), leading to a worsening in child outcomes. This evidence was discussed more thoroughly in the previous chapter.

In addition to the FSM evidence a number of US studies that look at exogenous changes in family income find positive effects on some types of parenting. A US randomised controlled trial (Cancian et al, 2013) from an evaluation of a welfare programme which allowed families in the treatment group to keep the full amount of child support paid by non-resident fathers found that although the differences in cash received by the treatment and control group were modest (on average \$101 in the first year and \$102 more of child support in the second year), for mothers that were able to keep their child support payments there was a significant reduction in risk of child abuse and neglect (measured as alleged child abuse or neglect that was investigated).

Hamad and Rehkopf (2015) analysed the effect of variations in the amount of Earned Income Tax Credit families received and find that at the four year follow up (though not at the two year follow up) families that receive higher tax credits have improved HOME scores (Home Observation Measurement for the Environment³¹). These results are consistent with two observational US studies which find that increases in income are associated with increased cognitive stimulation in the home (Votruba-Drzal, 2003), and improvements in the physical and psychosocial home environments (Dearing and Taylor, 2007).

Finally Akee et al (2010) used a natural experiment where casino profits are distributed to all adult tribal members in an Eastern Cherokee reservation and were able to compare households with and without adult tribal

³¹ The HOME score measure is based on interviewer observations such as whether the house is cluttered as well as questions to the mother such as how often she reads to the child. There are a different number of items measured at different ages and the scores are normalised by age.

members as well as households with different numbers of adult tribal members. They found that for households originally in poverty receiving this income increased mothers' and fathers' parental supervision, decreased the number of arrests of mothers and fathers and increased mother-child activities.

A number of studies with similarly robust methods also find positive effects of increases in income on one of the mechanisms of the Family Stress Model, maternal depression. Again this evidence is mostly from the US and includes evidence from a randomised controlled trial of a welfare programme (the Minnesota Family Investment Program) (Gennetian and Miller, 2002³²); two studies that exploit differences in the amount of Earned Income Tax Credit received by different families (Boyd-Swan et al, 2016; Evans and Garthwaite, 2010), as well as one study which looks at variations in the amount of child benefit received in Canada (Milligan and Stabile, 2011). Dearing et al's (2004) US observational study similarly finds that increases in income are associated with reductions in symptoms of maternal depression.

Focusing on recent UK evidence, studies using the same dataset as this research, the Millennium Cohort Study (MCS), suggest changes in income are also related to changes in mother's mental health and parenting in the UK. Wickham et al (2017) and Fitzsimons et al (2017) both analysed the relationship between transitions into poverty (and for Fitzsimons et al (2017) movements out of poverty also) and children's socioemotional outcomes as measured by the Strengths and Difficulties Questionnaire at ages five, seven and eleven years. Both studies found that moving into poverty is associated with worse outcomes for children and this is largely explained by the impact of transitions into poverty on mothers' mental health (in both studies once mothers' mental health is included in the

³² Although the same study by Gennetian and Miller finds no effect on maternal warmth, harsh parenting or supervision.

model, the poverty transitions lose most of their statistical significance). Both studies highlight the significant impact transitions into poverty can have on mothers' mental health and in turn the impact this has on children's mental health. Neither of the studies test the role of parenting but Fitzsimons et al (2017) hypothesise that changes in parenting are likely to be one of the mechanisms that explains how maternal mental health is affecting children's outcomes. These UK studies therefore provide further evidence that we would expect changes in hardship to be associated with changes in mothers' mental health, a factor that the previous chapter found, in-line with existing evidence (Kiernan and Huerta, 2008) to be an important mechanism of the relationship between hardship and parenting behaviours.

Taken together this evidence suggests we should expect to find that increases in hardship are associated with a worsening of parenting and decreases in hardship are associated with improvements in parenting. It is also expected that changes in hardship are associated with changes in mothers' mental wellbeing, which explains part of the relationship with changes in parenting behaviour to a greater or lesser extent (see summary of results in previous chapter).

In this chapter I build on the existing UK evidence in two ways: firstly, I analyse the relationship between changes in hardship and changes in parenting, as well as changes in mothers' mental wellbeing. The two UK studies discussed above do not include parenting in their analyses. Secondly, I analyse changes in experiences of hardship (debt, material deprivation and subjective hardship) as well as changes in income. Existing UK evidence focuses on income poverty only.

8.1 Research questions

1) How are changes in hardship (as measured by income, debt, feeling poor and material deprivation) associated with changes in parenting behaviours?

- Specifically are increases in hardship associated with a worsening of parenting behaviours and decreases in hardship associated with an improvement in parenting behaviours?

2) How are changes in hardship associated with changes in mothers' mental wellbeing?

- Are increases/decreases in hardship associated with worsening/improvements in mothers' mental wellbeing?

8.2 Data and Methods

This chapter makes use of the third and fourth wave of the MCS when children were around five and seven years respectively. All five waves were examined but waves three and four were chosen because they had the most similarities and it is therefore possible to look at changes in measures across these two waves; whilst the measures of hardship and mothers' mental health are available across waves 2-5, the parenting measures in many of the waves are not consistent. Waves three and four are most consistent; in fact all of the parenting measures in wave three are in wave four with just a couple of exceptions³³. In using these two waves it is therefore possible to continue using the parenting indices that fit into the four domains of my conceptual framework of parenting: 1) meeting physical needs 2) parent-child relationship 3) discipline and routine 4) cognitive stimulation.

³³ Routine bedtimes are asked about but not routine meals and all the discipline questions are asked apart from how often the mother makes sure the child does what is asked.

In order to measure changes in hardship, mother's mental wellbeing and parenting I created new variables based on the difference between these measures at waves 3 and 4. For example for parenting, equivalent parenting indices were created for wave 4 parenting measures³⁴. Then the parenting score at wave 4 was subtracted from the parenting scores at wave 3. This is then reverse-coded so that negative scores represent a worsening in parenting behaviours. See *Table 67* for details of how each change variable has been coded.

Once these variables were created OLS regressions were used to test the association between them. Two models were estimated: first the unadjusted regressions for change in hardship and change in parenting, as well as separately changes in hardship and changes in mother's mental wellbeing. In the second model, potential explanatory factors such as mother's education and work status were included in the model.

Because both changes in hardship and changes in mental health and parenting are measured over the same time period, one potential problem with my approach is that it does not allow sufficient time for the effects to be realised. When Fitzsimons et al (2017) analysed transitions into and out of poor maternal mental health, for example, they found that there may be 'legacy effects'; there was a continued negative association with children's outcomes for those whose mothers moved out of poor mental health (though smaller in size than for those whose mothers moved into or remained in poor maternal mental health) compared with those whose mothers were never in poor mental health. Furthermore, the study by Hamad and Rehkopf (2015) only found significant changes in the home environment 4 years after the increase in the Earned Income Tax Credit. It is not clear how long it should take for a change in economic hardship to impact maternal mental health and parenting, though it is unlikely to be

³⁴ Two of the parenting indices also had to be recreated for wave 3 to make them comparable to the wave 4 indices, accounting for the fact that two of the parenting measures are not available in wave 4.

instantaneous, and it might depend on the type of hardship experienced: falling into debt and feeling poor might be more of an immediate stressor whilst being deprived of necessities is likely to be an experience of hardship based on longer term disadvantage. Additionally, we know that people's financial situations are highly volatile, especially for those with low incomes (Jenkins, 2011) so with some of the hardship measures (income poverty and debt) the experiences recorded at the time of the survey may not be reflective of day-to-day experiences. There may be multiple transitions into and out of poverty in between the two time points for instance and so the picture is inevitably more complex than the simple measure of 'change in hardship' used, which potentially has a lot of measurement error. This is less of a concern with the measure of deprivation, changes in which are likely to occur after more sustained increases or decreases in financial resources.

Table 67 Measuring change in the MCS between waves 3 and 4

Type of variable	Measures available both waves	Change variable (difference between wave 3 and wave 4 variable)
<i>Independent variables - hardship</i>	Income quintile (OECD equivalised)	Continuous: Positive scores indicate decrease in income quintile (worsening hardship) Range from -4 to +4
	Debt (number of bills behind with)	Continuous: reverse coded so positive scores indicate increase in debt (worsening hardship) Range from -11 to +10
	Material deprivation (same items both waves: whether deprived of 1) child's coat, 2) child's shoes, 3) annual holiday, 4) celebrations, 5) small amount of money for mother)	Continuous: reverse-coded so positive scores indicate worsening deprivation Range from -4 to +5
	How well managing financially – (5 categories from 'doing alright' to 'finding it very difficult)	Continuous: reverse- coded so positive scores indicate managing worse Range: -4 to +5

Type of variable	Measures available both waves	Change variable (difference between wave 3 and wave 4 variable)
<i>Mechanisms- Mother's mental wellbeing</i>	Kessler 6 scale measuring symptoms of anxiety and depression (scale from 0 to 24 with higher scores indicating worse mental health)	Continuous: reverse-coded so positive scores indicate a worsening in mental distress Range: -23 to +24
	Life satisfaction measuring general life satisfaction (scale from 1 to 10 with higher scores indicating greater satisfaction)	Continuous: reverse-coded so negative scores indicate a worsening of life satisfaction Range: -9 to +9
<i>Dependent variables: Parenting</i>	Meeting Physical needs 6 measures of nutrition and physical activity – all measures the same in both waves	Continuous: difference in standardised indices from wave 3 and 4. Reverse-coded so positive scores indicate improvements in parenting.
	Closeness to the child – only one measure in both waves	Continuous: difference in standardised measure from both waves. Reverse-coded so positive scores indicate improvements in parenting.
	Discipline – authoritative four measures of authoritative discipline available in both waves. Wave 3 index re-coded without 'obey' which is not available in wave 4.	Continuous: difference in standardised indices from both waves. Reverse-coded so positive scores indicate improvements in parenting.
	Discipline – harsh/permissive four measures of discipline – same measures available in both waves	Continuous: difference in standardised indices from both waves. Reverse-coded so positive scores indicate improvements in parenting.
	Discipline – routine only one measure of routine was available in both waves – routine bedtimes. Wave 3 variable was recoded, excluding routine meal times to make measures equivalent	Continuous: difference in standardised indices from both waves. Reverse-coded so positive scores indicate improvements in parenting.
	Cognitive stimulation – trips out same six measures available in both waves	Continuous: difference in standardised indices from both waves. Reverse-coded so positive scores indicate improvements in parenting.
	Cognitive stimulation – play activities same 7 measures available in both waves	Continuous: difference in standardised indices from both waves. Reverse-coded so positive scores indicate improvements in parenting.

Type of variable	Measures available both waves	Change variable (difference between wave 3 and wave 4 variable)
<i>Dependent variables:</i> <i>Parenting</i>	Cognitive stimulation – educational activities same five measures available in both waves, although with slight differences in wording: wave 4 specifies that help with reading/writing/maths not including homework, whilst wave 3 includes homework within these measures. Also ‘numbers and counting’ referred to as ‘maths’ in wave 4 and ‘spelling and writing’ becomes just ‘writing’ in wave 4 question.	Continuous: difference in standardised indices from both waves. Reverse-coded so positive scores indicate improvements in parenting.
	Cognitive stimulation – TV/PC hours both measures available in both waves	Continuous: difference in standardised indices from both waves. Reverse-coded so positive scores indicate improvements in parenting.

Incorporating covariates which may change over time

For covariates which can change over time, such as mother’s work status, number of siblings in the household and number of parents/carers in the household, these need to be taken into account with measures from both waves. Tests for multicollinearity reveal that mothers’ education at time 1 and time 2 are too highly correlated to include in the same model (Appendix 23). Therefore each covariate is included from time 1 and additionally a new variable is created measuring any changes in covariates between time 1 and time 2 which is then controlled for. There is no problem with collinearity amongst the transformed variables (Appendix 23).

Table 68 Measuring change in covariates in the MCS between waves 3 and 4

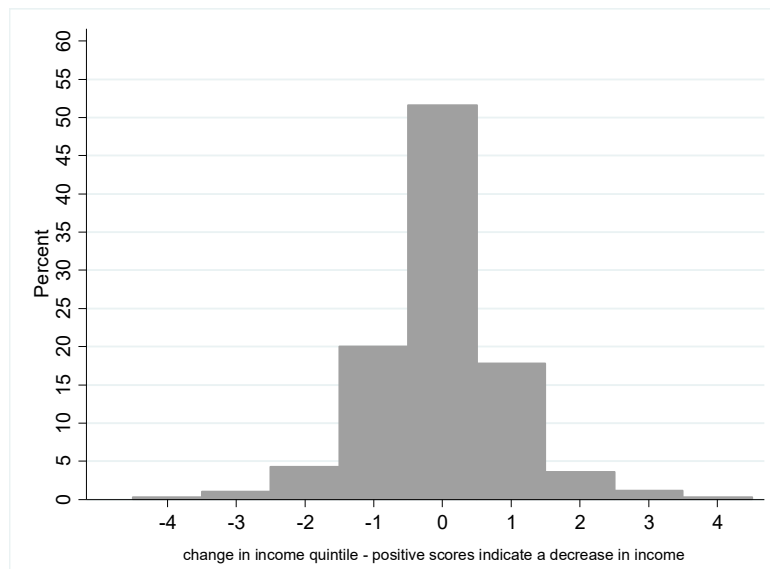
Covariate	Taken from wave	Level of measurement
Mother's age	Wave 3	Ordinal: grouped into 4 age categories
Mother's ethnicity	Wave 3	Categorical: 8 ethnic groups
Mother's education level	Wave 3	Ordinal: grouped into 5 NVQ levels
Whether mother increased education level by wave 4	Wave 3 and 4	Binary: 0= same education level 1= increase in education
Number of siblings	Wave 3	Ordinal: grouped into 4 categories
Change in number of siblings	Wave 3 and 4	Categorical: 1. Same number of siblings 2. Fewer siblings in household at wave 4 3. Greater number of siblings in household at wave 4
Number of parents in the household	Wave 3	Binary: 0= two parents/carers 1= one parent/carer
Change in number of parents in the household	Wave 3 and 4	Categorical: 1. Same number of parents/carers both waves 2. From two parents to one parent 3. From one parent to two parents
Mother's work status	Wave 3	Ordinal: 1. Not working 2. Working part-time 3. Working full-time
Change in mother's work status	Wave 3 and 4	Continuous: change in number of hours worked with negative values indicating decrease in hours worked, zero indicating no change in hours worked and positive numbers indicating increase in number of hours worked.

Once again the sample is restricted to natural mothers of singleton births and only respondents who have data in both waves 3 and 4 are kept. This gives a sample size of 12,051 once it is further restricted to respondents with non-missing data on all the covariates included in the adjusted model. Appropriate survey weights are used in all analyses.

8.3 Descriptive statistics regarding the changes in hardship, mental health and parenting between ages five and seven

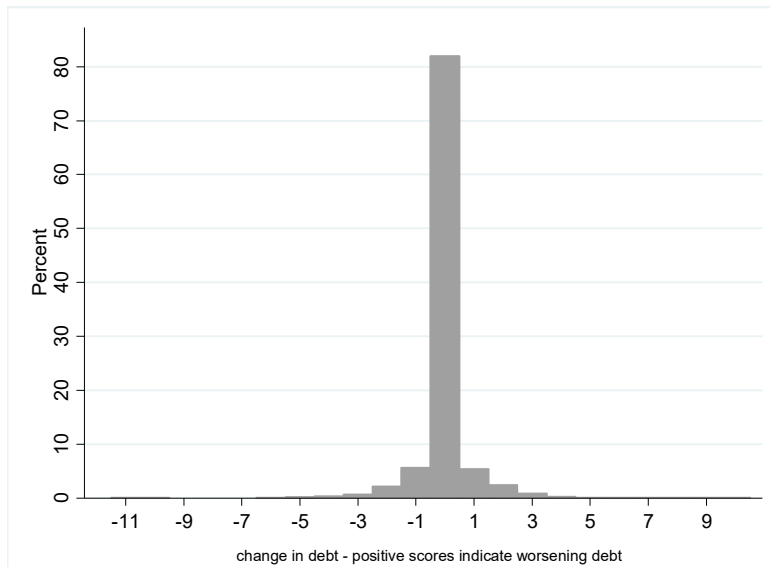
How much change has there been in hardship between when cohort children are aged five and seven?

Figure 49 Histogram showing change in income quintile between when cohort children are aged five and seven years



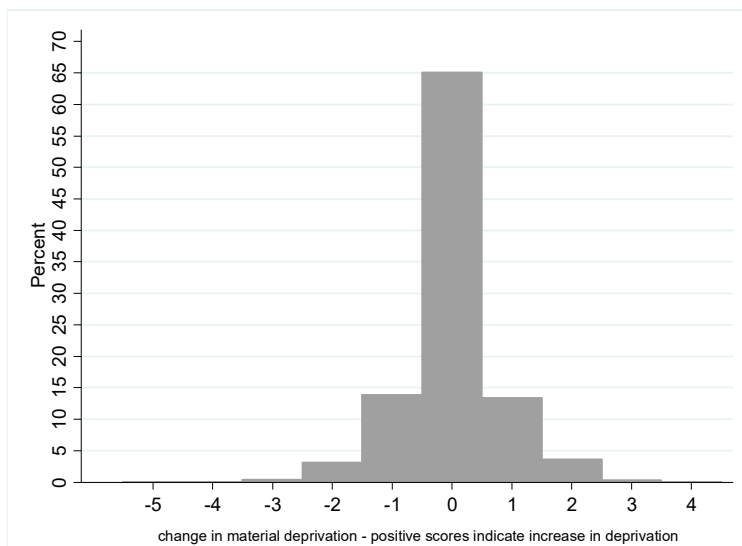
Just over 25% of households experienced an increase in income quintile from when cohort children were aged five to seven years, around 52% had no change and around 23% experienced a decrease in their income quintile.

Figure 50 Histogram showing change in debt between when cohort children are aged five and seven years



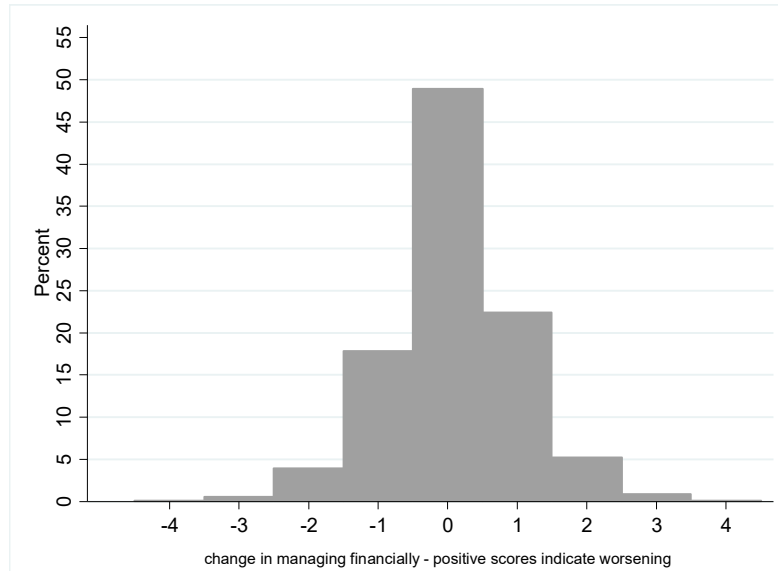
As can be seen from Figure 50 there is less variation across this two year time period in households' debt. For 82% there was no change in their level of debt between waves 3 and 4. Around 9% experienced a decrease in their level of debt and around 9% experienced an increase in their level of debt.

Figure 51 Histogram showing change in deprivation between when cohort children are aged five and seven years



For 65% of households their deprivation level stayed the same, for around 17% their deprivation worsened and for the same proportion their deprivation level improved between when cohort children were aged five and seven.

Figure 52 Histogram showing change in how well managing financially between when cohort children are aged five and seven years



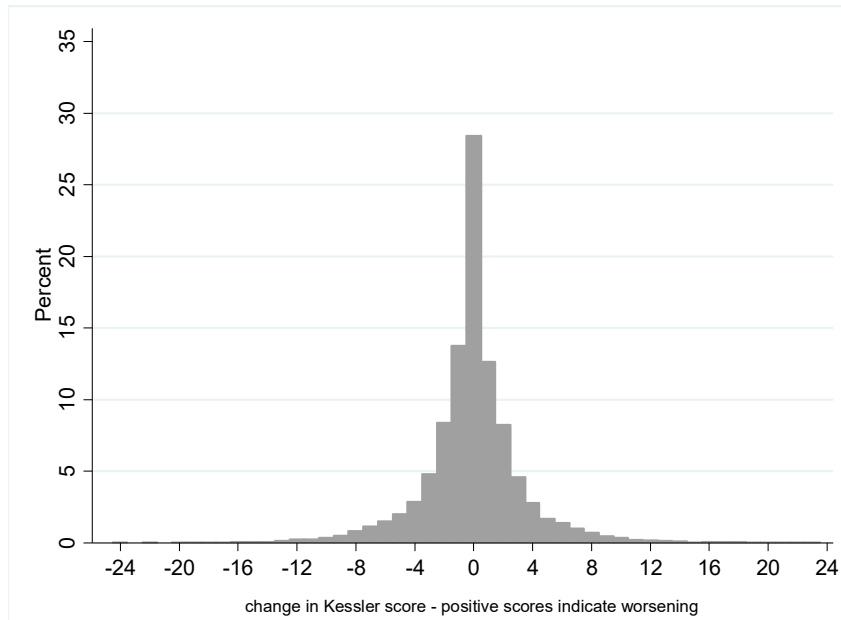
For 29% of respondents they felt they were managing less well financially when the cohort child was aged seven than when they were age five. For around 50% there was no change in how well they felt they were managing financially and for 22% they felt they were managing better when cohort children were aged seven than when they were five.

Overall then there has been the least amount of variation in debt between the two waves and the greatest amount of variation in how well respondents felt they were managing financially (which I will call 'feeling poor'). Conceptually this measure is most linked to the Family Stress Model – if it's about stress then how well parents *feel* they are doing financially should be what's important. Also previous analysis has highlighted possible inaccuracies with the income measure and there is less variation in debt and deprivation between the two year time period. For both these

reasons we might expect stronger results for the feeling poor measure than for the other measures of change hardship.

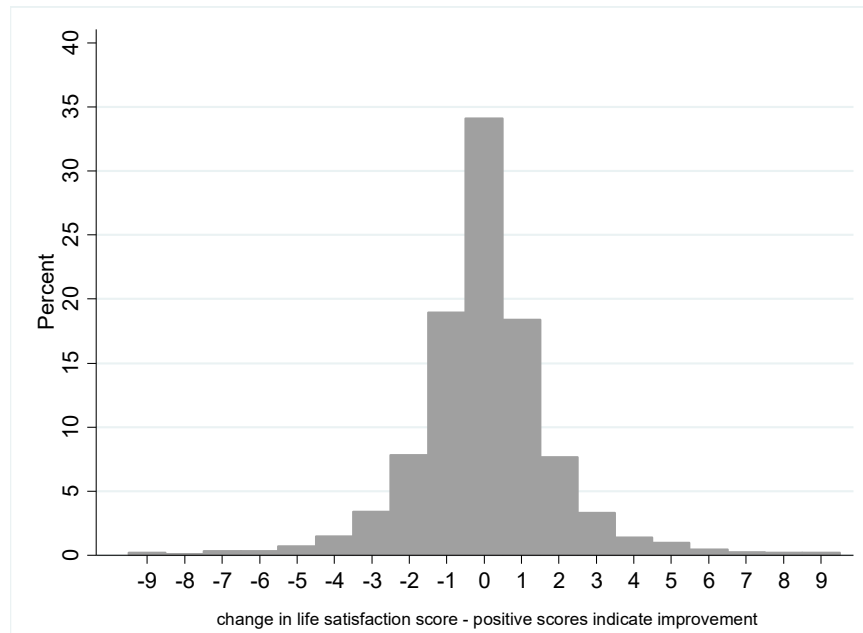
How much change has there been in mothers' mental wellbeing between when cohort children are aged five and seven?

Figure 53 Histogram showing change in mothers' mental health (Kessler score) between when cohort children are aged five and seven years



There is more variation in mothers' mental health between when children are age five and seven than there is in experiences of hardship. 35% of mothers experienced a worsening in their mental health between the two years. For 28% there was no change and for 37% there was an improvement.

Figure 54 Histogram showing change in life satisfaction between when cohort children are aged five and seven years



For 33% of mothers their life satisfaction decreased, for 34% there was no change and for 33% their life satisfaction increased between when the cohort child was aged five and seven.

How much change in parenting is there between when the cohort child is aged five and seven?

Changes in parenting between these two ages might reflect how as the child ages parenting adapts appropriately. Because the parenting indices are standardised they are measuring a mothers' relative score on parenting; how her parenting relates to the mean parenting score for that type of parenting. The change in parenting being measured is therefore changes in parents' relative parenting – how well they are parenting in relation to the mean – rather than absolute changes in parenting. It may be the case for instance, that all parents begin to play less with their child when they are aged seven compared with when they are aged five. But what the change in parenting score is capturing is whether their frequency of play activities with their child has got better or worse in relation to the mean – at age seven do they play with their child even less than other parents.

As can be seen from Table 69 there is some continuity in people's relative parenting scores, although the correlation between parenting indices when the child is age five and seven are moderate, with a correlation coefficient of around 0.5-0.6 for most parenting measures. It does differ according to the type of parenting measure; there is more variation in educational activities and hours of television, as well as routine bed time.

Table 69 Spearman's Rho correlations between parenting at age five and seven in the MCS

Parenting measure at age 5 and 7	Spearman's Rho
Meeting physical needs	0.5
Closeness	0.5
Authoritative discipline	0.6
Harsh discipline	0.6
Routine bedtime	0.4
Play activities	0.6
Educational activities	0.2
Trips out	0.6
TV hours	0.3

8.4 Results: Are changes in hardship associated with changes in parenting?

Table 70 Summary of regression results for changes in hardship and changes in parenting between waves 3 and 4 in the MCS

Change in parenting	Change in income		Change in debt		Change in deprivation		Change in feeling poor	
	Bivariate	Adjusted	Bivariate	Adjusted	Bivariate	Adjusted	Bivariate	Adjusted
Meeting physical needs	n/s	n/s	n/s	n/s	negative	negative	n/s	n/s
Closeness	positive	positive	n/s	n/s	n/s	n/s	n/s	n/s
Authoritative discipline	n/s	n/s	n/s	n/s	n/s	n/s	positive	positive
Harsh discipline	n/s (marginal positive)	n/s	negative	negative	n/s	n/s	n/s	n/s
Routine bedtime	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Trips out	n/s	n/s	n/s (marginal positive)	n/s (marginal positive)	negative	negative	n/s	n/s
Play activities	positive	n/s	n/s	n/s	n/s	negative	n/s	n/s
Educational activities	n/s	n/s	n/s	n/s	negative	negative	n/s	n/s
TV and PC hours	n/s	n/s	positive	positive	n/s	n/s	n/s	n/s

Note: results where significant (at 5% level) can be interpreted as the association between an increase in deprivation (as higher/positive values indicate increase in deprivation/decrease in income) and change in parenting (positive values indicating relative improvements in parenting) – therefore it would be expected that in general where there is a significant relationship it will be negative. n/s= not significant and marginal = p-value between 0.05 and 0.1

A summary of the regressions results for all changes in hardship and changes in parenting is presented in Table 70. Both changes in hardship and changes in parenting are measured as continuous variables, so an increase in debt for instance would be an increase in the number of bills the respondent is behind with. A worsening in play activities would be a decrease in the standardised score for frequency of play activities, signalling a worsening of the parent's relative position to the mean score for play activities.

On the whole the relationship between changes in hardship and changes in parenting are not consistently significant across hardship and parenting measures. There are slightly more significant associations in the bivariate regressions, but these are only for a handful of changes in hardship and parenting combinations and in a number of cases suggest an improvement in parenting score, which is counter-intuitive. However, there does seem to be a more consistent narrative for changes in material deprivation and changes in parenting and this holds once other factors are taken into account in the adjusted model as well. An increase in deprivation is associated with a decrease in meeting the child's physical needs, a decrease in the number of trips experienced outside of the home, a decrease in play activities with the child and a decrease in educational activities. Of all the hardship measures changes in deprivation is likely to be picking up more extreme and long-term changes in hardship. Changes in income, debt and feelings about how well you are managing financially may change quite quickly and continuously fluctuate, but in order to be deprived of additional necessary items (whether that is from previously not being deprived at all to being deprived of one item or being deprived of two items to being deprived of three) it is likely that a particularly significant change in financial resources has occurred. It seems then that changes deprivation are associated with changes in a number of parenting behaviours.

Changes in debt are associated with changes in two of the parenting measures, although one of these is in the opposite direction to expected: an increase in debt is associated with an increase in the use of harsh or permissive discipline which is in line with existing evidence and compliments findings from chapter 8 that showed the relationship between hardship and harsh or permissive discipline is fully mediated by mother's mental health. There is much evidence of the stress caused by being in debt so it is intuitive that an increase in debt might translate into more frequent harsh discipline. Unexpectedly and less straightforward to explain, an increase in debt is also associated with a decrease in the number of hours the child spends watching television and playing on the computer. Perhaps a worsening of debt can result in families limiting their use of electricity as well as limiting money spent on computer games.

There are more counter-intuitive results for changes in income and changes in feeling poor: a decrease in income is associated with an increase in how close the mother feels to the child (and in the bivariate model an increase in play activities). A worsening of feeling poor is associated with an increase in the use of authoritative discipline. This last result is less counter-intuitive than it appears; as hypothesised previously the discipline measures may actually be picking up the frequency of discipline in general rather than qualitatively distinguishing between different styles of discipline. The results for changes in feeling poor are therefore consistent with the results for changes in deprivation: an increase in hardship is associated with an increase in the frequency of discipline in general. These findings also give more confidence to the cross-sectional analyses of discipline; Because the question is worded as relative to when the child is naughty rather than in absolute terms (e.g. per week)³⁵, it was argued that the discipline measures could actually just be measuring differences between children in terms of how frequently they are naughty. Because this measure looks at changes in

³⁵ The discipline questions ask: 'How often do you do the following when [cohort child] is naughty?'

discipline over time for the same child this lends more confidence that there is a malleable relationship between experiences of hardship (or more specifically debt and feeling poor) and discipline (or perhaps naughtiness of the child), rather than some constant third factor such as culture explaining both, as changes in one are associated with changes in the other³⁶.

Overall then the main results show that changes in deprivation are associated with negative changes in a number of parenting measures. Changes in income, feeling poor and debt are less significant for changes in parenting, and so do not perfectly extend the previous cross-sectional results which found all measures of hardship to be associated with almost all measures of parenting.

Robustness checks

1. Focussing on a low-income subsample

One possible explanation for not finding significant relationships between changes in income quintile, debt and feeling poor and changes in parenting is that the analyses focus on changes in hardship and parenting for the whole sample, but existing research and previous chapters in this work concentrate on disadvantaged parents, generally finding significant relationships for this group. Therefore in focusing on the whole sample the effect may be diffused leading to less significant results. To test this I re-estimated the regressions restricting the sample to those who are in the three lowest income quintiles in wave three.

As can be seen from *Table 71* results are now in general less significant, in particular for the adjusted model: for changes in deprivation many of the results are now only marginally significant (at 10%), the only relationship that remains unchanged is the decrease in educational activities. The results

³⁶ Of course there could still be time-varying unobserved factors that are explaining both changes in hardship and changes in frequency of discipline.

for discipline in the adjusted model are also unchanged: an increase in debt is associated with an increase in the frequency of harsh or permissive discipline and an increase in feeling poor is associated with an increase in authoritative discipline. For changes in feeling poor there is now also a significant association with an increase in the number of hours of television/playing on the computer. These results indicate that the lack of significant relationships found for changes in income, debt and feeling poor and changes in parenting are not due to the relationship being diffused from including the more advantaged parents in the sample. If anything the reduction in significance suggests that the significant relationship between changes in deprivation and changes in parenting are perhaps being driven by changes in hardship experienced by more advantaged parents.

Table 71 Summary of regression results for changes in hardship and changes in parenting between wave 3 and 4 in the MCS with sample restricted to the lowest three income quintiles

Change in parenting	Change in income		Change in debt		Change in deprivation		Change in feeling poor	
	Bivariate	Adjusted	Bivariate	Adjusted	Bivariate	Adjusted	Bivariate	Adjusted
Meeting physical needs	n/s	n/s	n/s	n/s	(marginal negative)	(marginal negative)	n/s	n/s
Closeness	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Authoritative discipline	n/s	n/s	n/s	n/s	(marginal positive)	n/s	n/s	Positive
Harsh discipline	n/s	n/s	Negative	Negative	n/s	n/s	n/s	n/s
Routine bedtime	Positive	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Trips out	n/s	n/s	n/s	n/s	Negative	(marginal negative)	n/s	n/s
Play activities	Positive	n/s	n/s	n/s	n/s	(marginal negative)	n/s	n/s
Educational activities	Positive	n/s	n/s	n/s	Negative	Negative	n/s	n/s
TV and PC hours	n/s	n/s	Positive	(marginal positive)	n/s	n/s	n/s	Negative

Note: n/s= not significant (at 5% level)

Marginal = p-value between 0.05 and 0.1

2) The cross-sectional relationship between hardship and parenting at wave 4

Another possible explanation for not finding as significant relationships for changes in hardship and parenting between when the child is aged five and seven, compared with the cross-sectional relationships between hardship and parenting when the child is aged five, is that perhaps the cross-sectional relationships between hardship and parenting are not as strongly associated at age seven. In other words, perhaps experiences of hardship are less influential for parenting behaviours when children are aged seven compared to age five.

To test this I estimate OLS regressions for hardship experiences at age seven and parenting at age seven. On the whole results are significant and in the direction expected, although somewhat less significant than the relationship between hardship and parenting at the previous wave. The relationship between hardship and parenting therefore might be stronger when children are younger.

Table 72 Summary regression results for cross-sectional measures of hardship and parenting when the cohort child is age seven (wave 4) in the MCS

Parenting	In poverty		Debt (binary)		Deprivation (binary)		Feeling poor (binary)	
	Bivariate	Adjusted	Bivariate	Adjusted	Bivariate	Adjusted	Bivariate	Adjusted
Meeting physical needs	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Closeness	Negative	n/s	Negative	Negative	Negative	n/a	Negative	Negative
Authoritative discipline	n/s	n/s	Positive	Positive	Positive	Positive	Positive	Positive
Harsh discipline	n/s	n/s	Negative	Negative	n/s	n/s	Negative	Negative
Routine bedtime	Negative	n/s	Negative	Negative	n/s	n/s	Negative	Negative
Trips out	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Play activities	n/s	n/s	n/s	n/s	Negative	Negative	n/s	n/s
Educational activities	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
TV and PC hours	Negative	n/s	Negative	Negative	Negative	Negative	Negative	Negative

Note: n/s= not significant at 5% level

3) Comparing specific groups with change in hardship as a categorical variable

The analyses so far have presented results in terms of the average association between any change in hardship (in either direction) and changes in parenting. But this approach may obscure differences between different types of changes in hardship, both in terms of direction (worsening of hardship versus reduction in hardship) and level of hardship (moving from the third to lowest income quintile versus moving from the fifth to the fourth income quintile). Perhaps it is not *any* change in *any* direction that matters in terms of hardship, but more specifically what the change was. Comparing specific groups allows for an approach which more directly addresses both possible directions of change in hardship at specific cut offs.

I therefore estimate OLS regressions with categorical measures of change in hardship using binary cut-offs of hardship³⁷ with different reference categories to compare groups with different hardship trajectories. This imposes a threshold of what counts as a 'change in hardship', but allows for comparison between four groups with different hardship experiences across this two year period: 1) never in hardship, 2) always in hardship, 3) moves into hardship, 4) moves out of hardship, for each of the four hardship measures.

³⁷ In-line with previous analyses the following cut-offs are applied: 1) income poverty is measured as 60% of median OECD equivalised income 2) Debt is measured as being behind with one or more bill 3) deprivation is measured as being behind with two or more of the listed items due to not being able to afford them 4) feeling poor is measured as finding it 'quite' or 'very' difficult to manage financially,

i) Comparing those who move into hardship when the child is aged seven with those who do not experience hardship either at age five or seven

Comparing those who move into hardship with those who remain out of hardship is most similar to the emphasis of the Family Stress Model literature which focuses on financial stress and worsening of parenting. In-line with this body of evidence it is expected that those who move into hardship experience a worsening in their parenting compared with those who remain out of hardship.

As can be seen from *Table 73* when comparing these transitions into hardship the results are actually less significant than the first results which do not distinguish between the direction and level of hardship. In fact only two relationships are significant for the adjusted model and one of these is counter-intuitive: moving into debt is associated with more frequent play activities compared with those who remain not in debt (as work hours are controlled for in the model this relationship cannot be explained by having more time available when working less). Moving into deprivation is associated with a reduction in meeting the child's physical needs.

ii) Comparing those previously in hardship but who move out of hardship with those previously in hardship who remain in hardship

Comparing those who move out of hardship with those who remain in hardship when the child is aged seven, is loosely analogous to the US studies discussed earlier which measure the impact of an increase in income for poor families and find an improvement in parenting. In-line with this existing evidence (although the evidence is of a different kind) it is expected that those who move out of hardship experience an improvement in parenting compared with those who remain in hardship. This is again compatible with the Family Stress Model, though the focus of the literature is on experiences of financial stress.

Table 74 demonstrates that again changes in hardship comparing these two trajectories are largely insignificant and where they are significant the relationship is often in the opposite direction to that expected. Moving out of poverty compared with remaining in poverty is associated with less routine bedtimes and less educational activities. Moving out of debt compared to remaining in debt is associated with an increase in authoritative discipline (see earlier discussion regarding discipline measures capturing frequency of discipline in general rather than qualitatively different discipline styles). Similarly to moving out of poverty, moving out of deprivation is associated with a reduction in routine bedtimes, but also an improvement in play activities. Moving out of feeling poor is associated with more frequent harsh discipline.

On the whole then it seems that the relationships between moving out of hardship and changes in parenting are largely insignificant and where they are significant they are actually associated with a worsening of parenting behaviours (less routine bedtime and educational activities and more frequent discipline). The only positive results are an increase in play activities for those who move out of deprivation. It might be hypothesised that there is a worsening in some parenting behaviours because the moves out of hardship are largely accompanied by movements into or increases in the time spent working. However, as work hours are included in the adjusted model this is unlikely to be the explanation. Perhaps the quality of the work and working conditions explain some of these relationships.

Table 73 Summary of regression results for changes in parenting, comparing moving into hardship with not experiencing hardship at either time point in MCS wave 3 and 4

Changes in parenting	Moving into poverty		Moving into debt		Moving into deprivation		Moving into feeling poor	
	Bivariate	Adjusted	Bivariate	Adjusted	Bivariate	Adjusted	Bivariate	Adjusted
Meeting physical needs	n/s	n/s	n/s	n/s	n/s	Negative	n/s	n/s
Closeness	Positive	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Authoritative discipline	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Harsh discipline	n/s	n/s	(marginal negative)	n/s	n/s	n/s	n/s	n/s
Routine bedtime	n/s	n/s	n/s	n/s	Positive	n/s	(marginal positive)	n/s
Trips out	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Play activities	Positive	n/s	Positive	positive	n/s	n/s	Positive	n/s
Educational activities	Positive	n/s	Positive	n/s	Positive	n/s	Positive	n/s
TV and PC hours	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Note: n/s= not significant at 5%

Marginal = p-value between 0.05 and 0.1

Table 74 Summary of regression results for changes in parenting comparing moving out of hardship with experiencing hardship at both time points in MCS wave 3 and 4

Changes in parenting	Moving out of poverty		Moving out of debt		Moving out of deprivation		Moving out of feeling poor	
	Bivariate	Adjusted	Bivariate	Adjusted	Bivariate	Adjusted	Bivariate	Adjusted
Meeting physical needs	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Closeness	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Authoritative discipline	Negative	n/s	(marginal positive)	positive	n/s	n/s	n/s	n/s
Harsh discipline	n/s	n/s	n/s	n/s	n/s	n/s	Negative	negative
Routine bedtime	Negative	negative	n/s	n/s	Negative	negative	n/s	n/s
Trips out	n/s	n/s	n/s	n/s	Positive	n/s	n/s	n/s
Play activities	Negative	n/s	n/s	n/s	Positive	positive	n/s	n/s
Educational activities	Negative	negative	n/s	n/s	n/s	n/s	n/s	n/s
TV and PC hours	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Note: n/s= not significant at 5%

Marginal = p-value between 0.05 and 0.1

Are changes in hardship associated with changes in mothers' mental wellbeing?

Whilst on the whole changes in hardship have been found to be largely not significantly associated with changes in parenting, it is still plausible that changes in hardship are associated with changes in the mechanisms of the Family Stress Model – mothers' mental wellbeing. As can be seen from Table 75 and Table 76 there is a consistently significant relationship between changes in hardship and changes in mothers' mental wellbeing as measured by both the Kessler score and general life satisfaction. This holds for both the bivariate and adjusted model which includes other potentially explanatory factors, apart from for changes in income where the adjusted model is no longer significant for changes in mothers' Kessler score and changes in life satisfaction. Experiencing more debt, more deprivation and feeling poorer are all associated with a worsening of mothers' mental health (as measured by an increase in the Kessler score) and a decrease in mother's life satisfaction, even when taking into account a number of other related factors such as changes in mothers' work hours and changes in the numbers of parents/carers in the household. That changes in income are not found to be significant for changes in mothers' mental wellbeing whilst all other hardship measures are is consistent with previous findings that the income measure is likely to contain a lot of error and does not reliably capture respondents experiencing hardship. This is an important finding and highlights one of the contributions of this research in using a range of different measures of hardship; whilst income and income poverty in particular are often the main measures used in related literature if this analysis was restricted to measuring income/poverty only then a very important story would be missed. In this case it could falsely be concluded, based in the results for changes in income, that changes in hardship are not important for mothers' mental wellbeing, when in actual fact the three alternative hardship measures consistently provide evidence that changes in hardship are important for mothers' mental wellbeing.

Table 75 Regression results for changes in hardship and changes in mothers' mental health (Kessler score) between wave 3 and 4 in the MCS

	bivariate	adjusted
change in income quintile	0.086 *	0.037
	[0.04]	[0.04]
constant	-0.062	-0.275
	[0.04]	[0.25]
R-squared	0.001	0.009
N	11309	11309
change in debt	0.18 *	0.167 *
	[0.07]	[0.07]
constant	-0.07	-0.288
	[0.04]	[0.26]
R-squared	0.002	0.011
N	11293	11293
change in deprivation	0.261 ***	0.232 ***
	[0.05]	[0.05]
constant	-0.069	-0.262
	[0.04]	[0.25]
R-squared	0.004	0.012
N	11312	11312
change in feeling poor	0.348 ***	0.333 ***
	[0.05]	[0.05]
constant	-0.091 *	-0.306
	[0.04]	[0.25]
R-squared	0.01	0.017
N	11310	11310

* p<0.05, ** p<0.01, *** p<0.001

Note higher Kessler scores indicate greater mental distress.

Table 76 Regression results for changes in hardship and changes in life satisfaction between wave 3 and 4 of the MCS

	bivariate		adjusted
change in income quintile	-0.089 *** [0.02]		-0.032 [0.03] [0.00]
constant	-0.009 [0.02]		-0.236 [0.14]
R-squared	0.002		0.023
N	11122		11122
change in debt	-0.132 ** [0.04]		-0.116 ** [0.04]
constant	-0.004 [0.02]		-0.235 [0.14]
R-squared	0.004		0.026
N	11107		11107
change in deprivation	-0.181 *** [0.03]		-0.156 *** [0.03]
constant	-0.003 [0.02]		-0.231 [0.14]
R-squared	0.006		0.027
N	11125		11125
change in feeling poor	-0.28 *** [0.03]		-0.259 *** [0.03]
constant	0.021 [0.02]		-0.194 [0.13]
R-squared	0.021		0.04
N	11122		11122

* p<0.05, ** p<0.01, *** p<0.001

As with the analysis for changes in parenting the models were also estimated with a low income subsample (see Appendix 24) and the results on the whole are robust to these: when restricting the sample to those whose income is in the lowest three income quintiles at wave 3, changes in income are not significant for changes in mothers' mental health and life

satisfaction in either model. There is one difference to previous results: for the adjusted model changes in debt are not significantly associated with changes in the mothers' Kessler score for the low income sample. This suggests that for the previous results the relationship between changes in debt and changes in mothers' Kessler score may be driven by respondents in the higher income quintiles. The rest of the results show that changes in hardship are consistently associated with changes in mothers' mental health and life satisfaction for respondents in the lowest three income quintiles.

When comparing specific groups with different hardship trajectories the conclusions are largely unchanged although not significant for every group comparison. Tables 61 and 62 show regression results with the first column comparing those who move into hardship with those not in hardship at either time point, and the second column comparing those who move out of hardship with those who remain in hardship. The reference category is indicated by 'ref' and the coefficients of interest are bold. All results are for the adjusted model.

For those who move into debt, deprivation and begin feeling poor, compared with those who do not experience these types of hardship in either wave, mothers' mental health worsens (indicated by an increase in the Kessler score). Moving out of debt and moving out of feeling poor, compared with those who experience these hardships at both time points, is associated with an improvement in mother's mental health (a decrease in their Kessler score). For moving out of deprivation compared with remaining deprived the coefficient is of the expected sign but is not statistically significant and again changes in the income-based measure (this time income poverty) are not significant for any group comparison.

Table 77 Regression results comparing different trajectories for changes hardship and changes in mothers' mental health (Kessler score) between wave 3 and 4 of the MCS

	Moving into hardship		Moving out of hardship	
not in poverty both waves	ref		0.205	
			[0.16]	
moves OUT OF poverty	-0.171		0.035	
	[0.17]		[0.18]	
in poverty both waves	-0.205		ref	
	[0.16]			
moves INTO poverty	0.16		0.366	
	[0.16]		[0.19]	
constant	-0.176		-0.381	
	[0.26]		[0.28]	
R-squared	0.01		0.01	
N	11309		11309	
not in debt both waves	ref		-0.407	*
			[0.18]	
moves OUT OF debt	-0.637	**	-1.043	***
	[0.20]		[0.26]	
in debt both waves	0.407	*	ref	
	[0.18]			
moves INTO debt	0.549	**	0.142	
	[0.20]		[0.26]	
constant	-0.34		0.067	
	[0.26]		[0.32]	
R-squared	0.015		0.015	
N	11293		11293	
never deprived	ref		0.001	
			[0.20]	
moves OUT OF deprivation	-0.291		-0.29	
	[0.17]		[0.25]	
deprived both waves	-0.001		ref	
	[0.20]			
moves INTO deprivation	0.442	**	0.444	
	[0.16]		[0.24]	
constant	-0.29		-0.292	
	[0.25]		[0.33]	
R-squared	0.011		0.011	
N	11312		11312	
never feeling poor	ref		-0.07	
			[0.23]	
moves OUT OF feeling poor	-0.689	***	-0.758	**
	[0.20]		[0.28]	
feels poor both waves	0.07		ref	
	[0.23]			
moves INTO feeling poor	0.531	**	0.462	
	[0.17]		[0.27]	
constant	-0.269		-0.2	
	[0.25]		[0.35]	
R-squared	0.013		0.013	
N	11310		11310	

* p<0.05, ** p<0.01, *** p<0.001

Table 78 Regression results comparing different trajectories for changes in hardship and changes in mothers' life satisfaction between wave 3 and 4 in the MCS

	Moving into hardship		Moving out of hardship	
not in poverty both waves	ref		0.15	
			[0.08]	
moves OUT OF poverty	-0.011		0.139	
	[0.09]		[0.10]	
in poverty both waves	-0.15		ref	
	[0.08]			
moves INTO poverty	0.022		0.171	
	[0.09]		[0.10]	
constant	-0.163		-0.312	*
	[0.14]		[0.15]	
R-squared	0.023		0.023	
N	11122		11122	
not in debt both waves	ref		0.079	
			[0.08]	
moves OUT OF debt	0.244	*	0.323	*
	[0.10]		[0.13]	
in debt both waves	-0.079		ref	
	[0.08]			
moves INTO debt	-0.185		-0.106	
	[0.11]		[0.14]	
constant	-0.232		-0.312	*
	[0.14]		[0.15]	
R-squared	0.025		0.025	
N	11107		11107	
never deprived	ref		0.163	
			[0.10]	
moves OUT OF deprivation	0.226	*	0.389	**
	[0.09]		[0.13]	
deprived both waves	-0.163		ref	
	[0.10]			
moves INTO deprivation	-0.217	*	-0.054	
	[0.09]		[0.13]	
constant	-0.202		-0.365	*
	[0.14]		[0.16]	
R-squared	0.025		0.025	
N	11125		11125	
never feeling poor	ref		0.041	
			[0.11]	
moves OUT OF feeling poor	0.552	***	0.593	***
	[0.11]		[0.16]	
feels poor both waves	-0.041		ref	
	[0.11]			
moves INTO feeling poor	-0.633	***	-0.592	***
	[0.10]		[0.15]	
constant	-0.197		-0.238	
	[0.13]		[0.17]	
R-squared	0.037		0.037	
N	11122		11122	

* p<0.05, ** p<0.01, *** p<0.001

For mothers' life satisfaction results are similarly in the expected direction, if slightly less significant. Moving into deprivation and feeling poor, compared with not experiencing these hardships at either time point, is associated with a significant decrease in life satisfaction, although results for moving into debt are not significant. Moving out of debt, moving out of deprivation and moving out of feeling poor, compared with experiencing these hardships in both waves, is associated with an increase in mothers' life satisfaction. Again changes in the income-based poverty measure are not significant for either group comparison.

8.5 Discussion

On the whole changes in hardship are not consistently significantly related to changes in parenting, apart from changes in deprivation where an increase in deprivation is associated with a worsening of parenting behaviours in terms of meeting children's physical needs, trips outside of the home, play activities and educational activities. Of the four hardship measures examined the measure of deprivation is likely to be capturing longer-term experiences of hardship rather than short-term fluctuations in income or debt or how well respondents feel they are managing financially. It is therefore likely to have less measurement error in terms of identifying respondents experiencing changes in hardship and is also likely to be capturing more severe experiences of hardship. It may be that the lack of significant relationships between changes in other kinds of hardship and parenting are due to measurement error when identifying changes in hardship and it may also be that it is only changes in more severe experiences of hardship that are associated with changes in parenting.

There are a number of other possible explanations for why changes in most of the hardship measures are not as significantly related to changes in parenting, as would be expected from the cross-sectional relationship between hardship and parenting. One explanation is that parenting behaviours once formed and habitual are relatively stable and therefore not

very responsive to changes in environment or context. There is mixed evidence on this with some studies finding (absolute and relative³⁸) stability in parenting over time and others finding variability. As discussed in Tang and Sinan (2015) the difference in the age of the children is likely to explain these different findings with studies of younger children finding less stability in parenting. In their own study of changes in income and parenting the authors find that for White and Hispanic parents, changes in income are associated with changes in observational measures of parenting (Ibid), although this is still consistent with the age-related theory of parenting stability and change, as the period their sample covers is from when children are aged one to four and a half years old.

In terms of UK evidence on this, using the Avon Longitudinal Study of Parents and Children (ALSPAC), Gutman and Feinstein (2010) find that mother-child interactions increase between six and 38 months and then remain stable between 38 and 42 months. Outside activities with the child decreased over six to 18 months before recovering and becoming more stable. The authors also found that the rate of parenting change varied across different groups, for example the increase in mother-child interactions was less for mothers with higher education, therefore during this period the gap in parenting between mothers with different education levels narrowed (Ibid). Although covering a younger age period (6 months to 3 ½ years) this finding would be consistent with the findings in this chapter that the relationship between hardship and parenting behaviours is not as significant when the cohort children are aged seven years as when they are aged five.

³⁸ Holden and Miller (1999) define absolute stability as referring to the same parents behaving in similar ways towards their child on multiple occasions, whilst relative stability refers to whether parents' behaviours relative to other parents changes over time i.e. do they maintain the same relative position in their parenting within a group. This latter definition takes into account developmental changes in the child which may affect appropriate adjustments in parenting. It is also the definition most relevant to this research which is concerned with relative differences in parenting by hardship status.

If parenting is more unstable and thereby potentially more responsive to change when children are younger this would support an early intervention approach; potentially it is early parenting that can be influenced and therefore it is early hardship experiences as well as parenting that ought to be targeted for intervention, before parenting becomes stable. This interpretation is also supported by evidence that early experiences of poverty are particularly significant for children (Dickerson and Popli, 2016). However, the US evidence cited at the beginning of the chapter demonstrates that parenting is amenable to change when there are positive shocks to income.

It might be that different aspects of parenting are more or less stable. Dallaire and Weinraub (2005) find positive parenting is quite stable but harsh parenting less so because it is more emotion-driven. The MCS measures of parenting tend to be more focused on positive parenting behaviours apart from the harsh discipline measures. This is inconsistent with the results for deprivation however, which are associated with changes in play activities, trips out, educational activities and meeting children's physical needs, which are all positive examples of parenting.

A second potential explanation for a lack of consistently significant relationships between changes in income, debt and feeling poor and changes in parenting is that it could be that there is a lagged effect; whilst mothers' mental health may change quickly in response to changes in hardship, changes in parenting may take longer to take effect. This would be consistent with the findings of this chapter, as changes in hardship are significantly associated with changes in mothers' mental health and life satisfaction in the expected direction.

Finally, a third potential explanation is that it could be due to the way parenting is imperfectly measured in the MCS. The parenting measures in the MCS are self-reported, and so it could be argued that rather than measuring actual parenting these measures are capturing mothers'

reflections or beliefs about how they *should* parent and therefore how they should present their parenting to others. If that is what the parenting measures are actually measuring then it is plausible that even if parenting behaviours did change in response to changes in hardship, mothers' beliefs about how they should present their parenting are unlikely to change and therefore these changes would not be identified with these measures. This is not to suggest that the parenting measures are redundant – the cross-sectional analyses demonstrate they are clearly picking up systematic differences by mothers' hardship experiences. It does mean that you might expect to find less change in self-reporting of parenting even if day-to-day parenting behaviours have actually shifted. However, this cannot fully explain that lack of significant relationships, given that for changes in deprivation at least there are significant changes in parenting in the direction expected: for mothers who experience an increase in deprivation this is significantly associated with a decrease in play activities, educational activities, trips outside of the home and meeting the child's physical needs.

Regardless of the results for changes in parenting, the findings are unambiguous when it comes to mothers' mental wellbeing: increases in hardship are significantly associated with an increase in mothers' mental distress (as measure by the Kessler score) and a decrease in mothers' life satisfaction. These findings are consistent with other studies from the US (Boyd-Swan et al, 2016, Evans and Garthwaite, 2010, Gennetian and Miller, 2002) and the UK (Wickham et al, 2017; Fitzsimons et al, 2017). This is an important finding because not only is mothers' mental health important in its own right but we also know that mothers' mental health is important for children's outcomes (even if it is not being picked up immediately via changes in parenting) (Kiernan & Mensah, 2009; Mensah & Kiernan, 2011). These findings suggest we ought to be concerned about changes in hardship, even if the changes are not immediately accompanied by measurable changes in parenting.

Chapter 9

Discussion and conclusions: what do we know about the relationship between poverty and parenting in the UK?

9.1 Summary of findings and contributions

The overarching research questions for this thesis were: what is the relationship between economic hardship and parenting in the UK? And what mechanisms explain this relationship? This was broken down into four main research questions and corresponding sub-questions, with the questions investigated in four empirical chapters (six to nine). The main findings and contributions from this research are described below, before discussing the policy implications of these findings, limitations of the research and directions for future research.

Are poor parents *poor* parents?

Chapter six makes a number of contributions to existing research on low income parents in analysing how parenting behaviours differ across mothers in different income groups. In response to the negative discourse on poor parents, unadjusted models were estimated to first establish to what extent there are 'raw' differences in the parenting behaviours of low income parents, before estimating adjusted models that take into account potential confounding factors, such as mothers' education level.

Two important differences between this research and pre-existing evidence is that rather than simply comparing parents in income poverty with all other parents not in poverty, this research compared parents in the lowest income group to parents in the median income group, as well as analysing the pattern of parenting across all income groups. The use of this alternative reference category is significant because political discourse and the rhetoric prevalent in the media suggests not only that low income parents are worse at parenting than the average non-poor parent (the

implicit reference category being parents with average incomes), but also that low income parents are a deviant group in terms of being uniquely different to non-poor parents. Pre-existing evidence may work to reinforce these ideas by only comparing parents in poverty with all other parents, finding differences between these two groups (e.g. Holmes and Kiernan, 2013; Dickerson and Popli, 2016; Kiernan and Mensah, 2011) and so not challenging the poor parents as 'deviant' narrative. This pre-existing research may also be exaggerating the differences in parenting between poor parents and non-poor parents, as the comparison group (all parents not in poverty) includes those at the highest end of the income distribution.

Findings from this research show that on the whole most mothers, regardless of their income were parenting in ways we would describe as good. Where there were differences between mothers in the lowest income quintile and median income quintile some of these differences showed parents in the lowest income quintile to be doing relatively *better* than their median-income counterparts (and many of these positive differences remain after accounting for other associated factors). Mothers in the lowest income group are more likely to be overrepresented in the 'ideal' categories for parenting behaviours such as taking their child to the park, doing sport or exercise with their child, drawing or painting, playing indoor games, having someone at home help with maths or writing and having their child spend time with friends outside of school. These positive differences are a previously untold story of low income parents, though the findings corroborate those of Lareau's (2003) ethnographic study of parenting in the US, in which Lareau highlights both the positive attributes of the 'accomplishment of natural growth' approach to parenting taken by poorer parents, and the negative aspects of the 'concerted cultivation' approach adopted by many middle class parents.

Once other factors are taken into account, there are no significant differences in the parenting between mothers in the lowest and median

income group for how close the mother feels to the child, frequency of overall play activities with the child, involvement in overall educational activities with the child and confidence in being a good parent.

There are some negative differences in parenting between mothers in the lowest and median income groups and these differences are often part of a wider income-parenting gradient that extends all the way up the income distribution, rather than being a difference that is specific to low income mothers. For example, whilst mothers in the lowest income group report less routine meal and bedtimes for their child compared with mothers in the median income group, mothers in the median income group report less routine meal and bedtimes than mothers in the top income quintile. For some parenting behaviours then, income seems to make a difference all the way up the income distribution, rather than low income parents being uniquely different. This is also the case for meetings the child's physical needs (nutrition and exercise), trips outside of the home, and hours spent watching television and playing computer games. Importantly, this suggests that the difference between low income parents and other parents has been exaggerated in previous works, because those at the top of the income distribution (who are not the implicit reference category when characterising differences of low income parenting), are also parenting differently to average income parents.

The only parenting measures for which mothers in the lowest income group were behaving uniquely differently to mothers in all other income quintile groups were for the two discipline indices; mothers in the lowest income group reported using less harsh or permissive discipline as well as authoritative discipline. This is an interesting, if on the surface a counter-intuitive finding, given US literature on low income and discipline style (McLoyd, 1990; Magnuson and Duncan, 2002). However, these findings are consistent with other analyses of the previous wave of the MCS; it is found that parents in income poverty report smacking their child less (Jones,

2010). On the surface it may seem then that in the UK at least these different discipline measures are actually capturing *frequency* of discipline overall rather than tapping into distinctive styles of discipline, as measured by Baumrind's typology (2005). This may be the case to some extent, and this has important implications for parenting research in the UK which often focuses on these measures. However, even when the total frequency of discipline overall is taken into account, mothers in the lowest income quintile still report using harsh or permissive discipline as a slightly smaller proportion of their overall discipline than mothers in other income groups. It is hypothesised that perhaps mothers in the lowest income quintile are underreporting these types of discipline styles even more than mothers in other income groups, perhaps through greater fear of state intervention (Bostock, 2002: 278). One methodological finding from this chapter therefore is that we ought to be wary of what these discipline measures are actually capturing.

To conclude findings for the first research question, 'Do mothers in the lowest income quintile group parent differently to mothers in the median income quintile?', on the whole there is not much difference in the reported parenting of mothers in the lowest and median income quintiles. Some of these differences are positive, with low income mothers doing *better* at some parenting behaviours than median income mothers, even when other factors such as work hours are accounted for. Where there are *negative* differences there are two important qualifications to this; firstly, these differences are driven by a minority of parents within the low income group – we would not expect the average low income child to experience very different parenting to the average median income child. Secondly, once other factors were taken into account the majority of these differences were not specific to low income mothers but part of a wider income-parenting pattern that included parents across the full income distribution. These findings raise important challenges to common characterisations of

low income parenting. In sum, it is not straightforwardly the case that low income mothers are uniquely parenting worse than better-off parents.

Debt, deprivation and feeling poor; how are different experiences of hardship related to parenting?

Chapter seven contributes to existing evidence which has a narrow focus on income poverty, by analysing different experiences of hardship and how these relate to different types of parenting, as well as how these experiences of hardship relate to low income. The analysis included experiences of debt, material deprivation and feeling poor, as well as measures of housing quality and the local area.

As expected each of these experiences of hardship were associated with income, with mothers who reported experiencing any of these hardships more likely to also be in the lowest income group, and few people in the highest income quintile experiencing any of these hardships. However, the amount of overlap between these hardship experiences and low income is not as large as may be assumed. Analysis from chapter six, which focuses on the lowest income quintile, was only capturing around 50% of the mothers experiencing each of these hardships. So although low income may be a useful proxy for experiencing hardship in general, it does not precisely identify all mothers experiencing various kinds of hardship. For example, around 20% of mothers who reported being deprived of two or more items had incomes in the top three quintiles, as well as around 30% of mothers who felt they were not managing well financially. These findings complement previous evidence which finds limited overlap between different experiences of hardship (Nolan and Whelan, 1996; Whelan et al, 20014). In terms of multiple deprivation there is some overlap between experiences of these different types of hardship, with persistent poverty, debt, deprivation and feeling poor being the most closely associated. Around 20% of the sample experienced two or more different kinds of hardship.

Building on the findings from chapter six, I later show that each experience of hardship is associated with parenting even once other explanatory factors, such as mother's education and work status, are taken into account. These relationships are in the expected direction consistently across the different hardship measures; experiencing hardship tends to be associated with worse parenting. Debt, material deprivation and feeling poor seem to be particularly wide-ranging in terms of being significantly related to nearly all types of parenting.

There seems to be something about hardship not just low income that is particularly important for parenting behaviours. On the whole, these different types of hardship are not only significant for almost all parenting measures, even when accounting for other factors³⁹, but also the size of the regression coefficients indicate that the strength of the relationship between these different types of hardship and parenting are on the whole stronger than the relationship between income and parenting. These findings are robust to controlling for income, so the results are not driven by the reference category including more advantaged parents.

Another important distinction between the findings of association between parenting and hardship and parenting and income, is the results for the two discipline measures which are significant but in the opposite direction. Experiencing debt, material deprivation or feeling poor is associated with *more* frequent harsh or permissive discipline as well as *more* frequent authoritative discipline, while low income is associated with reporting *less* frequent harsh or permissive as well as authoritative discipline.

Perhaps these differences are due to different mechanisms at play for parents experiencing these forms of hardship rather than just being on low income.

³⁹ In contrast, being in the lowest rather than median income quintile was not significantly associated with how close the mother feels to the child, play activities, involvement in education or confidence in parenting.

What mechanisms explain the relationship between hardship and parenting in the UK?

In chapter eight I explored the possible indirect pathways from experiences of hardship to parenting behaviours, using structural equation modelling (SEM). Specifically I tested the relevance of Family Stress Model (FSM) mechanisms. This theory explains the relationship between hardship and parenting (and thereby children's worse outcomes) via the negative impact of hardship on parental mental health and relationship conflict. There is much US evidence for this model (Cooper and Stewart, 2013), but to my knowledge only one other study tests the Family Stress Model using UK data (Kiernan and Huerta, 2008). This work builds on this study in two main ways. Firstly, I test whether the Family Stress Model is more or less relevant for different types of parenting. Secondly, I incorporate measures of relationship satisfaction for mothers who are living with a partner at the time of the survey.

Based on previous findings that it seems to be something about experiencing hardship in general rather than a particular kind of hardship, that is important for parenting, hardship was measured as a latent construct based on people's experiences of debt, deprivation and feeling poor.

Again, in including multiple parenting measures across different domains, this research was able to distinguish the significance of different pathways for different types of parenting. On the whole the findings provide supportive evidence that the Family Stress Model explains some of the relationship between hardship and parenting behaviours; hardship was associated with worse maternal mental health (Kessler scores) and lower life satisfaction which in turn was associated with worse parenting. The extent to which mothers' mental wellbeing explained this relationship differed for different types of parenting. Mothers' mental health and life satisfaction were particularly important in explaining the relationship

between hardship and how close the mother feels to the child; both authoritative and harsh or permissive discipline; and play activities. For these types of parenting mothers' mental health and life satisfaction *fully* explained the relationship between hardship and parenting; the direct pathway was no longer significant. These results are intuitive given that these types of parenting behaviours could be described as in part emotionally-driven, or at least requiring emotional resources.

In terms of meeting the child's physical needs, routine and educational activities, FSM mechanisms partially mediated the relationship with hardship; the indirect pathways were significant but some of the relationship between hardship and these parenting measures remained unexplained by the model. In all cases mothers' mental wellbeing explained less than half of the relationship: 21% for meeting physical needs, 34% for routine and 37% for educational activities. It seems likely that in the case of meeting physical needs and educational activities, access to resources (e.g. leisure centres, affordable supermarkets and educational resources) explain part of the remaining 'direct effect'. These two measures were also found to have an income gradient in chapter six, further evidence that perhaps Investment Model mechanisms (parents' ability to invest in goods and services) play a role in explaining these relationships with hardship.

For two of the parenting measures the Family Stress Model did not explain the relationship with hardship at all; mothers' mental health and life satisfaction was not relevant for trips outside of the home and hours of television and computer games. Trips out is also the measure which is most strongly related to hardship. It seems that for these measures Investment Model mechanisms are likely to have more explanatory power. Again this is intuitive given the financial cost of trips outside of the home and relatedly the amount of time spent watching television instead.

For mothers in a relationship at the time of the survey, the GRIMS measure of relationship quality was a mediator for most parenting behaviours, though the overall rating of relationship satisfaction was not. Experiencing hardship was associated with lower relationship quality, which in turn was associated with worse parenting on all measures, apart from authoritative discipline (which was still fully mediated by mothers' mental health and life satisfaction), and the two parenting measures that were not explained by the Family Stress Model mechanisms in the previous analysis: trips out and hours of television.

Relationship quality seems to be particularly important for educational activities where it is the only significant mechanism and fully explains the relationship with hardship. It is also the only significant mechanism for the relationship between hardship and meeting the child's physical needs. For these two parenting measures mothers' mental health and life satisfaction were no longer significant. As mental health and life satisfaction are allowed to covary in the model, rather than indicating that mental health and life satisfaction are not important for these parenting behaviours for mothers in a relationship, it is more likely that these results suggest that any influence of mental health/life satisfaction on these parenting behaviours operates through the association with relationship quality.

To conclude, chapter eight provides evidence that the Family Stress Model is relevant in explaining *some* of the relationships between hardship and parenting, though it depends on the type of parenting in question. It fully explains the relationship between hardship and some parenting behaviours and only partially explains it for others. For trips out and hours of television, the FSM mechanisms do not have any explanatory power; other mechanisms, perhaps related to the Investment model, are likely to be important for these types of parenting. For mothers in a relationship, relationship quality was also an important mechanism, particularly for

educational activities and meeting physical needs. Both of these findings are new contributions to the existing FSM literature in the UK.

Changes in hardship and changes in mothers' mental health

Finally, in chapter nine I analysed the relationship between changes in hardship and changes in mothers' mental wellbeing, and parenting behaviours. Again, to my knowledge there is no other research in the UK that considers this. Data from waves 3 and 4, when the cohort children were aged five and seven is used. Almost all of the same parenting measures are included in the two waves so it is possible to look at changes in parenting in terms of the same nine parenting measures, organised into the four parenting domains.

Whilst this analysis cannot test if the relationship between hardship and parenting is causal (there still may be unobserved factors driving the relationship), it can provide a more confident assessment of whether parenting is amenable to change.

A worsening of material deprivation is found to be associated with a worsening of meeting the child's physical needs and a reduction in the number of trips out as well as frequency of play activities and educational activities. Changes in income, debt and feeling poor, however, are not consistently associated with changes in parenting. These results hold after a number of robustness checks, including restricting the sample to those with lower incomes when the child is aged five and comparing different transitions into and out of hardship. Changes in material deprivation are likely to be capturing more permanent and severe experiences of hardship; it may be that the other measures of hardship are noisier when taking the difference between two time points and this may explain the significant relationship found for changes in deprivation but not other changes in hardship experiences. We know, for instance that income fluctuates a lot, especially for people with low incomes (Jenkins, 2011), so these snapshot

measures when the child is aged five and seven, might not be a very accurate reflection of changes in income in particular⁴⁰.

Importantly, it is found that changes in all kinds of hardship (apart from income) are significantly related to changes in mothers' mental health and life satisfaction, and this is the case for both directions of change. Moving into debt, deprivation or feeling poor is significantly associated with a worsening of mothers' mental health and life satisfaction, compared with mothers who do not experience these hardships at either time point. Moving out of these experiences of hardship is associated with an improvement in mothers' mental health and an increase in life satisfaction compared with mothers who remain in hardship. This reinforces the contribution of this research in using alternative measures of hardship. If only income was used, as is common in other studies, the consistently significant results found for changes in hardship and changes in mothers' mental health would have been overlooked and it would have falsely been concluded that changes in economic hardship are not important for changes in parenting.

A number of possible explanations are considered for why the relationship between changes in hardship and changes in parenting are not similar for other changes in hardship. As discussed above it could be to do with measurement error for change in hardship (though changes in debt and feeling poor are associated with changes in mothers' mental health, so perhaps this explanation only applies to the change in income measure). It could be that parenting is relatively stable, especially as children grow older, but again this is inconsistent with the findings as changes in deprivation are significantly associated with changes in parenting. Perhaps then parenting is responsive to changes but the impact of changes in hardship take longer to translate into changes in parenting than changes in

⁴⁰ This hypothesis is consistent with the finding that changes in income are also not related to changes in mother's mental health, whilst changes in debt, feeling poor and deprivation are.

mothers' mental health which is more immediate. This last hypothesis is consistent with the changes in deprivation findings, as experiencing increased deprivation is likely to be due to longer term changes in hardship.

Overall then, it is found that a worsening of material deprivation is associated with a worsening of some parenting measures. Changes in other types of hardship are not consistently associated with changes in parenting. Importantly changes in hardship of all kinds (apart from income) are found to be associated with changes in mothers' mental health and life satisfaction, as expected in both directions. Regardless of the parenting results, we know mother's mental health and life satisfaction are important for parenting and so these changes in mental health and life satisfaction are likely to influence parenting behaviours even if this is not captured at the time of the survey.

Summary of original contributions

This thesis has made a number of contributions, both methodological and in terms of new empirical evidence. First, by looking across the full income distribution and comparing parents in the lowest income group to parents in the median income group, rather than focusing on a binary income poverty measure, this research has shown that it is not straightforwardly the case that low income parents are doing worse in terms of parenting. For low income mothers a number of parenting behaviours are not significantly different to median income mothers and there are in fact some positive differences where low income mothers are doing better; this is an untold story of low income parenting. Importantly, where there are negative differences in parenting these differences are mostly part of an income-parenting gradient which applies to parents across the full income distribution, rather than being specific to low income parents.

Second, this research has developed and made use of a conceptual framework for measuring parenting that is comprehensive in including

different parenting domains and relevant for parenting children of different ages. Previous empirical research has focused on a handful of parenting measures, sometimes combining very different types of parenting within one measure, and lacking justification for the measures which are used. Evidence specific to different theories of parenting, such as Attachment theory (Bowlby, 1979) or Baumrind's Parenting Styles typology (Baumrind, 1966; 1991), have focused on particular domains of parenting only (the mother-child relationship or discipline styles) and have not included parenting behaviours related to cognitively stimulating activities and meeting children's physical needs, both of which we know to be important for children's outcomes. The lack of cohesion in measuring parenting has also meant that the evidence on parenting is difficult to evaluate and compare across studies. Using children's different outcomes (physical health, emotional wellbeing, behavioural and cognitive development) to categorise different parenting goals, four domains of parenting were developed: 1) meeting children's physical needs 2) the parent-child relationship 3) discipline and routine 4) cognitive stimulation. These domains are inclusive of the main parenting theories and empirical evidence of the importance of particular parenting behaviours.

This conceptual framework of parenting was used in the empirical analyses, with multiple parenting measures categorised into these four domains. Measuring parenting in this way allowed for new empirical evidence; the relationships between hardship and parenting and the mechanisms that explain these relationships were found to be different for different types of parenting. For instance trips outside of the home showed the strongest relationship with hardship and was not at all explained by Family Stress Model mechanisms. In contrast, the relationships between experiencing hardship (measured as debt, deprivation and feeling poor) and how close the mother feels to the child and frequency of play activities were fully explained by mother's mental health and life satisfaction.

A third contribution, in relation to measurement and concepts, is to do with measuring economic hardship. Much of the existing research on hardship and parenting has focused on a narrow definition of hardship as income poverty. This research has explored different experiences of hardship and found that in some cases alternative measures of hardship, such as debt, material deprivation and feeling poor, are more significant for parenting than low income. Also in the case of discipline the relationship with these alternative types of hardship are significant in the opposite direction; low income or being in income poverty is associated with less frequent harsh or permissive discipline as well as authoritative discipline, whilst debt, deprivation and feeling poor are associated with more frequent harsh or permissive discipline as well as more frequent authoritative discipline. The low income category not only seems to be capturing a slightly different group (only around 50% of mothers who describe being in debt, deprivation or feeling poor are in the lowest income quintile), but given the consistency in the relationships with parenting across the different hardship measures, these findings might give us reason to trust the alternative measures of hardship more than the income measure. Income is of course difficult to measure accurately and this is a particular problem for the MCS for which the income measure used is banded. These alternative measures of hardship then seem to better identify parents who we would describe as experiencing hardship. If these alternative hardship measures had not been used it might have falsely been concluded that experiencing hardship is not particularly significant for parenting⁴¹, but also that changes in hardship are not important for changes in mothers' mental health⁴².

⁴¹ The alternative hardship measures were significantly associated with almost all parenting measures in the adjusted model, whilst low income was not associated with closeness to the child, play activities, educational activities and confidence in parenting.

⁴² Changes in debt, deprivation and feeling poor were all associated with changes in mothers' mental health but changes in income were not.

Therefore, if relying solely on this particular banded income measure some important relationships would have been missed.

Finally, this study contributes new empirical evidence to two more areas of research. This is the only UK research to fully test the FSM, including the role of relationship quality, in addition to maternal mental health, finding that relationship quality is indeed an important mechanism between hardship and parenting. Additionally, this is the only UK study to my knowledge which looks at the relationship between changes in hardship and changes in parenting, finding that a worsening of deprivation is associated with a worsening of some parenting behaviours, though on the whole changes in other types of hardship are not associated with changes in parenting.

9.2 Policy implications

There has been a continuous shift by successive governments to focus on how parents behave as both the source of the problem and the solution for poorer children's worse outcomes, though this has taken slightly different forms. At the time of writing, the most recent focus has been on parental worklessness as the source of children's worse outcomes, despite evidence that much of the relationship between parental worklessness and children's outcomes is actually explained by other associated factors (Schoon et al, 2012). Focusing on the behaviour of parents in this way negates the importance of the economic context in which parenting takes place. That experiencing hardship is associated with differences in parenting, even when taking account of differences in work hours, education level, and whether there are one or two parents in the household, amongst other factors, highlights the importance of the economic context in which parenting takes place. The findings from this research cannot be used to make causal claims, and undoubtedly there is more to the relationship between hardship and parenting than the factors that could be explored in these analyses. However, taken with other complementary evidence from

both the US and the UK, the findings presented here make the case for the need to address the economic circumstances in which parenting takes place.

Given that it was consistently found that multiple and different experiences of hardship were associated with more negative parenting behaviours, even when taking other factors into account, protecting families from hardship by ensuring all families have adequate incomes is likely to have benefits for both maternal mental health and parenting behaviours. At the time of writing child poverty in the UK has increased since 2012 (DWP, 2017) and low income families have borne the brunt of austerity measures in the form of a benefits freeze, benefit cap and a recently introduced two-child limit on child benefit and child tax credits, among other measures. A further increase in child poverty is predicted with a forecasted increase of 50% by 2020 (Brown and Hood, 2016). This context of increasing disadvantage is likely to hamper efforts to improve parenting behaviours. Whilst it might be politically unpalatable to many, reducing child poverty is not so tall an order and has been achieved before; under Labour child poverty fell (though not as much as anticipated) and there were some improvements in parenting (for example less harsh discipline) as well as some improvement in children's outcomes (Stewart, 2013). Joyce (2014) attributes the fall in poverty in this period to the substantial increase in cash benefits for families as being the most significant factor. Reducing or eradicating child poverty and ensuring families' incomes meet their needs should be a priority in any strategy to improve the parenting.

Relatedly, this research suggests focusing on other ways to improve families' living standards may also aid attempts to improve parenting. Debt was found to be associated with worse parenting, even when controlling for income. Identifying families either in debt or at risk of debt, and providing specialist services to help parents reduce debt is likely to be helpful in reducing stress and the negative spill overs this can have on

parenting. Though not as widely associated with different parenting behaviours as deprivation, debt and feeling poor, housing quality and characteristics of the local area were also significantly associated with parenting. Ensuring adequate standards of housing are met (e.g. reducing problems with damp) perhaps through regulations of landlords, as well as providing more affordable good quality housing to avoid problems with overcrowding are also likely to be beneficial to the family home environment. The neighbourhood area is another possible point of policy intervention; access to outdoor spaces where children can take part in physical activity, making leisure activities subsidised and thereby more affordable for low income families, as well as bringing these resources to more deprived areas so expensive travel costs can be avoided, are also possible ways to improve the experiences of disadvantaged families and address the parenting difference that was most strongly related with hardship: trips outside of the home.

As well as addressing families' economic disadvantage and living standards, the findings of this research further reinforce what we know about the importance of mothers' mental health. Mental health fully explained the relationship between experiences of hardship and play activities, how close the mother felt to the child and discipline. It also explained some of the relationship between hardship and meeting the child's physical needs, routine and educational activities. Whilst mothers' mental health may get picked up on by health visitors soon after the child's birth, this research suggests that screening mothers for any problems with mental health and providing appropriate support would also be beneficial for mothers of school-aged children. For example, in terms of interventions that are already in place, improvements in mother's mental health ought to be one of the main goals of the Troubled Families Programme. The current Prime Minister Theresa May has pledged to address the shortfall in mental health services. It is important to emphasise however, as mothers' mental health was found to be a *pathway* from economic hardship to some

parenting behaviours, it should not be addressed in isolation from the material circumstance the family is living in.

In addition, relationship quality between parents was also found to be significantly related to most types of parenting. Providing support to improve relationships for couples with children is also likely to promote improvements in parenting. These findings are supported by a review from the Early Intervention Foundation that finds trying to improve parent-child relationships without addressing inter-parental problems does not lead to long-lasting improvements (Harold et al., 2016). Former Prime Minister David Cameron had committed to doubling investment in relationship support for families. Again, as parental relationship quality is one of the mechanisms between hardship and parenting, to focus on improving parental relationships without addressing families' economic conditions is likely to be of limited success. Mental health and relationship quality are additional areas for policy intervention, as routes through which hardship influences parenting, but hardship itself needs to be addressed first and foremost.

In sum, the findings presented here, alongside other related research suggest that focusing on improving parenting without addressing experiences of economic hardship, and some of the mechanisms through which it operates - mother's mental health, relationship quality- is likely to be counter-productive. Efforts to improve parenting are likely to benefit from taking a more holistic approach in addressing factors that are influential for parenting. This is of particular concern at present, in the context of forecasted continued increases in child poverty.

9.3 Limitations

As is the case with most research there are certain limitations. Whilst the MCS data is incredibly rich with multiple measures of hardship and parenting as well as particular mechanisms of this relationship, there are other factors that would have been useful to explore but were not available in the dataset. The role of social support for instance has been found to be an important buffer in the relationship between hardship, stress and parenting (Lee et al, 2009), though there is no measure of this in the third wave of the MCS. The analysis presented here is also limited to parenting when the child is aged five and seven. It would have been desirable to make use of the most recently available wave when children are aged eleven years, and contribute to evidence on parenting when children are older, as most of the UK evidence has focussed on early years. As well as contributing new evidence on parenting when children are older, having consistent parenting measures at an additional time point would have allowed for fixed effects analysis which could more confidently assess the relationship between hardship and parenting by controlling for unobserved factors that are stable over time. However, many of the parenting measures were not included in fifth wave of the MCS and so including this wave in the analysis would have been of very limited value. Continuity in parenting measures or at least equivalent measures within parenting domains is therefore a useful recommendation for future surveys related to these subjects.

In exploring the mechanisms that explain the relationship between hardship and parenting, this research was limited to examining Family Stress Model mechanisms that were available in the data, though other pathways, such as attention, time and energy, are likely to be important also. The included mechanisms did not explain any of the relationship between hardship and trips outside of the home or hours of television, and explained less than half of the relationship between hardship and meeting children's physical needs, routine and educational activities. Some of these

alternative pathways are possible to capture in survey measures, but qualitative research with parents could also contribute to this aim, given the relative strengths of qualitative approaches at exploring processes (Ritchie in Ritchie and Lewis, 2003: 28). Investment Model mechanisms (the ability to invest in goods and services), though partly incorporated in the hardship measures themselves (deprivation) and parenting measures (trips outside of the home), may also be more easily explored through qualitative research with parents. The direct 'effect' between hardship and trips outside of the home for instance may be due to the cost of trips out specifically, the cost of travel (where the activities themselves such as visiting a museum, may be free) or characteristics of the local area which make trips outside of the home difficult. Each of these reasons would come under the category of the Investment Model but nevertheless describe different specific pathways.

One of the main limitations of this research is that the outcome of interest – parenting – is reported by parents themselves. As discussed previously there is likely to be a social desirability effect which compels parents to underreport parenting behaviours that are perceived to be negative (shouting at or smacking the child) and over-report or exaggerate parenting behaviours commonly perceived to be positive (such as frequently reading with their child). This also has implications for measuring change in parenting; if these parenting measures are actually identifying different perceptions of good and bad parenting or how attitudes and beliefs about how parenting behaviours ought to be presented, then it may be the case that even when there is a shift in day to day parenting practices this is not reflected in the measure.

The parenting measures are certainly positively skewed, though it may also be the case that on the whole the majority of parents are parenting in similar ways. The self-reported measure is not ideal but is not entirely redundant as it is capturing systematic differences in the parenting of

mothers in different groups, even if these differences are small and driven by a minority of parents within these groups. One possible alternative is to use observational measures; this could take the form of video-recorded interactions between mothers and their children as has been used in some US studies. This would not entirely resolve social desirability bias, as parents are likely to behave differently when being observed. Furthermore the observer may hold their own biases about parents from different social groups, and thereby interpret their behaviours differently. Still, observational measures of parenting might be useful even as a form of triangulation. Again another possible solution to the measurement of parenting is to use qualitative research with families. This is impressively exemplified in Lareau's (2003) ethnographic study of low income, working class and middle class families in the US. Whilst the presence of a researcher undoubtedly will have changed the dynamics of family behaviour, the researchers spent a long time with the families they observed, and described how families gradually became more relaxed with their presence (shouting and cursing was more commonly witnessed) (Lareau, 2003: 9). As well as the potential to better capture processes and measure parenting with greater validity, there is an ethical case to be made for this kind of research, in giving voice to a group who are much written about and the focus of policy discourse. Qualitative research of this kind in the UK would therefore be a useful objective of future research.

9.4 Future research

In addition to the suggestion of qualitative research in order to examine mechanisms that relate hardship to parenting and are not easily captured in surveys, there are a couple of ways in which this quantitative analysis can be extended. Firstly, this research has focused solely on the parenting behaviours of mothers, yet this does not capture the full parenting experience of children in households with more than one parent. Incorporating fathers' parenting behaviours would allow for a more comprehensive understanding of children's experiences of parenting, as different parents' behaviours may be substitutive, in that what a child might not get from one parent (reading bedtime story) they might get from the other. In addition this would make a useful contribution to the empirical evidence on fathers' and stepfathers' parenting and whether the relationship with and mechanisms of hardship are the same or different. Finally, there are political reasons why extending the analyses to include fathers would be desirable; as discussed in the literature review, the policy focus on parenting is still gendered, focusing on mothers more than fathers. For empirical research to follow this pattern also, arguably contributes to the problem.

A second possible area of future research is to extend analyses from chapter nine to include children's outcomes in the structural equation model. I believe I am justified in focusing on parenting as the outcome of interest in this research, given the amount of evidence relating to the importance of parenting as variously measured, and the attention parenting has received in terms of UK policy, and doing so allowed for me to provide a more detailed analysis of the relationship between hardship and parenting. Nevertheless, having developed these parenting measures related to different domains, it would be useful to go on to assess how each of these different types of parenting are related to children's different outcomes. This would enable me to determine whether the parenting measures that are most strongly related to hardship (for example trips outside of the

home) are also strongly related to children's outcomes. As discussed in the conceptual framework there is a vast amount of research on the relationship between parenting and child outcomes, but none that have included parenting measures in each of the domains I have focused on.

References

- Acock, A. C. (2013). Discovering structural equation modelling using Stata. *Stata Press books*.
- Akee, R. K. Q., Copeland, W. E., Keeler, G., Angold, A. and Costello, E. J. (2010) 'Parents' Incomes and Children's Outcomes: A Quasi-experiment Using Transfer Payments from Casino Profits', *American Economic Journal: Applied Economics*, 2, pp. 86–115.
- Alcock, P., (1997), *Understanding Poverty*, Hampshire: Macmillan Press Ltd
- Allen, G. (January 2011). *Early Intervention: The Next Steps; An Independent Report to Her Majesty's Government*, HM Government
- Attree, P. (2004). 'Growing up in disadvantage: a systematic review of the qualitative evidence' *Child: Care, Health and Development*, 30(6), 679-689
- Axford, N., Sontalia, S., Wrigley, Z., Goodwin, A., Ohlsen, C., Bjornstad, G., Barlow, J., Schrader-McMillan, A., Coad, J. and Toft, A., (2015) *The best start at home: A report on what works to improve the quality of parent-child interactions from conception to age 5*, London: Early Intervention Foundation
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs: Prentice-Hall.
- Bartholomew, D.J., Steele, F., Galbraith, J. and Moustaki, I., (2008). *Analysis of multivariate social science data*. CRC press.
- Baumrind, D. (1966). 'Effects of Authoritative Parental Control on Child Behavior', *Child Development*, 37(4), 887-907
- Baumrind, D. (1991). The Influence of Parenting Style on Adolescent Competence and Substance Use. *Journal of Early Adolescence*, 11(1), 56-95.
- Baumrind, D. (2005). 'Patterns of parental authority and adolescent autonomy', *New directions for child and adolescent development* Vol. 108, pp. 61-69.

- Baumrind, D., & Black, A. E. (1967). 'Socialization practices associated with dimensions of competence in preschool boys and girls', *Child Development*, 38(2), 291-327
- Bennett, D.S., Sullivan, M.W. and Lewis, M., (2006). 'Relations of parental report and observation of parenting to maltreatment history'. *Child maltreatment*, 11(1), pp.63-75.
- Benton, D., (2008) 'The influence of children's diet on their cognition and behavior', *European Journal of Nutrition*, 47(3), pp.25-37.
- Benzeval, M., Bond, L., Campbell, M., Egan, M., Lorenc, T., Petticrew, M. and Popham, F., (2014), *How does money influence health?* York: Joseph Rowntree Foundation
- Berthoud, R., & Bryan, M. (2011). 'Income, deprivation and poverty: a longitudinal analysis'. *Journal of Social Policy*, 40(01), 135-156.
- Bhattacharyya, G., Ison, L. and Blair, M. (2003) *Minority Ethnic Attainment and Participation in Education and Training: The Evidence*, Research Topic Paper RTP01-03, London: Department for Education and Skills
<http://webarchive.nationalarchives.gov.uk/20130401151715/http://www.education.gov.uk/publications/eOrderingDownload/RTP01-03MIG1734.pdf>
 accessed 08/07/15
- Blow, L., Walker, I., & Zhu, Y. (2012). 'Who benefits from child benefit?' *Economic Inquiry*, 50(1), 153-170.
- Bollen, K., Tueller, S., & Oberski, D. (2013). 'Issues in the structural equation modelling of complex survey data', In *Proceedings of the 59th World Statistics Congress*.
- Bornstein, M. (eds) (2002) *Handbook of Parenting Volume 1 Children and Parenting*, National Institute of Child Health and Development, New Jersey: Lawrence Erlbaum Associates, Publishers
- Bostock, L. (2002). 'God, she's gonna report me': the ethics of child protection in poverty research. *Children and society*, 16(4), 273-283.

- Bowlby, J. (1979). *The making & breaking of affectional bonds*. London: Tavistock Publications.
- Boyd-Swan, C., Herbst, C. M., Ifcher, J., & Zarghamee, H. (2016). 'The Earned Income Tax Credit, Mental Health, and Happiness', *Journal of economic behavior and organization*, 126, 18-38
- Bradbury, B., Corak, M., Waldfogel, J. and Washbrook, E., (2015), *Too many children left behind: The US achievement gap in comparative perspective*, Russell Sage Foundation.
- Bradley, R. H., Caldwell, B. M., Rock, S. L., Hamrick, H. M., & Harris, P. (1988). 'Home observation for measurement of the environment: Development of a home inventory for use with families having children 6 to 10 years old'. *Contemporary Educational Psychology*, 13(1), 58-71.
- Bradshaw, J. and Holmes, J. (2010) 'Child Poverty in the First Five Years of Life' in Hansen, K., Joshi, H. and Dex, S. (eds) *Children of the 21st Century: The First Five Years*, Bristol: Policy Press
- Brewer, M., & O'Dea, C. (2012). *Measuring living standards with income and consumption: evidence from the UK* (No. 2012-05). ISER Working Paper Series.
- British Medical Association, (June 2017), *Health at a price: Reducing the impact of poverty*, London: British Medical Association
- Brocklebank, R., Bedford, H., & Griffiths, L. J. (2014). Social determinants of parent-child interaction in the UK. *Child: care, health and development*, 40(4), 472-480.
- Brooks-Gunn, J., & Markman, L. (2005). The contribution of parenting to ethnic and racial gaps in school readiness. *The future of children*, 15(1), 139-168.
- Brooks-Gunn, J., Schneider, W., & Waldfogel, J. (2013). The Great Recession and the risk for child maltreatment. *Child abuse & neglect*, 37(10), 721-729.
- Browne, J. and Hood, A. (2016) *Living standards, poverty and inequality in the UK: 2015-16 to 2020-21*, IFS Report R114, London: Institute for Fiscal Studies

Browne, J., Hood, A. and Joyce, R. (2016) 'The (changing) effects of universal credit' chapter 10 in *IFS Green Budget 2016*, Institute for Fiscal Studies, accessed at

<https://www.ifs.org.uk/uploads/gb/gb2016/gb2016ch10.pdf> on 27/09/16

Burchardt, T. (2008). *Time and income poverty*, CASE report 57, Centre for Analysis of Social Exclusion, London School of Economics and Political Science.

Burgess, S., Gregg, P., Hall, E., Meadows, S., Proud, S., Propper, C., & Washbrook, L. (2006). *Up to age 7: family background and child development up to age 7 in the Avon Longitudinal Survey of Parents and Children (ALSPAC)*, Bristol: University of Bristol.

Burney, E. and Gelsthorpe, L., 2008. Do we need a 'naughty step'? Rethinking the parenting order after ten years. *The Howard Journal of Criminal Justice*, 47(5), pp.470-485.

Cambridge Centre for Housing and Planning Research, (2014) *In-depth interviews with people affected by the benefit cap*, Research report No. 895,

Department for Work and Pensions accessed at

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/385901/rr895-benefit-cap-indepth-interviews.pdf on 27/09/2016

Cameron, D. (2010) *Supporting Parents* 11th January, accessed at

<http://www.demos.co.uk/files/cameronsspeechjan2010.pdf> on 02/12/15

Cameron, D., (11th January 2016) *Prime Minister's Speech on Life Chances*, available at chances <https://www.gov.uk/government/speeches/prime-ministers-speech-on-life-chances> accessed on 15/6/2016

Cancian, M., Mi-Youn, Y., & Shook Slack, K. (2013). 'The Effect of Additional Child Support Income on the Risk of Child Maltreatment'. *Social Service Review*, 87(3), 417-437

Chan, T. W., & Koo, A. (2011). Parenting Style and Youth Outcomes in the UK. *European Sociological Review*, 27(3), 385-399

- Churchill, H. and Clarke, K. (2009), 'Investing in Parenting Education: A Critical Review of Policy and Provision in England', *Social Policy and Society*, 9:1, pp35-53
- Clarke, K. (2006). Childhood, parenting and early intervention: A critical examination of the Sure Start national programme. *Critical Social Policy*, 26(4), 699-721
- Cohen, J., 1992. A power primer. *Psychological bulletin*, 112(1), p.155.
- Coll, C. and Pachter, L. 'Ethnic and Minority Parenting' in Bornstein, M (eds.) (2002) Handbook of Parenting. Volume 4: Social Conditions and Applied Parenting. Second Edition.
- Communities and Local Government, (March 2011) *The English Indices of Deprivation 2010*, London: Department for Communities and Local Government
- Conger, K. J., Reuter, M. A., & Conger, R. D. (2000). 'The Role of Economic Pressure in the Lives of Parents and their Adolescents: The Family Stress Model' In Crockett, R. K & Silbereisen, R. K. (Ed.), *Negotiating Adolescence in Times of Social Change* (pp. 202-223). Cambridge: Cambridge University Press.
- Conger, R., & Elder, G. H., Jr. (1994). *Families in troubled times: adapting to change in rural America*. New York: A. de Gruyter.
- Cooksey, E. Joshi, H. and Verropoulou, G. (2009), 'Does mother's employment affect children's development? Evidence from the children of the British 1970 Birth Cohort and the American NLSY79', *Longitudinal and Life Course Studies*, Vol 1. (1) pp95-115
- Cooper and Stewart, (2017), *Does Money Affect Children's Outcomes? An Update*, CASE paper 203, London: Centre for Analysis of Social Exclusion available at <http://sticerd.lse.ac.uk/dps/case/cp/casepaper203.pdf>
- Cooper, K. and Stewart, K. (2013) *Does Money Affect Children's Outcomes? A Systematic Review*, York: Joseph Rowntree Foundation

Cprek, S. E., Williams, C. M., Asaolu, I., Alexander, L. A., & Vanderpool, R. C. (2015). 'Three positive parenting practices and their correlation with risk of childhood developmental, social, or behavioural delays: An analysis of the national survey of children's health'. *Maternal and child health journal*, 19(11), 2403-2411.

Crossley, s. (2015a), "Realising the (troubled) family', 'crafting the neoliberal state'", *Families, Relationships and Societies*, Policy Press

Crossley, S. (2015b), 'The Troubled Families Programme: the perfect social policy?' *Centre for Crime and Justice Studies Briefing 13*, London: Centre for Crime and Justice Studies accessed at <https://www.crimeandjustice.org.uk/sites/crimeandjustice.org.uk/files/The%20Troubled%20Families%20Programme,%20Nov%202015.pdf> on 27/09/16

Cunha, F., & Heckman, J. J. (2008). Formulating, identifying and estimating the technology of cognitive and noncognitive skill formation. *Journal of Human Resources*, 43(4), 738-782.

Cunliffe, J. (2016) *Offending risk factors and area: an investigation using structural equation modelling*, A thesis submitted to the Department of Social Policy of the London School of Economics

Dallaire, D. H., & Weinraub, M. (2005). The stability of parenting behaviors over the first 6 years of life. *Early Childhood Research Quarterly*, 20(2), 201-219.

Daly, M. (2015), 'Parenting Support as a Policy Field: An Analytic Framework', *Social Policy and Society*, Vol 14 Issue 4 pp597-608

Daly, M. and Bray, R., (2015) 'Parenting Support in England: The Bedding Down of a New Policy', *Social Policy and Society*

Daly, M. and Kelly, G., (2015), *Families and poverty: Everyday life on a low income*, Bristol: Policy Press

- Day, L., Bryson, C., White, C., Purdon, S., Bewley, H., Sala, L. K., & Portes, J. (2016) *National Evaluation of the Troubled Families Programme: Final Synthesis Report*, London: Department for Communities and Local Government.
- Dearden, L. and Sibietta, L. (2010) 'Ethnic Inequalities in Child Outcomes' in Hansen, K., Joshi, H. and Dex, S. (eds) *Children of the 21st Century: The first five years*, Bristol: The Policy Press
- Dearing, E. and Taylor, B. A. (2007) 'Home Improvements: Within-Family Associations between Income and the Quality of Children's Home Environments', *Journal of Applied Developmental Psychology*, 28, 5–6, pp. 427–44.
- Dearing, E., Taylor, B. A. and McCartney, K. (2004) 'Implications of Family Income Dynamics for Women's Depressive Symptoms During the First 3 Years After Childbirth', *American Journal of Public Health*, 94, pp. 1372–77.
- Deater-Deckard, K., Dodge, K. A., Bates, J. E., & Pettit, G. S. (1996). 'Physical Discipline Among African American and European American Mothers: Links to Children's Externalizing Behaviors'. *Developmental Psychology*, 32(6), 1065-1072
- Decancq, K., & Lugo, M. A. (2013). 'Weights in multidimensional indices of wellbeing: An overview'. *Econometric Reviews*, 32(1), 7-34.
- Demo, D. & Cox, M. (2000) 'Families with Young Children: A Review of Research in the 1990s' *Journal of Marriage and Family*, 62(4), 876-895.
- Department for Work and Pensions (2017) *Households Below Average Income: An Analysis of the Income Distribution: 1994/95 – 2015/16*. Published 16 March 2017
- Department for Work and Pensions (April 2017) *Improving Lives: Helping Workless Families*, London: HM Government
- Department for Work and Pensions, (2014) *Benefit Cap: Analysis of Outcomes of capped claimants*, DWP ad hoc research report no.11, accessed at

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/385970/benefit-cap-analysis-of_outcomes-of-capped-claimants.pdf on 27/09/16

Dermott, E. (2012). 'Poverty' versus 'Parenting': an Emergent Dichotomy'. *Studies in the Maternal*, 4(2).

Dermott, E. and Pomati, M. (2015) "Good Parenting Practices: How Important are Poverty, Education and time Pressure?", *Sociology*, Vol 50 (1) *Developmental Psychology*, 22, 723–742.

Dickerson, A. and Popli, G.K., (2016), 'Persistent poverty and children's cognitive development: evidence from the UK Millennium Cohort Study', *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 179(2), pp.535-558.

Dickerson, A., & Popli, G. (2012). *Persistent Poverty and Children's Cognitive Development: Evidence from the Millennium Cohort Study*. CLS Cohort Studies Working Paper. London: Centre for Longitudinal Studies.

Dowler, E. (2008). 'Food and health inequalities: The challenge for sustaining just consumption'. *Local Environment*, 13(8), 759-772.

Duncan, G.J., Magnuson, K. and Votruba-Drzal, E., (2017), 'Moving beyond correlations in assessing the consequences of poverty', *Annual review of psychology*, 68 pp.413-434.

Duncan, G., Magnuson, K., and Votruba-Drzal, E. (2014) "Boosting family income to promote child development." *The Future of Children* 24.1 (2014): 99-120.

Ermisch, J. (2008). 'Origins of Social Immobility and Inequality: Parenting and Early Child Development', *National Institute Economic Review*, 205(1), 62-71.

Ermisch, J., Iacovou, M. and Skew, A.J., 'Family relationships' in McFall, S.L. and Garrington, C., (Eds.) (2011) *Understanding Society: Early findings*

from the first wave of the UK's household longitudinal study. Colchester:
Institute for Social and Economic Research, University of Essex.

Evans, G. W., Ricciuti, H. N., Steven, H., Schoon, I., Bradley, R., Corwyn, R.,
& Hazan, C. (2010). 'Crowding and Cognitive Development: The Mediating
Role of Maternal Responsiveness Among 36-Month-Old Children'.
Environment and Behavior, 42(1)

Evans, W. N., & Garthwaite, C. L. (2010). *Giving Mom a Break: The Impact of
Higher EITC Payments on Maternal Health*. National Bureau of Economic
Research, Inc, NBER Working Papers: 16296. Retrieved from
<http://www.nber.org/papers/w16296.pdf>

Feinstein, L and Duckworth, K. (2006) 'Development in the early years: its
importance for school performance and adult outcomes', *Wider Benefits of
Learning Research Report No.20*, London: Centre for Research on the Wider
Benefits of Learning, Institute of Education

Field, F. (2010). *The Foundation Years: Preventing Poor Children Becoming Poor
Adults; The Report of the Independent Review on Poverty and Life Chances*, HM
Government

Fitzsimons, E., Goodman, A., Kelly, E., & Smith, J. P. (2017). 'Poverty
dynamics and parental mental health: Determinants of childhood mental
health in the UK'. *Social Science & Medicine*, 175, 43-51.

Garriga, A. and Kiernan, K., 2014. *Parents' relationship quality, mother-child
relations and children's behaviour problems: evidence from the UK Millennium
Cohort Study*. Working Paper. [http://www.york.ac.
uk/media/spsw/documents/research-andpublications/Garriga-and-
Kiernan-WP2013](http://www.york.ac.uk/media/spsw/documents/research-andpublications/Garriga-and-Kiernan-WP2013)

Gennetian, L. A. and Miller, C. (2002) 'Children and Welfare Reform: A
View from an Experimental Welfare Program in Minnesota', *Child
Development*, 73, pp. 601-20.

- Ghate, D., & Hazel, N. (2002). *Parenting in Poor Environments*. London: Jessica Kingsley Publishers.
- Gillies, V. (2012a) 'Personalising poverty: parental determinism and the 'Big Society' agenda' in Atkinson, W., Roberts, S. and Savage, M. *Class Inequality in Austerity Britain: Power, Difference and Suffering*, Macmillan
- Gillies, V. (2012b) 'Family Policy and the Politics of Parenting: From Function to Competence' in Richter, M. and Andresen, S. (Eds.) *The Politicization of Parenthood: Shifting private and public responsibilities in education and child rearing*, Children's Well-Being: Indicators and Research Volume 5, pp13-26, Netherlands: Springfield
- Gillies, V., 2007. *Marginalised mothers: Exploring working class experiences of parenting*. New York: Routledge.
- Gregg, P., Harkness, S. and Machin, S. (1999) *Child Poverty and its Consequences*, York: Joseph Rowntree Foundation
- Gregg, P., Waldfogel, J. And Washbrook, E. (2006) 'Family expenditures post-welfare reform in the UK: Are Low Income Families with Children starting to catch up?' *Labour Economics*, 13, 6, pp. 721–46.
- Gutman, L. M., & Feinstein, L. (2007). Parenting Behaviours and Children's Development from Infancy to Early Childhood: Changes, Continuities and Contributions *Wider Benefits of Learning Research Report*. London: Centre for Research on the Wider Benefits of Learning, Institute of Education.
- Gutman, L., Brown, J., Akerman, R. and Obolenskaya, P., 2010. Change in wellbeing from childhood to adolescence: risk and resilience [Wider Benefits of Learning Research Report No. 34].
- Gutman, L.M. and Feinstein, L., (2010). 'Parenting behaviours and children's development from infancy to early childhood: changes, continuities and contributions'. *Early Child Development and Care*, 180(4), pp.535-556.

- Hamad, R., & Rehkopf, D. H. (2016). Poverty and child development: a longitudinal study of the impact of the earned income tax credit. *American journal of epidemiology*, 183(9), 775-784
- Hansen, K. (Ed.). (2012). *Millennium Cohort Study: First, Second, Third and Fourth Surveys A Guide to the Datasets (Seventh Edition)* London: Centre for Longitudinal Studies.
- Hansen, K., & Kneale, D. (2013). 'Does how you measure income make a difference to measuring poverty? Evidence from the UK'. *Social indicators research*, 110(3), 1119-1140.
- Harold, G., Acquah, D., Sellers, R., Chowdry, H. and Feinstein, L., (2016), *What works to enhance inter-parental relationships and improve outcomes for children*, London: Early Intervention Foundation
- Hartas, D., (a) (2011). 'Families' social backgrounds matter: socio-economic factors, home learning and young children's language, literacy and social outcomes'. *British Educational Research Journal*, 37(6), pp.893-914.
- Hartas, D., (b) (2011). 'The ecology of young children's behaviour and social competence: child characteristics, socio-economic factors and parenting' *Oxford Review of Education*, 37(6), pp.763-783.
- Harvey, E. (1999). 'Short-term and long-term effects of early parental employment on children of the National Longitudinal Survey of Youth'. *Developmental psychology*, 35(2), 445.
- Haux, T. (March 2012), 'Parenting support policies in England from 1997 to the present – an overview', *PolChi Working Paper No. 12/1*
- Hawes, D.J. and Dadds, M.R., 2006. Assessing parenting practices through parent-report and direct observation during parent-training. *Journal of Child and Family Studies*, 15(5), pp.554-567
- Hawkes, D., & Joshi, H. (2012). Age at motherhood and child development: Evidence from the UK Millennium Cohort. *National Institute Economic Review*, 222(1), R52-R66.

HBAI, 2015, *Households Below Average Income (HBAI) Quality and Methodology Report*, Department for Work and Pensions, accessed at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/437251/households-below-average-income-quality-methodology-2013-14.pdf on 3/11/15

Heckman, J. J., & Masterov, D. V. (2007). 'The productivity argument for investing in young children'. *Applied Economic Perspectives and Policy*, 29(3), 446-493.

Heflin, C. M., Corcoran, M. E., & Siefert, K. A. (2007). 'Work trajectories, income changes, and food insufficiency in a Michigan welfare population'. *Social Service Review*, 81(1), 3-25.

Hills, J. (January 2015) 'The Coalition's Record in Cash Transfers, Poverty and Inequality 2010-2015', *Social Policy in a Cold Climate working paper 11*, London: Centre for Analysis of Social Exclusion

Hills, J., (2004), *Inequality and the State*, Oxford: Oxford University Press

Hills, J., McKnight, A., & Smithies, R. (2006). 'Tracking income: how working families' incomes vary through the year', CASE Report 32, London: London School of Economics

Hobcraft, J.N. and Kiernan, K.E., (2010). 'Predictive factors from age 3 and infancy for poor child outcomes at age 5 relating to children's development, behaviour and health: evidence from the Millennium Cohort Study'. *York: University of York*.

Holden, G. W., & Miller, P. C. (1999). 'Enduring and different: a meta-analysis of the similarity in parents' child rearing'. *Psychological bulletin*, 125(2), 223.

Holmes, J. (1993). *John Bowlby and Attachment Theory*. London: Routledge.

- Holmes, J., & Kiernan, K. (2013). 'Persistent poverty and children's development in the early years of childhood', *Policy and Politics*, 41(1), 19-42.
- Hooper, C.-A., Gorin, S., Cabral, C., & Dyson, C. (2007). *Living with Hardship 24/7: the Diverse Experiences of Families in Poverty in England*. London: The Frank Buttle Trust.
- Housing (Overcrowding) Act, 2003
<http://www.publications.parliament.uk/pa/cm200203/cmbills/046/2003046.pdf>, accessed 06/10/15
- Hu, L. T., & Bentler, P. M. (1999). 'Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives'. *Structural equation modeling: a multidisciplinary journal*, 6(1), 1-55.
- Jansen, E., Daniels, L.A. and Nicholson, J.M., (2012). 'The dynamics of parenting and early feeding—constructs and controversies: a viewpoint'. *Early Child Development and Care*, 182(8), pp.967-981.
- Janssen, I. and LeBlanc, A.G., (2010). 'Systematic review of the health benefits of physical activity and fitness in school-aged children and youth'. *International Journal of Behavioral nutrition and physical activity*, 7(40), pp.1-16.
- Jarvis, S., & Jenkins, S. P. (1997). 'Low income dynamics in 1990s Britain'. *Fiscal Studies*, 18(2), 123-142.
- Jenkins, S. P. (2011). *Changing fortunes: income mobility and poverty dynamics in Britain*. Oxford University Press.
- Jenkins, S. P. (2011). *Changing fortunes: income mobility and poverty dynamics in Britain*. OUP Oxford.

- Johnson, J (Ed) (March 2012), *Millennium Cohort Study: Psychological, Developmental and Health Inventories*, London: Centre for Longitudinal Studies
- Jones, E and Smith, K, 'Parenting' in Hansen, K. and Joshi, H. (eds) (2008) *Millennium Cohort Study Third Survey: A User's Guide to Initial Findings*, London: Centre for Longitudinal Studies
- Jones, E. (2010) 'Parental Relationships and Parenting', in Hansen, K., Joshi, H. and Dex, S. (eds) *Children of the 21st Century: The first five years*, Bristol: The Policy Press
- Jones, E. Gutman, L. and Platt, L. (2013) *Family Stressors and Children's Outcomes*, Childhood Wellbeing Research Centre, Department for Education, Research report DFERR254 accessed https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/219639/DFE-RR254.pdf on 18/06/15
- Joyce, R. (2014) 'Child poverty in Britain: recent trends and future prospects', *IFS Working Paper W15/07*, London: Institute for Fiscal Studies
- Kaplan, D., 2012. *Structural equation modeling: Foundations and extensions: Third Edition* Sage Publications.
- Katz, I., Corlyon, J., La Placa, V. and Hunter, S. (2007). The Relationship Between Parenting and Poverty. *IRF Report*, York: Joseph Rowntree Foundation
- Kaushal, N., Gao, Q. and Waldfogel, J. (2007) 'Welfare Reform and Family Expenditures: How Are Single Mothers Adapting to the New Welfare and Work Regime?' *Social Service Review*, 81, pp. 369–96.
- Kelly, Kelly and Sacker (November 2013) 'Changes in Bedtime Schedules and Behavioural Difficulties in 7 Year Old Children' in *Pediatrics*, Vol. 132, No. 5
- Kelly, Y., Sacker, A., Del Bono, E., Francesconi, M. and Marmot, M., (2011). 'What role for the home learning environment and parenting in reducing the socioeconomic gradient in child development? Findings from the

Millennium Cohort Study'. *Archives of Disease in Childhood*,
p.archdischild195917.

Kempson, E. (1996). *Life on a low income: Elaine Kempson*. York: York
Publishing Services for the Joseph Rowntree Foundation.

Kennedy, S. (July 2014), *Child Poverty Act: A Short Guide*, House of
Commons Library Research Paper, SN/SP/5585

Kessler, R.C., Andrews, G., Colpe, L.J., Hiripi, E., Mroczek, D.K., Normand,
S.L., Walters, E.E. and Zaslavsky, A.M., (2002). Short screening scales to
monitor population prevalences and trends in non-specific psychological
distress. *Psychological medicine*, 32(06), pp.959-976.

Ketende, S. and Joshi, H. (2008) Chapter 12 'Income and Poverty' in
Hansen, K. and Joshi, H. (eds) (2008) *Millennium Cohort Study Third Survey:
A User's Guide to Initial Findings*, London: Centre for Longitudinal Studies

Ketende, S., McDonald, J. & Joshi, H. (2010) Chapter 7 'Neighbourhoods
and residential mobility' in Hansen, K. Joshi, H. and Dex, S. (eds) *Children
of the 21st Century: The First Five Years*, Bristol: Policy Press

Kiernan K, Huerta MC (2008) 'Economic deprivation, maternal depression,
parenting, and children's cognitive and emotional development in early
childhood', *British Journal of Sociology* 59: 783–806.

Kiernan, K and Mensah, F (2010) 'Partnership trajectories, parent and child
wellbeing' in Hansen, K. Joshi, H. and Dex, S. (eds) *Children of the 21st
Century: The First Five Years*, Bristol: Policy Press

Kiernan, K. E., & Mensah, F. K. (2009). 'Poverty, Maternal Depression,
Family Status and Children's Cognitive and Behavioural Development in
Early Childhood: A Longitudinal Study', *Journal of Social Policy*, 38(4), 569-
588.

Kiernan, KE & Mensah, FK (2011), 'Poverty, family resources and children's
early educational attainment: the mediating role of parenting' *British
Educational Research Journal*, vol 37, no. 2, pp. 317-336.

- Kline, R.B., 2011. Principles and practice of structural equation modeling. 2011. *New York: Guilford Press*
- Koutoumanou, E. and Wade, A. (2012) 'Introduction to dealing with missing data version 3', London: University College London
- Krumpal, I. (2013). Determinants of social desirability bias in sensitive surveys: a literature review. *Quality & Quantity*, 47(4), 2025-2047.
- Lareau, A. (2003) *Unequal Childhoods: Class, Race, and Family Life*, California: University of California Press
- Lee, C.-Y. S., Anderson, J. R., Horowitz, J. L., & August, G. J. (2009). 'Family Income and Parenting: The Role of Parental Depression and Social Support', *Family Relations*, 58(4), 417-430.
- Lee, C.-Y. S., Lee, J. and August, G. J. (2011) 'Financial Stress, Parental Depressive Symptoms, Parenting Practices, and Children's Externalizing Problem Behaviors: Underlying Processes', *Family Relations*, 60, pp. 476–490
- Lee, E., Bristow, J., Faircloth, C., & Macvarish, J. (2014). *Parenting culture studies*. Basingstoke, Hampshire: Palgrave Macmillan.
- LeVine, R. (1977). Child Rearing as Cultural Adaptation. In P. H. Leiderman, S. R. Tulkin & A. H. Rosenfeld (Eds.), *Culture and infancy: variations in the human experience*. New York Academic Press Inc.
- Lewis, J. (1980). *The politics of motherhood: child and maternal welfare in England, 1900-1939*. McGill-Queen's Press-MQUP.
- Lewis, J. (2006) *Children, Changing Families and Welfare States*, Edward Elgar Publishing Ltd
- Lewis, J. (2011). Parenting programmes in England: Policy Development and Implementation Issues, 2005-2010. *Journal of Social Welfare and Family Law*, 33(2), 107-121.

- Lister, R (Ed.) (1996) *Charles Murray and the Underclass: The Developing Debate*, London: IEA Health and Welfare Unit
- Lister, R. (2006), 'Children (but not women) first: New Labour, child welfare and gender', *Critical Social Policy*, vol 26(2), pp315-335
- Loopstra, R. and Tarasuk, V., (2013) 'Severity of household food insecurity is sensitive to change in household income and employment status among low-income families', *The Journal of nutrition*, 143(8), pp.1316-1323.
- Lucas, P. (2011), 'Some reflections on the rhetoric of parenting programmes: evidence, theory, and social policy', in *Journal of Family Therapy*, 33: pp181-198
- Lucero, Jessica L., Sojung Lim, and Anna Maria Santiago. (2016) "Changes in economic hardship and intimate partner violence: a family stress framework." *Journal of family and economic issues* 37, no. 3: 395-406.
- MacDonald, K., (March 10-11 2016) *Structural Equation Modelling Using Stata* training course pack, Washington, StatCorp
- Macvarish, J., Lee, E., & Lowe, P. (2015). 'Neuroscience and family policy: What becomes of the parent?' *Critical Social Policy*, 35(2), 248-269.
- Magnuson, K. A., & Duncan, G. J. (2002). 'Parents in Poverty'. In M. H. Bornstein (Ed.), *Handbook of Parenting Second Edition: Volume 4 Social Conditions and Applied Parenting* (Vol. 4). New Jersey: Lawrence Erlbaum Associates.
- Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). 'Poverty impedes cognitive function'. *Science (New York, N.Y.)*, 341(6149), 976-980.
- Mayer, S. E. (1997). *What money can't buy: family income and children's life chances*. Cambridge, Mass: Harvard University Press.
- McKendrick, J. H., Cunningham-Burley, S., & Backett-Milburn, K. (2003). *Life in Low Income Families in Scotland: Research Report*. In C. f. R. o. F. a. R.

(CRFR) & U. o. Edinburgh (Eds.). Edinburgh: Centre for Research on Families and Relationships (CRFR) University of Edinburgh.

McLoyd, V. (1990), 'The Impact of Economic Hardship on Black Families and Children: Psychological Distress, Parenting and Socioemotional Development', *Child Development*, Vol. 61, No. 2. p311-346

McMunn, A., Kelly, Y., Cable, N., & Bartley, M. (2011). Maternal employment and child socio-emotional behaviour in the UK: longitudinal evidence from the UK Millennium Cohort Study. *Journal of epidemiology and community health*, jech-2010.

Melhuish, E.C., Phan, M.B., Sylva, K., Sammons, P., Siraj-Blatchford, I. and Taggart, B., (2008 a). Effects of the home learning environment and preschool center experience upon literacy and numeracy development in early primary school. *Journal of Social Issues*, 64(1), pp.95-114.

Melhuish, E.C., Sylva, K., Sammons, P., Siraj-Blatchford, I., Taggart, B., Phan, M. and Malin, A., (2008 b). Preschool influences on mathematics achievement. *Science*, 321(5893), pp.1161-1162.

Mensah, F. K., & Kiernan, K. E. (2011). 'Maternal general health and children's cognitive development and behaviour in the early years: findings from the Millennium Cohort Study', *Child: Care, Health and Development*, 37(1), 44-54.

Micklewright, J., & Schnepf, S. V. (2010). How reliable are income data collected with a single question? *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 173(2), 409-429.

Milburn, A., Shephard, G., Attwood, T., Carrie, A. M., Cleal, P., Gregg, P., Johnston, D., Guy, C., Hamilton, D. and Williams, C., (2013) *State of the Nation 2013: social mobility and child poverty in Great Britain*, Social Mobility & Child Poverty (SMCP) Commission

Milligan, K. and Stabile, M. (2011) 'Do Child Tax Benefits Affect the Well-Being of Children? Evidence from Canadian Child Benefit Expansions', *American Economic Journal: Economic Policy*, 3, pp. 175–205.

Mistry, R. S., Biesanz, J. C., Taylor, L. C., Burchinal, M. and Cox, M. J. (2004) 'Family Income and Its Relation to Preschool Children's Adjustment for Families in the NICHD Study of Early Child Care', *Developmental Psychology*, 40, pp. 727-745

Moore, J. C., Stinson, L. L., & Welniak, E. J. (2000). Income measurement error in surveys: A review. *JOURNAL OF OFFICIAL STATISTICS-STOCKHOLM*, 16(4), 331-362.

Mostafa, T. and Platt, L. 'Chapter 7: Poverty and Deprivation', in Platt, L. (eds) (2014) *Millennium Cohort Study Initial Findings from the Age 11 Survey*, London: Centre for Longitudinal Studies

Moullin, S., Waldfogel, J., & Washbrook, E. (2014). *Baby Bonds: Parenting, Attachment and a Secure Base for Children*: The Sutton Trust.

Mullainathan, S., & Shafir, E. (2013). *Scarcity: why having too little means so much*. London: Allen Lane.

Natcen, (September 2008), *Millennium Cohort Study Weep 3 Questionnaire documentation*, London: Centre for Longitudinal Studies

Noble, M. Wright, G. Dibben, C. Smith, G. McLennan, D., Anttila, C., Barnes, H., Mokhtar, C., Noble, S., Avenell, D., Gardner, J., Lloyd, M., (2004), *The English Indices of Deprivation 2004 (Revised)*, Report to the Office of the Deputy Prime Minister. London: Neighbourhood Renewal Unit

Noble, M., McLennan, D., Wilkinson, K., Whitworth, A., Barnes, H. and Dibben, C. (March 2008), *the English Indices of Deprivation 2007*, London: Communities and Local Government

Nolan, B. and Whelan, C., (1996), *Resources, Deprivation and Poverty*, Clarendon Press

O'Connor, T. G., & Scott, S. B. (2007). *Parenting and Outcomes for Children*. In T. J. R. Foundation (Ed.). York: The Joseph Rowntree Foundation.

- O'Connor, T.G., 2002. 'Annotation: The 'effects' of parenting reconsidered: findings, challenges, and applications', *Journal of Child Psychology and Psychiatry*, 43(5), pp.555-572.
- OECD, 2008, *Handbook on Constructing Composite Indicators: Methodology and User Guide*, published by OECD, accessed at <http://www.oecd.org/std/42495745.pdf> on 25/06/15
- Parke, R. D., Coltrane, S., Duffy, S., Buriel, R., Dennis, J., Powers, J., French, S. & Widaman, K. F. (2004) 'Economic Stress, Parenting, and Child Adjustment in Mexican American and European American Families', *Child Development*, 75, pp. 1632–1656
- Parkes, A. and Wright, D. (2011) *Growing Up in Scotland: Parenting and children's health*, Edinburgh: Scottish Government
- Parsons, S., Schoon, I. and Vignoles, A., (2013) 'Parental worklessness and children's early school achievement and progress', *Longitudinal and Life Course Studies*, 5(1), pp.19-41.
- Patterson, G. (1969). 'Behavioral Techniques Based Upon Social Learning: An Additional Base for Developing Behavior Modification', In C. M. Franks (Ed.), *Behavior therapy: Appraisal and Status*. New York: McGraw-Hill.
- Peat, J. K., Dickerson, J., & Li, J. (1998). Effects of damp and mould in the home on respiratory health: a review of the literature. *Allergy*, 53(2), 120-128.
- Phillips, D. A., & Shonkoff, J. P. (Eds.). (2000). *From Neurons to Neighborhoods: The Science of Early Childhood Development*. National Academies Press.
- Phoenix, A. and Husain, F. (2007) *Parenting and Ethnicity*, Joseph Rowntree Foundation, York: York Publishing Services Ltd
- Piachaud, D. (2008). 'Time and Money', In J. Strelitz & R. Lister (Eds.), *Why Money Matters: Family Income, Poverty and Children's Lives*. London: Save the Children.

- Platt, L., Haux, T. and Rosenberg, R. (June 2015) *Mothers, parenting and the impact of separation*, CASE paper 190, London: Centre for Analysis of Social Exclusion, London School of Economics
- Plewis, I. (Ed.) (July 2007a), *the Millennium Cohort Study: Technical Report on Sampling 4th Edition*, London: Centre for Longitudinal Studies, accessed file:///C:/Users/cooperkm/Downloads/Technical_Report_on_Sampling_4th_Edition.pdf on 09/07/15
- Plewis, I. (2007b) 'Non-response in a birth cohort study: the case of the Millennium Cohort Study' *International Journal of Social Research Methodology*, 10(5), 325-334.
- Ponnet, K., Van Leeuwen, K. and Wouters, E., 2014. Examining mediating pathways between financial stress of mothers and fathers and problem behaviour in adolescents. *Journal of Family Studies*, 20(1), pp.66-78.
- Power, A. (2007). *City survivors: bringing up children in disadvantaged neighbourhoods*. Bristol: Policy Press.
- Raschke, C. (2012) 'The Impact of the German Child Benefit on Child Well-Being', SOEPpaper No. 520. Available at SSRN: <https://ssrn.com/abstract=2197764>
- Reeves, R., and Howard, K. (2013). *The Parenting Gap*, Washington, DC: The Brookings Institution
- Rezvan, P., Lee, K. and Simpson, J. (2015) 'The rise of multiple imputation: a review of the reporting and implementation of the method in medical research', *BMC Medical Research Methodology*, 15(1), 30
- Riccio, J., Dechausay, N., Greenberg, D., Miller, C., Rucks, Z. and Verma, N. (2010) 'Toward reduced poverty across generations: Early findings from New York City's conditional cash transfer program'. NY: MDRC
- Ridge, T. (2009). *Living with Poverty: A Review of the Literature on Children's and Families' Experiences of Poverty*. Department for Work and Pensions (Ed.): Centre for the Analysis of Social Policy, University of Bath.

- Riots Communities and Victims Panel. (2012). *After the Riots: The Final Report of the riots Communities and Victims Panel*. London.
- Ritchie, J. (2003). 'The Application of Qualitative Methods to Social Research', In J. Ritchie & J. Lewis (Eds.), *Qualitative research practice: a guide for social science students and researchers* (pp. 24-46). London: SAGE.
- Roberts and Ketende, 'Parental health' in Hansen and Joshi, (Eds) (October 2008), *The Millennium Cohort Study Third Survey: A User's Guide to Initial Findings*, London: Centre for Longitudinal Studies
- Rosenberg, R. (August 2012), *Millennium Cohort Study MCS3: Guide to Derived Variables*, London: Centre for Longitudinal Studies
- Rust, J., Bennun, I., Crowe, M. and Golombok, S., 1990. The GRIMS. A psychometric instrument for the assessment of marital discord. *Journal of Family Therapy*, 12(1), pp.45-57.
- Sacker, A., Schoon, I. and Bartley, M., (2002). Social inequality in educational achievement and psychosocial adjustment throughout childhood: magnitude and mechanisms. *Social science & medicine*, 55(5), pp.863-880.
- Schoon, I., Barnes, M., Brown, V., Parsons, S., Ross, A., & Vignoles, A. (2012) 'Intergenerational transmission of worklessness: Evidence from the Millennium Cohort and the Longitudinal Study of Young People in England', *Research report DFE-RR-234*, Department for Education.
- Schoon, I., Hope, S., Ross, A. and Duckworth, K., (2010). 'Family hardship and children's development: the early years', *longitudinal and life Course studies*, 1(3), pp.209-222.
- Schoon, I., Jones, E., Cheng, H. and Maughan, B., (2012) 'Family hardship, family instability, and cognitive development', *J Epidemiol Community Health*, 66(8), pp.716-722.

- Schoon, I., Cheng, H., Jones, E. and Maughan, B., (2013) 'Wellbeing of children: Early influences', *Report for the Nuffield Foundation*, London: Institute of Education.
- Scott, S., J. Lewsey, L. Thompson, and P. Wilson. "Early parental physical punishment and emotional and behavioural outcomes in preschool children." *Child: care, health and development* 40, no. 3 (2014): 337-345.
- Shah, A. K., Mullainathan, S., & Shafir, E. (2012). 'Some consequences of having too little', *Science (New York, N.Y.)*, 338(6107), 682-685
- Shelter. (2006). *Chance of a Lifetime: The Impact of Bad Housing on Children's Lives*. London: Shelter.
- Shonkoff, J. P. (2009). Investment in early childhood development lays the foundation for a prosperous and sustainable society. *Encyclopaedia on early childhood development*, 1-5 accessed at <http://child-encyclopedia.com/Pages/PDF/ShonkoffANGxp.pdf> on 21/07/15
- Shonkoff, J. P., Garner, A. S., Siegel, B. S., Dobbins, M. I., Earls, M. F., McGuinn, L., Pascoe, J., and Wood, D. L. (2012). 'The lifelong effects of early childhood adversity and toxic stress.' *Pediatrics*, 129(1), pp232-246.
- Skinner, M. L., Elder, G. H. and Conger, R. D. (1992). 'Linking economic hardship to adolescent aggression', *Journal of Youth and Adolescence*, 21, pp. 259-276
- Smith, M. (2004). Parental mental health: disruptions to parenting and outcomes for children. *Child & Family Social Work*, 9(1), 3-11.
- Social Mobility and Child Poverty Commission. (2013). *State of the Nation 2013: Social Mobility and Child Poverty in Great Britain*.
- Sterne, J., White, I., Carlin, J., Spratt, M., Royston, P., Kenward, M., Wood, A., Carpenter, J. R. (2009), 'Multiple imputation for missing data in epidemiological and clinical research: potential and pitfalls', *BMJ (Clinical Research Ed.)*, 338, b2393

Stewart, K and Roberts, N (2015) 'Plans to axe child poverty measures contradict the vast majority of expert advice the government received', *LSE Politics and Policy Blog* access at <http://blogs.lse.ac.uk/politicsandpolicy/plans-to-axe-child-poverty-measures-have-no-support-among-experts/> on 1/12/15

Stewart, K. (2013), 'Labour's record on the under fives: policy, spending and outcomes 1997-2010', *Working paper 4*, London: Centre for Analysis of Social Exclusion, London School of Economics and Political Science

Stewart, K. (2015) 'The Coalitions record on the under fives 2010-2015', *Working paper 12*, London: Centre for Analysis of Social Exclusion, London School of Economics and Political Science

Stewart, K. and Obolenskaya, P. (January 2015) 'The Coalition's Record on the Under Fives: Policy, Spending and Outcomes 2010-2015', *Social Policy in a Cold Climate Working Paper 12*, London: Centre for Analysis of Social Exclusion

Sylva, K., Melhuish, E., Sammons, P. Siraj-Blatchford, I. and Taggaer, B. (2004), *Technical Paper 12 The Final Report: Effective Pre-School Education*, London: Institute of Education

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B., 2004. The Effective Provision of Pre-school Education (EPPE) Project: Technical paper 12-final report: Effective pre-school education.

Tang, C. M., & Sinanan, A. N. (2015). Change in Parenting Behaviors from Infancy to Early Childhood: Does Change in Family Income Matter? *Journal of Family Social Work*, 18(5), 327-348.

Taylor, J., Spencer, N., & Baldwin, N. (2000). 'Social, economic, and political context of parenting', *ARCHIVES OF DISEASE IN CHILDHOOD*, 82(2), 113-120.

The Social Mobility Commission (2017) *Social Mobility Policies between 1997 and 2017: time for change*, Social Mobility Commission

The Telegraph, (18th August, 2010) 'Nick Clegg: good parenting, not poverty, shape a child's destiny', accessed at

<http://www.telegraph.co.uk/news/politics/7952977/Nick-Clegg-good-parenting-not-poverty-shape-a-childs-destiny.html> on 2/12/15

Topping, K., Dekhinet, R., & Zeedyk, S. (2013). Parent–infant interaction and children's language development. *Educational Psychology*, 33(4), 391-426.

Treanor, M 2015, 'The effects of financial vulnerability and mothers' emotional distress on child social, emotional and behavioural wellbeing: a structural equation model' *Sociology-The journal of the British sociological association*, vol 50, no. 4, pp. 673-694

Tunstall, R., Lupton, R., Kneale, D., and Jenkins, A. (2011) 'Growing up in social housing in the new millennium: housing, neighbourhoods, and early outcomes for children born in 2000', CASE report: 143, London: CASE, London School of Economics

University of London¹, UCL Institute of Education, Centre for Longitudinal Studies, *Millennium Cohort Study: First Survey, 2001-2003* [computer file]. 11th Edition. Colchester, Essex: UK Data Archive [distributor], December 2012. SN: 4683, <http://dx.doi.org/10.5255/UKDA-SN-4683-3>

University of London², UCL Institute of Education, Centre for Longitudinal Studies, *Millennium Cohort Study: Second Survey, 2003-2005* [computer file]. 8th Edition. Colchester, Essex: UK Data Archive [distributor], December 2012. SN: 5350, <http://dx.doi.org/10.5255/UKDA-SN-5350-3>

University of London³, UCL Institute of Education, Centre for Longitudinal Studies, *Millennium Cohort Study: Third Survey, 2006* [computer file]. 6th Edition. Colchester, Essex: UK Data Archive

[distributor], December 2012. SN: 5795, <http://dx.doi.org/10.5255/UKDA-SN-5795-3>

University of London⁴, UCL Institute of Education, Centre for Longitudinal Studies, *Millennium Cohort Study: Fourth Survey, 2008*

[computer file]. 4th Edition. Colchester, Essex: UK Data Archive

[distributor], December 2012. SN: 6411, <http://dx.doi.org/10.5255/UKDA-SN-6411-3>

University of London⁵, UCL Institute of Education, Centre for

Longitudinal Studies, *Millennium Cohort Study: Fifth Survey, 2012* [computer

file]. Colchester, Essex: UK Data Archive [distributor], February 2014. SN:

7464, <http://dx.doi.org/10.5255/UKDA-SN-7464-1>

Violato, M., Petrou, S., Gray, R., & Redshaw, M. (2011). 'Family Income and Child Cognitive and Behavioural Development in the United Kingdom: Does Money Matter?' *Health Economics*, 20(10), 1201-1225.

Votruba-Drzal, E. (2003) 'Income Changes and Cognitive Stimulation in Young Children's Home Learning Environments', *Journal of Marriage & Family*, 65, pp. 341-55.

Wachs, T. D., & Camli, O. (1991). Do ecological or individual characteristics mediate the influence of the physical environment upon maternal behavior? *Journal of Environmental Psychology*, 11(3), 249-264.

Waldfogel, J. (2006) *What Children Need*, Cambridge Massachusetts: Harvard University Press

Washbrook, E. (2010). *Early Environments and Child Outcomes: An Analysis* Commission for the Independent Review on Poverty and Life Chances, University of Bristol.

Welfare Reform and Work Act 2016 available at

<http://www.legislation.gov.uk/ukpga/2016/7/contents/enacted/data.htm>

accessed on 15/6/2016

Whelan, C. T., Layte, R., & Maitre, B. (2003). Persistent income poverty and deprivation in the European Union: an analysis of the first three waves of the European Community Household Panel. *Journal of Social Policy*, 32(01), 1-18.

Whelan, C. T., Layte, R., & Maître, B. (2004). Understanding the mismatch between income poverty and deprivation: a dynamic comparative analysis. *European Sociological Review*, 287-302.

Wickham, S., Whitehead, M., Taylor-Robinson, D., & Barr, B. (2017). The effect of a transition into poverty on child and maternal mental health: a longitudinal analysis of the UK Millennium Cohort Study. *The Lancet Public Health*, 2(3), e141-e148.

Willems, M. (2006) *Measuring Child Poverty using Material Deprivation: Possible Approaches*, Department for Work and Pensions, Working paper no 28

Wrapson, W., Mewse, A., & Lea, S. (2008). 'The Psychology of Poverty', In J. Strelitz & R. Lister (Eds.), *Why Money Matters: Family Income, Poverty and Children's Lives*. London: Save the Children.

Yeung, W. J., Linver, M. R., & Brooks-Gunn, J. (2002). 'How Money Matters for Young Children's Development: Parental Investment and Family Processes', *Child Development*, 73(6), 1861-1879.

Zubrick, S. R., Lucas, N., Westrupp, E. M., and Nicholson, J. M. (2014) *Parenting Measures in the Longitudinal Study of Australian Children: Construct Validity and Measurement Quality, Waves 1 to 4*, Canberra: Department of Social Sciences

**The London School of Economics and
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**Poverty and Parenting in the UK
Appendices**

Kerris Cooper

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Appendix 1

Table showing UK quantitative evidence for the relationship between hardship and parenting

Datasets: ALSPAC = Avon Longitudinal Study of Parents and Children MCS = Millennium Cohort Study NCDS = National Child Development Study

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
Burgess et al (2006)	ALSPAC	<p>Parenting measures (created dummy variables from): Reading to child; teaching child; talking to child whilst occupied; how often child watches TV; breastfed baby; smoked in pregnancy; maternal bonding; discipline.</p> <p>Home environment measured as: outings to places; number of</p>	<p>Income – average of net household income at 33 and 47 months and whether reported financial difficulties pre-birth.</p>	<p>How child outcomes at age 5 and age 7 are influenced by measures of family background and proximal, mediating, factors such as parenting behaviours and childcare arrangements.</p>	<ul style="list-style-type: none"> - At age 5 finds parental education stronger association with children's outcomes than income - Parenting is important but doesn't explain much of the gap between children from low and high income families - (Family investment model) find home environment in terms of books and toys make large difference to early learning gaps and strongly related to income - Parenting patterns are more important in driving the 	<p>Only able to describe association – does not make use of longitudinal data.</p> <p>Does not explore mechanisms between SES and parenting.</p>

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
		books child has throughout preschool; number and range of toys; crowding index; damp/condensation/mould.		(Take ecological development approach)	differences in behavioural outcomes between the most and least affluent children, than they are for early educational attainment.	
Gutman and Feinstein (2007)	ALSPAC	Parenting measures: mother-child interactions (cuddles, read books to child); Outside activities (going to the shops or park); home environment (stimulation toys/objects in the home as well mother teaching activities) – used standardised HOME measure.	Income – cross-sectional measure from first wave	How parenting behaviours and their influence on child outcomes change over time. Also examines moderating effects of socioeconomic characteristics .	Found positive effect of stimulating home environment on outcomes constant across socioeconomic variables, suggesting parenting may have a protective effect against negative association between income and parental education, and child outcomes. But mother-child interaction had important differences across socioeconomic groups. Found maternal education most significant moderator. Find different aspects of parenting affect different	Associations only; does not explore mechanisms between income/education and parenting.

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
					child outcomes and some effects immediate whilst others manifest over time.	
Sacker et al (2002)	NCDS	<p>Parental involvement - mother's/father's interest in child's education reported by head teacher; whether parents talk with teacher; time spent with child.</p> <p>Parental aspirations: hopes for school leaving age; hopes for further education and hopes for first job</p> <p>Both observed at age 7, 11 and 15</p>	<p>Material deprivation measured as latent variable based on overcrowding, use of facilities, housing tenure and whether claiming benefits. (All observed at age 7, 11 and 15.)</p> <p>Looks at social class rather than money, accepting this</p>	<p>Look at 'class inequalities model' and 'contextual systems model' – pathways from family social class to children's education and psychosocial adjustment. Look at parental involvement as well as material deprivation, school composition</p>	<p>Find parental involvement becomes less important and social contexts beyond the family become more important.</p> <p>Parents interest in education greater at 11 than 7 or 16 and aspirations less idealistic at 16. Strength of social class influence on education increased over time, but on psychosocial development decreased over time p869</p> <p>At age 7 the 'strongest positive proximal influence' on children's resources was parental involvement, equally strongly related to both</p>	<p>Associations only – three cross-sectional structural equation models.</p> <p>Do not look at mechanisms between material deprivation and parenting.</p> <p>Also authors acknowledge constrained by data gathered up to 40 years ago.</p>

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
			is mediated by material resources available, using Bronfenbrenne r's theoretical framework.	and aspirations.	<p>educational achievement and psychosocial adjustment p870</p> <p>Parental involvement still most important factor for education and psychosocial adjustment at age 11 but almost equalled by negative effect of material deprivation. Age 16 parental involvement still significant but reduced effect as material deprivation and school composition became more important- material deprivation effect was twice that of parental involvement at this age and significantly undermined the positive effects of parental involvement. P971</p> <p>Parenting 'overwhelming' differentiating factor at age 7 but affected by social class both directly (norms/values)</p>	

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
					and indirectly (material deprivation) p873	
Ermisch (2008)	MCS - first three waves	<p>Educational activities (if read to, plus all other educational measures grouped, plus if take to library)</p> <p>Parenting style (six questions about rules, routine, television, meals together).</p>	Income at 9 months (in bands)	<p>Show that differences by income group emerge by 3rd birthday and that 'an important part of these differences can be accounted for by 'what parents do' in terms of educational activities and parenting style</p>	<p>Find at age three and five cognitive development and behavioural problems associated with family income, and these differences are throughout the income range, not just for the bottom group.</p> <p>Educational activities and more structured parenting associated with higher income. Find reading more positively affects cognitive development and behaviour up to child's third birthday and other educational activities also have significant positive effects, particularly for school readiness and behaviour. Parenting style has a larger impact on</p>	<p>Cross-sectional associations only.</p> <p>Does not explore processes between hardship and parenting.</p> <p>Author acknowledges may be other parenting behaviours not included that are important.</p>

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
					<p>relationships with peers than on cognitive development. Foetal growth mainly influences cognitive development.</p> <p>**Further analysis (don't understand method – compares different parameters to check if differences in parenting style account for income differences in children's outcomes?) Authors conclude depending on whether take higher or lower estimates parenting behaviours viewed as either minor or major contributor to socioeconomic differences in outcomes at age 3. Even if take lower estimates parenting behaviours shown to be important to income differences in outcomes. Furthermore there are likely</p>	

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
					<p>to be parenting inputs not included in the data that may also vary with income.</p> <p>Concludes that early cognitive and behavioural development is important for future outcomes as adult, and better parenting in terms of educational activities and more structured parenting style therefore contributes to the child's 'lifetime economic success'</p>	
Kiernan and Huerta (2008)	MCS – first 2 waves	All measured at age 3: Reading activities - (how often mother reads to child; whether another family member reads to child; whether a family member takes child to a library)	Economic deprivation – measured as combination of income poverty, financial difficulties and housing tenure at 9 months.	Examine the extent to which economic circumstances in infancy and mother's mental well-being are associated with	Maternal depression associated with behavioural problems but not cognitive development. Economic deprivation associated with increased risk of maternal depression which partly mediates relationship between economic deprivation and behavioural problems (30% of total effect	Contributions include using multiple parenting measures and exploring links between hardship and parenting (maternal depression). However use first 2 waves only. Cross sectional measures

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
		<p>Mother-child relations – (used positive dimension of Pianta scale)</p> <p>Disciplinary practices – (smacking and shouting)</p>		<p>children’s cognitive development and internalizing and externalizing behaviours at age 3 years and what part parenting plays in mediating these factors.’ Also examine whether pathways differ for lone mother families.</p> <p>N.B. references family stress model and</p>	<p>of economic deprivation on externalizing and 37% on internalizing problems). Find parenting explains over half of total effect of economic deprivation on cognitive development and around 40% of effect of economic deprivation on behaviour problems. Therefore part of effect of economic deprivation takes place through parenting practices but also other mechanisms, not specified in the model. Parenting also partly accounts for effect of maternal depression on behavioural problems (around 60% of total effect on externalizing problems).</p> <p>Relationship between economic deprivation and parenting practices varies</p>	<p>used – authors emphasise not to be interpreted causally and paths could run in opposite direction (e.g. effect of child temperament). Also authors acknowledge may be other factors in between hardship and parenting such as relationship conflict and social support.</p> <p>Interpretation and measurement of investment model pathways is limited to reading activities, which would be considered parenting outcome rather than mediator to parenting.</p>

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
				investment model in introduction	<p>depending on the parenting construct – moderate association with reading activities, smaller but significant association with positive parent-child relationship and no association with whether uses harsh discipline practices. Depression affected all three parenting behaviours.</p> <p>Find similar paths in both two-parent and lone-mother families (although slightly stronger association between maternal depression and parenting practices in lone parent families and stronger relationship between parenting practices and child outcomes). Authors conclude findings support FSM and Investment</p>	

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
					model (importance of deprivation for reading and in turn for cog development). Because direct path from economic development slightly weaker suggest may be as important to focus on intervening mechanisms as raising benefit levels for instance. Suggest further research required to identify other mediators such as social support or relationship conflict.	
Evans et al (2009)	MCS first three waves (and US sample of 80 children)	(UK measures) Maternal responsiveness measured as 4 items from the observational HOME inventory	(UK measures) Crowding measured as ratio of number of people in the household to number of rooms.	In both US and UK sample control for other factors including income to test if maternal responsiveness is a mediator	When include responsiveness in both samples find this explains part of the link between crowding and children's cognitive development. Magnitude of mediation stronger in US (reduction of effect of crowding on child	Cross-sectional association only. Very basic and not very detailed analysis. Do not explore link between crowding and maternal responsiveness. Only measures one type of parenting behaviour-

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
				between crowding and children's cognitive development	outcomes of 14%) compared to UK (reduction of 6%).	authors acknowledge crowding may be important for other parenting behaviours.
Kiernan and Mensah (2011)	MCS – first three waves	Use variety of parenting measures to create parenting index (including interviewer observations of parent-child interaction at three year wave).	Poverty measured as equivalised income below 60% of median. Family resources – composite index of socioeconomic resources and demographics : income poverty, maternal education, family employment,	Look at duration of poverty – episodic or persistent poverty – and lack of other family resources on child school achievement. Main aim is to assess extent to which positive parenting mediates the effects of poverty.	Find poverty matters but persistent poverty even more detrimental to child outcomes. Positive parenting lower in families in poverty and in families with lower resources. But also children in poor or low resources families who experienced positive parenting were more likely to be doing well in school. Also found poverty was associated with every parenting measure – suggesting impact of economic disadvantage is 'not specific to any particular	Measures more than just income poverty but different dimensions of hardship combined in one score. Similarly not possible to make use of range of parenting measures as all combined in one score. Use longitudinal poverty measure – and includes movements in/out of poverty but outcome measures are cross-sectional. Also authors highlight a substantial

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
			housing tenure, quality of area, family structure etc		<p>parenting behaviour, but may impact negatively across many different aspects of parenting.'p328</p> <p>Find half of the effect of poverty on children's achievement may be explained by parenting and around 40% of the effect of family resources on children's achievement may be explained by parenting.</p> <p>Effects similar across different poverty categories and family resource quintiles. p327</p> <p>Gaps: Does not include mechanisms between resources and parenting- gap highlighted by authors themselves. Cross-sectional outcome measure only. Uses 3 waves of MCs but not most recent. Use index score of parenting – doesn't show</p>	<p>part of the relationship between resources and child outcomes remains to be explained. Also highlight findings not causal and part of relationship with parenting could be explained by other factor such as parental mental wellbeing and social support.</p> <p>Does not explore link between hardship and parenting: 'However we have not thrown light on the mechanisms and processes by which poverty and disadvantage hinder positive parenting, which would aid our</p>

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
					separate aspects. Broad measure of family resources includes characteristics usually used as controls and makes it impossible to separate effect of financial resources from other family factors such as number of children, maternal education etc (although able to measure distinct association of each factors but not detailed). Also measure of actual financial resources limited to poverty status.	understanding of why some children fare less well...is it lack of income or capabilities that reduces the chances of some parents engaging in cognitively enhancing activities or does poverty lead to family stresses that inhibit positive parenting or are both working together?'
Kelly et al (2011)	MCS – first three waves	Measured 3 domains of home environment: 1) Home learning environment (<u>parental basic skills difficulties at 9 months</u> , frequency of learning activities at age 3 and 5	Income measured in 5 bands	3 aims of the research: 1) to examine extent of socioeconomic inequality in early child health and development at 3 and 5	Main findings of interest: When adjust for demographic, home learning, family routine and psychosocial environment the income gradient is reduced by 50% for socio-emotional difficulties and between 27-49% for cognitive test score gaps.	Cross-sectional associations only. Authors suggest longitudinal analysis also to reveal direction of causality. Does not look at mechanisms between income and parenting. Parenting measures actually

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
		<p>2) Family routines (whether child had regular bed times and meal times at age 3 and 5 3) Psychosocial home environment (at age 3 = maternal psychological distress, parent-child relationship and discipline strategies and observation of parent-child interaction, whether mother felt she was a competent parent and whether had lots of rules and rules were enforced. At age 5 used similar measures except for observational measure)</p>		<p>years. 2) To examine whether the income gap widens between these ages. 3) To assess contribution of the home learning environment, family routines and psychosocial home environment to inequalities in early child health and development</p>		<p>include non-parenting factors such as low skill of parent during infancy. Also maternal psychological distress measured as part of parenting behaviours rather than separate mechanism. Conceptually not very clear and not linked to investment or stress pathways.</p>

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
Violato et al (2011)	MCS - first three waves	<p>Child-parent interaction – measured at waves 1 and 2</p> <p>Parenting practices/views in relation to discipline- measured at waves 2 and 3.</p> <p>In analysis measures are grouped together under ‘parental stress’, along with measure of parental depression using Malaise Inventory score.</p>	<p>Income – equivalised and in 2 forms: lagged measure of transitory income and a measure of permanent income.</p>	<p>Investigates association between family income and children’s cognitive and behavioural outcomes, as well as three groups of mediating factors: parental stress, parental investment and other family-related pathways.</p> <p>N.B. Refers to Family Stress Model and Investment Model</p>	<p>In cross-sectional regressions found that once three mediating factors are included the association between income and children’s behavioural outcomes reduce by 28, 32 and 15% for ‘parental stress’, ‘parental investment’ and ‘other family related factors’, with investment factors having the biggest effect. When included all together they reduced the income effect by 47%.</p> <p>The mediators explained less of the link between income and cognitive outcomes – 14% for ‘other family related pathways’ and ‘parental stress’ and 12 % for ‘investment’ mediators. When all were included together</p>	<p>Aside from Kiernan and Huerta (2008) this is the only other study to explore mechanisms between hardship and parenting. However it is less detailed in that it assesses the impact of mechanisms by including them as controls.</p> <p>Also as with most studies focuses on income only and does not look at full range of parenting behaviours.</p>

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
					<p>they reduced the income coefficient by 23%.</p> <p>Includes analysis of importance of individual parenting measures for different outcomes at different ages.</p> <p>These findings are consistent with the fixed effect analysis although this found income was not significant for children's outcomes. Authors warn that longitudinal element of the data is very limited and variability of key variables scarce and therefore might lack precision in parameter estimates.</p>	
Dickerson and Popli (2012)	MCS – first four waves	Parental investment – how often child read to/draws or paints at home/ taken to library/ helped	Poverty and persistent poverty	Focus is on impact of persistent poverty on cognitive	Both income and parenting have separate effects on children's outcomes but 'Indirect effect of low income on cognitive development	Doesn't look at mechanisms between hardship and parenting.

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
		<p>with reading or writing/ helped with maths.</p> <p>Parenting style – Whether child has regular bedtime/ how much TV child watches/ whether parents smack or shout at the child when naughty. Also Pianta scale which captures mother-child relationship.</p> <p>Also measure mother’s psychological distress using Kessler scale.</p>		<p>development. Separates out impact of income and parenting (as investment or parenting style) – to examine relative importance of both (having discussed in intro the shift in attention from income to parenting and background e.g. in Field review). Interested in whether income still makes a</p>	<p>through its impact on parenting investment is very important.’</p> <p>Effect of poverty on cognitive outcomes remains when parenting included – authors conclude that income poverty remains important for children’s outcomes ‘and cannot be mitigated completely by the better provision of parenting support services’.</p>	<p>Parenting measures combined so cannot see separate effects.</p> <p>Only measure income poverty.</p>

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
				difference, even once controls such as parental investment are included.		
Holmes and Kiernan (2013)	MCS – first three waves	Measure parenting behaviours, attitudes, family experiences and maternal attributes, organised into four groupings: 1) promotion of reading and learning 2) parent-child relations 3) family organisation 4) negative discipline	Persistent poverty: Used the banded income data measuring poverty as 60% of the median UK income and persistent poverty as being poor in all three waves. Episodic poverty as experiencing	Developmental contexts and outcomes of persistently poor children and to establish contexts that may promote resilience	Not much difference in parenting behaviours between episodically poor and persistently poor mothers, apart from on observational measure where persistently poor mothers less likely to show all six types of positive interaction. Also persistently poor more likely to have irregular bedtimes and mealtimes than episodic poor. Across all parenting measures persistently poor children had less favourable parenting experiences than never poor. Most of the factors reduced effect of poverty on children's	Contributes multiple parenting measures and distinguishes between episodic and persistent poverty (although due to crude income measure may over-estimate or under-estimate). But cross-sectional only. Does not look at factors between poverty and parenting. Also focuses on resilience factors – rare behaviours for parents

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
			poverty in one or two waves		outcomes but similar for both episodic and persistent poverty – suggesting processes by which poverty affects children’s outcomes not strongly related to duration of poverty. Socio-demographic factors had biggest impact as well as maternal depression and lack of self efficacy. Parenting attitudes/behaviours also important – all had some effect but biggest effect from quality of parent-child relations. The effect of persistent poverty on cog and behavioural outcomes was reduced by around 40% where parent-child relations were similar to those of never poor parents and the effect was much greater for persistent poverty than episodic poverty. Authors	in poverty that have positive effect – so parenting not conceptualised as a mechanism and impact of poverty on parenting not acknowledged in this analysis. i.e. policy recommendations focus on improving parenting behaviours.

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
					<p>suggest that as warmth and conflict do not differ greatly between episodic and persistently poor, it may be that poor parent-child relations is particularly detrimental when poverty persists over several years.</p> <p>Taking into account all the measures reduced the effects of persistent poverty by two thirds for both outcomes.</p> <p>Also parenting behaviours remain important even after socio-demographic characteristics are controlled for. Behaviours during pregnancy and infancy e.g. smoking and breast feeding have much bigger impact on behavioural outcomes.</p> <p>Three important resilience factors for cog outcomes: reading to child several times a week or more (2 or 3 times</p>	

Study	Data	Parenting measures	Hardship measures	Focus	Relevant findings/contributions	Gaps/ limitations
					<p>as likely to have positive cognitive outcomes), positive interactions between mother and child and mothers who felt they had control over their lives. For behavioural outcomes resilience factors found in mothers lacking any experience of depression, and where little evidence of conflict between parent and child – in both cases four times less likely to show behavioural problems at age 5. Also reading, regular bedtimes and meal times, not continuing to smoke during pregnancy and breastfeeding. Authors conclude broadly speaking this suggests different resiliency factors for cog and behavioural outcomes.</p>	

Appendix 2 Table summarising studies that test the association between parenting and children's outcomes

Authors	Data	Child outcomes measured	Which parenting behaviours are important?
Burgess et al 2006	ALSPAC	Cognitive outcomes Behavioural outcomes	Mother's teaching score; Parental reading; Number of books; Number of toys; Hours of TV; Trips to department stores; Trips to library; Breastfeeding; Maternal bonding; Types of discipline; Mother talking to child whilst doing housework; Outings; Housing: damp condensation or mould
Gutman and Feinstein, 2010	ALSPAC	Social development Fine motor development Gross motor development	Outside activities Mother-child interactions (lagged associations)
Sacker et al 2002	NCDS	Educational achievement Psychosocial adjustment	Parental involvement (although becomes less important as other factors are more influential as child gets older).
Washbrook (2010)	ALSPAC and MCS	Cognitive development: BAS cognitive Z score (three assessments: Naming Vocabulary scale, Picture similarities scale and Pattern construction scale) Behavioural/ socio-emotional outcomes: Use strengths and	N.B different parenting behaviours important for different outcomes Home learning environment (particularly for cognitive outcomes) Parental sensitivity (particularly for children's social-emotional outcomes) Health behaviours (particularly for health outcomes)

Authors	Data	Child outcomes measured	Which parenting behaviours are important?
		<p>difficulties questionnaire which has 4 scales for: hyperactivity/inattention, conduct problems, emotional problems, and peer problems.</p> <p>Health outcomes: General health (poor – to excellent) reported by mother. BMI.</p>	Authoritative parenting
Ermisch (2008)	MCS	<p>Cognitive outcomes (the British Ability Scales Naming Vocabulary Scale and the Bracken School Readiness Assessment)</p> <p>Behavioural outcomes (Strengths and Difficulties Questionnaire)</p> <p>N.B also measure parent-child relationship as a child outcome (using Pianta scale).</p>	<p>N.B different parenting behaviours important for different outcomes</p> <p>Educational activities</p> <p>Parenting style</p>
Hartas (a) (2011)	MCS	Foundation Stage Profile measures - teacher-ratings of child social and	<p>Reading</p> <p>Help with reading homework</p>

Authors	Data	Child outcomes measured	Which parenting behaviours are important?
		<p>academic progress based on continued observation during first year in primary school:</p> <ul style="list-style-type: none"> - Personal emotional and social development - Communication, language and literacy 	(other home learning activities not significant)
Hartas (b) (2011)	MCS	<p>Behaviour – measured using Strengths and Difficulties Questionnaire which has 5 scales (emotional symptoms, conduct problems, hyperactivity, peer problems, and pro-social), reported by parent and measured by teacher-rated Personal, Social and Emotional development (PSE).</p> <p>N.B. Also measure Cognitive development and Language measures</p>	<p>Parent-child relationship</p> <p>Parenting sensitivity</p> <p>Home learning environment</p>

Authors	Data	Child outcomes measured	Which parenting behaviours are important?
		but these were included in the analysis as child characteristics not outcomes.	
Sylva et al 2004 EPPE study	EPPE study data	Cognitive development Social/behavioural development	Home learning environment
Melhuish et al (2008 a)	EPPE data	Cognitive development (British Ability Scales II and literacy and numeracy scores)	Home learning environment
Kelly et al. 2011	MCS	Socio-emotional difficulties (strengths and difficulties questionnaire) Cognitive development (British Ability Scale and Bracken School Readiness Assessment)	Home learning environment Family routine Psychosocial home environment
Kelly, Kelly and Sacker (November 2013)	MCS (age 3, 5, 7)	Behavioural difficulties based on Strengths and Difficulties Questionnaire reported by completed by mothers at age 3 and 5 and teachers at age 7.	Regular bedtimes

Authors	Data	Child outcomes measured	Which parenting behaviours are important?
Jones, Gutman and Platt (2013)	MCS analysis of risk factors, promotive and protective factors for outcomes at age 7 (Also ALSPAC analysis of stressors on outcomes age 13-14 and 16)	Non-verbal cognitive skills Verbal cognitive skills Maths skills Key Stage 1 (KS1) attainment Behaviour	All important for outcomes at age 7: Hours of TV; Frequency of being disciplined; Mother feels she is a good parent; Mother reads to child more often; Father reads to child more often; Mother feels close to child; Rules are strictly enforced; Parents have contact with the child's school; Child sees friends more often outside of school
Ermisch et al in McFall and Garrington (eds) 2011	Understanding Society data	Child self-reported happiness with family	All important for child-reported happiness with family: Arguing with parents Discussing important matters with parents Eating evening meal with family

Authors	Data	Child outcomes measured	Which parenting behaviours are important?
Hobcraft and Kiernan (2010)	MCS age 9 months, 3 and 5 years	<p>Children’s developmental stage – for age 5 measured by Foundation Stage Profile (FSP) assessments by teachers.</p> <p>For age 3 measured as Bracken Basic Concepts Scale.</p> <p>Behaviour – measured by Strengths and Difficulties questionnaire by mothers for age 3 and 5.</p> <p>Health – measured by overall health status as reported by mother at age 5.</p> <p>Whether child has a longstanding disability or illness at age 3.</p>	<p>N.B. different factors are associated with different outcomes.</p> <p>Parent-child relationship (Pianta conflict, Pianta warmth and positive or negative observations of mother-child interactions)</p> <p>Shouting at the child</p> <p>Irregular mealtimes</p> <p>Irregular bedtimes</p> <p>Reading to child daily</p>
Gutman et al 2010	Analysis of risk and resilience for changes in wellbeing using ALSPAC	<p>Emotional wellbeing (e.g. fears, anxiety, mood)</p> <p>Behavioural wellbeing (e.g. engagement in troublesome or antisocial activities).</p>	Parent-child relationship (Closeness)

Authors	Data	Child outcomes measured	Which parenting behaviours are important?
	At ages 7, 10 and 13.	<p>Social wellbeing (e.g. friends, social interactions, social competence)</p> <p>Subjective school wellbeing (e.g. enjoyment of school). All composite measures based on factor analysis.</p> <p>Measured at ages 7, 10 and 13.</p>	

Appendix 3 Variables in MCS wave 3 with item non-response

1) Descriptive statistics comparing those with missing data (5%+) on key variables with those non-missing

Variables used in chapter 5

Table 1 Table showing number missing for each variable used in the analysis in MCS wave 3

Variable	percent missing	number missing
income quintile	1%	98
mother's education	0%	21
ethnic group	0%	4
mother's work status	1%	199
physical needs	1%	97
closeness	6%	825
authoritative discipline	8%	1,190
harsh/ permissive discipline	8%	1,149
routine	0%	64
trips out	0%	60
play activities	1%	78
educational activities	2%	247
TV hours	0%	70
Total sample	14595	

Three of the parenting measures have a high (more than 5% of the sample) number of missing data. These are all quite sensitive/potentially controversial parenting measures:

- how close the mother feels to the child
- frequency of authoritative discipline
- frequency of harsh or permissive discipline

Analysis of individual parenting measures that make up these two discipline indices were analysed separately to investigate whether it was non-response to a discipline measure in particular that was responsible for the 8% missing from the indices measures. As can be seen from Table 2 there is not a clear pattern with one particular discipline measure being

responsible for the overall proportion missing. The non-response is for all of the discipline measures rather than one in particular (such as smacking).

Table 2 Number missing for each individual discipline variable used in the analysis in MCS wave 3

Individual parenting measures	percent missing	number missing
Reason with	6%	912
Send to bedroom	6%	846
Take away treats	6%	900
Tell off	6%	863
Ensure obeys	6%	945
Smack	6%	878
Shout at	6%	856
Bribe	6%	869
Ignore	7%	974
Total sample	14595	

Possible reasons for not responding to these questions is because they are sensitive questions that parents may be wary of giving a socially desirable response to. It may be uncomfortable to answer these questions, for example if they do not feel particularly close to their child they might want to not answer this question altogether, rather than answer in acknowledgement of how close they feel to their child, or answer falsely.

As can be seen from the tables below, mothers who had missing data for these variables were more likely to be in the lowest income quintile, were very over-represented in the group with no qualifications or overseas qualifications, were more likely to be from a non-white ethnic group, and had a much greater proportion not working. There was not so much difference in terms of age of the mother. Overall then those with missing data on these three parenting measures are more disadvantaged than the overall sample. Given the research questions relate to hardship and parenting it is problematic that those with item non-response for these

measures are more disadvantaged than the sample as a whole. Findings related to these three measures ought to be taken with caution.

Table 3 Table comparing income of respondents in the full sample and respondents with missing data on key variables in MCS wave 3

Income quintile	full sample	missing closeness	missing authoritative	missing harsh/permissive
lowest	20%	53%	43%	46%
2nd	20%	28%	28%	28%
3rd	20%	9%	14%	12%
4th	20%	6%	9%	10%
highest	20%	4%	6%	4%
Total	100%	100%	100%	100%

Table 4 Table comparing education of respondents in the full sample and respondents with missing data on key variables in MCS wave 3

Mother's education	full sample	missing closeness	missing authoritative	missing harsh/permissive
none of these or overseas qualifications	14%	65%	50%	52%
NVQ level 1	8%	7%	9%	7%
NVQ level 2	29%	11%	20%	19%
NVQ level 3	14%	7%	8%	8%
NVQ level 4	30%	9%	12%	13%
NVQ level 5	5%	2%	2%	1%
Total	100%	100%	100%	100%

Table 5 Table comparing ethnicity of respondents in the full sample and respondents with missing data on key variables in MCS wave 3

Mother's ethnic group	full sample	missing closeness	missing authoritative	missing harsh/ permissive
White	89%	36%	51%	50%
Mixed	1%	2%	2%	2%
Indian	2%	5%	4%	5%
Pakistani	3%	23%	17%	17%
Bangladeshi	1%	10%	7%	7%
Black Caribbean	1%	3%	3%	2%
Black African	2%	12%	9%	9%
Other Ethnic group incl Chinese	2%	9%	7%	7%
Total	100%	100%	100%	100%

Table 6 Table comparing work status of respondents in the full sample and respondents with missing data on key variables in MCS wave 3

Mother's work status	full sample	missing closeness	missing authoritative	missing harsh/ permissive
not working	42%	83%	72%	74%
working part-time	45%	11%	21%	18%
working full-time	13%	6%	8%	8%
Total	100%	100%	100%	100%

Table 7 Table comparing age of respondents in the full sample and respondents with missing data on key variables in MCS wave 3

Mother's age	full sample	missing closeness	missing authoritative	missing harsh/ permissive
18 to 24	7%	6%	8%	9%
25 to 34	44%	50%	48%	51%
35 to 44	46%	39%	40%	36%
45 plus	3%	4%	4%	3%
Total	100%	100%	100%	100%

Variables used in chapter 6

Table 8 Table showing number missing for each variable used in the analysis in MCS wave 3

Variable	percent missing	number missing
persistent poverty waves 1-3	14%	2,046
debt	1%	102
deprivation	1%	82
feeling poor	1%	82
crowded accommodation	1%	79
damp housing	1%	82
mother negative neighbourhood perceptions	1%	95
interviewer neighbourhood observation	7%	1,021
Lowest decile for Index of Multiple Deprivation (England only)	36%	5,323
Total sample	14595	

Note: This table includes additional variables used in chapter 6 that have not been discussed already in relation to chapter 5.

Unsurprisingly the largest proportion missing are for the IMD variable – this is because the IMD restricts the sample to England only so in this case is not actually a problem of missing data. The highest proportion actually missing is for the persistent poverty variable; this is because this measure restricts the sample to mothers who are included in waves 1, 2 and 3 of the MCS. The other variable with a large proportion missing is the neighbourhood observation by the interviewer. This measure was restricted to people who did not move house between waves 2 and 3, which accounts for some of these missing values.

In terms of checking the impact of those with missing values on the analyses results, I have re-run analyses with the most restrictive sample to check if there is a difference in findings given the number missing for persistent poverty measure, area observations and Index of Multiple Deprivation which is for England only. This robustness check is discussed in chapter 6 of the main text and detailed in Appendix 17.

Variables used in chapter 7

For the SEM analysis of mechanisms all of the mechanisms in both the full and relationship sample have a high proportion missing or not answered (refusal to answer, don't know or 'not applicable'). Again this is likely to be due to the sensitive nature of the questions which relate to mother's mental health and happiness, as well as sensitive questions about their relationship. Perhaps mothers were more likely to not answer these questions if their answers were negative – this has implications for the analysis findings as this would bias the results. Because these questions were answered using self-completion, language barriers may also explain some of the missing responses.

1) Whole sample analysis

Table 9 Table showing additional variables from MCS wave 3, used in chapter 7 analyses, with 5%+ missing

Variable	percent missing	Total missing
Kessler scale	6%	809
Life satisfaction	7%	965
Total sample	14595	

Table 10 Comparing language spoken at home for respondents with missing data on key variables, from MCS wave 3 used in chapter 7 analyses

language spoken at home	full sample	Kessler missing	Life satisfaction missing
Yes - English only	91%	41%	65%
Yes - mostly English-sometimes other	3%	10%	7%
Yes - about half English and half other	3%	19%	19%
No - mostly other, sometimeS English	2%	28%	7%
No - other language(s) only	0%	3%	1%
Total	100%	100%	100%

Table 11 Comparing income for respondents with missing data on key variables, from MCS wave 3 used in chapter 7 analyses

Income quintile	full sample	Kessler missing	Life satisfaction missing
lowest	20%	53%	53%
2nd	20%	29%	20%
3rd	20%	9%	17%
4th	20%	5%	6%
highest	20%	3%	4%
Total	100%	100%	100%

Table 12 Comparing mother's education status for respondents with missing data on key variables, from MCS wave 3 used in chapter 7 analyses

Mother's education	full sample	Kessler missing	Life satisfaction missing
none of these or overseas qualifications	14%	66%	41%
NVQ level 1	8%	6%	16%
NVQ level 2	29%	12%	23%
NVQ level 3	14%	7%	11%
NVQ level 4	30%	8%	7%
NVQ level 5	5%	1%	2%
Total	100%	100%	100%

Table 13 Comparing mother's ethnicity for respondents with missing data on key variables, from MCS wave 3 used in chapter 7 analyses

Mother's ethnic group	full sample	Kessler missing	Life satisfaction missing
White	89%	34%	62%
Mixed	1%	3%	1%
Indian	2%	5%	6%
Pakistani	3%	24%	14%
Bangladeshi	1%	10%	5%
Black Caribbean	1%	3%	1%
Black African	2%	13%	6%
Other Ethnic group incl Chinese	2%	9%	5%
Total	100%	100%	100%

Table 14 Comparing mother's work status for respondents with missing data on key variables, from MCS wave 3 used in chapter 7 analyses

Mother's work status	full sample	Kessler missing	Life satisfaction missing
not working	42%	85%	64%
working part-time	45%	10%	27%
working full-time	13%	6%	8%
Total	100%	100%	100%

Table 15 Comparing mother's age for respondents with missing data on key variables, from MCS wave 3 used in chapter 7 analyses

Mother's age	full sample	Kessler missing	Life satisfaction missing
18 to 24	7%	7%	11%
25 to 34	44%	51%	54%
35 to 44	46%	38%	34%
45 plus	3%	4%	1%
Total	100%	100%	100%

As can be seen from the tables those who did not answer the questions relating to mental distress (Kessler scale) and life satisfaction were on the

whole more disadvantaged than the full sample. This is particularly the case for the Kessler measure; a much greater proportion of those with missing a Kessler measure mostly spoke a non-English language at home, were much more likely to be in the lowest income quintile, to have no qualifications, to be in a non-White ethnic group, and to not be working, compared with the full sample. Again there were less differences by mother's age.

2) Sub-sample of mothers in a relationship

For the subsample of mothers who were in a relationship at wave three, those with missing data on the GRIMS measure of their relationship and their overall relationship satisfaction, were similarly more disadvantaged than the full sample of mothers in a relationship, across the same measures and also across mother's age: those with missing relationship satisfaction are more likely to be in the lowest age category.

Again this is problematic because this research is interested in the relationship between hardship and these measures as potential mechanisms that influence parenting; if item non-response is heavily patterned by disadvantage this could bias the results.

Table 16 Proportion missing for variables used in analyses of the subsample of mothers in a relationship at MCS wave 3

Variable	percent missing	Total missing
GRIMS score	8%	889
Relationship satisfaction	6%	723
Total sample	11685	

Table 17 Comparing language spoken at home for respondents with missing data on key variables, from MCS wave 3 subsample of mothers in a relationship, used in chapter 7 analyses

language spoken at home	full sample	GRIMS missing	Relationship satisfaction missing
Yes - English only	90%	49%	85%
Yes - mostly English-sometimes other	3%	9%	3%
Yes - about half English and half other	3%	16%	6%
No - mostly other, sometimes English	3%	23%	4%
No - other language(s) only	0%	3%	3%
Total	100%	100%	100%

Table 18 Comparing income for respondents with missing data on key variables, from MCS wave 3 subsample of mothers in a relationship, used in chapter 7 analyses

Income quintile	full sample	GRIMS missing	Relationship satisfaction missing
lowest	11%	36%	16%
2nd	18%	32%	30%
3rd	22%	16%	35%
4th	24%	10%	5%
highest	25%	6%	15%
Total	100%	100%	100%

Table 19 Comparing mother's education for respondents with missing data on key variables, from MCS wave 3 subsample of mothers in a relationship, used in chapter 7 analyses

Mother's education	full sample	GRIMS missing	Relationship satisfaction missing
none of these or overseas qualifications	12%	53%	28%
NVQ level 1	7%	7%	5%
NVQ level 2	28%	18%	41%
NVQ level 3	15%	7%	13%
NVQ level 4	33%	12%	6%
NVQ level 5	6%	4%	6%
Total	100%	100%	100%

Table 20 Comparing mother's ethnic group for respondents with missing data on key variables, from MCS wave 3 subsample of mothers in a relationship, used in chapter 7 analyses

Mother's ethnic group	full sample	GRIMS missing	Relationship satisfaction missing
White	89%	45%	62%
Mixed	1%	2%	12%
Indian	2%	6%	7%
Pakistani	3%	22%	4%
Bangladeshi	1%	10%	4%
Black Caribbean	1%	2%	6%
Black African	1%	6%	3%
Other Ethnic group incl Chinese	2%	8%	3%
Total	100%	100%	100%

Table 21 Comparing mother's work status for respondents with missing data on key variables, from MCS wave 3 subsample of mothers in a relationship, used in chapter 7 analyses

Mother's work status	full sample	GRIMS missing	Relationship satisfaction missing
not working	38%	71%	49%
working part-time	49%	21%	37%
working full-time	13%	8%	13%
Total	100%	100%	100%

Table 22 Comparing mother's age for respondents with missing data on key variables, from MCS wave 3 subsample of mothers in a relationship, used in chapter 7 analyses

Mother's age	full sample	GRIMS missing	Relationship satisfaction missing
18 to 24	5%	7%	17%
25 to 34	42%	51%	46%
35 to 44	50%	38%	35%
45 plus	3%	4%	2%
Total	100%	100%	100%

Variables used in chapter 8

Unsurprisingly, it is the same measures that had a high proportion missing at wave three that then have a high proportion missing for the measures of change in these variables between waves 3 and 4; change in Kessler score and life satisfaction (both measures of mechanisms between hardship and parenting), and change in how close the mother feels to the child and the discipline measures, have 5% or more item non-response.

Table 23 Number missing for variables used in chapter 8 measuring changes between MCS waves 3 and 4

Variable	Percent missing	Total missing
change in income quintile	1%	64
change in feeling poor	1%	114
change in debt	1%	143
change in deprivation	1%	107
change in Kessler score	6%	809
change in life satisfaction	8%	1010
mother's education wave 4	0%	1
mother's work status wave 4	2%	236
change in mother's education	0%	14
change in mother's work	0%	59
change in meeting physical needs	1%	129
change in closeness	6%	803
change in authoritative discipline	9%	1141
change in harsh/permissive discipline	11%	1317
change in routine bed times	1%	82
change in trips out	1%	80
change in play activities	1%	110
change in educational activities	2%	256
change in TV/PC hours	1%	98
Total sample		12455

Again respondents with missing information on these measures are more disadvantaged than the full sample, over-represented in the lowest income and education groups, non-White ethnic groups, in particular Pakistani and Black African. Again there is not much difference in terms of the mother's age.

Table 24 Comparing language spoken at home for respondents with missing data on key variables measuring change between MCS wave 3 and 4, used in chapter 8 analyses

language spoken at home (Wave 3)	full sample	missing change Kessler	missing change life satisfaction	missing change closeness	missing change authoritative	missing change harsh
Yes - English only	91%	48%	54%	48%	59%	63%
Yes - mostly English-sometimes other	3%	10%	9%	10%	9%	9%
Yes - about half English and half other	3%	17%	17%	17%	14%	12%
No - mostly other, sometimes English	2%	22%	19%	22%	17%	14%
No - other language(s) only	0%	3%	2%	3%	2%	2%
Total	100%	100%	100%	100%	100%	100%

Table 25 Comparing income for respondents with missing data on key variables measuring change between MCS wave 3 and 4, used in chapter 8 analyses

Income quintile (wave 3)	full sample	missing change Kessler	missing change life satisfaction	missing change closeness	missing change authoritative	missing change harsh
lowest	21%	52%	53%	53%	44%	44%
2nd	20%	26%	25%	25%	25%	25%
3rd	20%	10%	11%	10%	14%	14%
4th	19%	7%	7%	7%	10%	10%
highest	20%	5%	4%	5%	7%	7%
Total	100%	100%	100%	100%	100%	100%

Table 26 Comparing mother's education for respondents with missing data on key variables measuring change between MCS wave 3 and 4, used in chapter 8 analyses

Mother's education (Wave 3)	full sample	missing change Kessler	missing change life satisfaction	missing change closeness	missing change authoritative	missing change harsh
none of these	14%	59%	55%	59%	47%	44%
NVQ level 1	8%	6%	8%	6%	7%	7%
NVQ level 2	29%	14%	16%	13%	21%	22%
NVQ level 3	15%	9%	9%	9%	10%	10%
NVQ level 4	29%	11%	10%	11%	14%	15%
NVQ level 5	5%	2%	2%	2%	2%	2%
Total	100%	100%	100%	100%	100%	100%

Table 27 Comparing mother's ethnic group for respondents with missing data on key variables measuring change between MCS wave 3 and 4, used in chapter 8 analyses

Mother's ethnic group	full sample	missing change Kessler	missing change life satisfaction	missing change closeness	missing change authoritative	missing change harsh
White	89%	40%	47%	41%	52%	57%
Mixed	1%	2%	2%	2%	1%	2%
Indian	2%	6%	6%	6%	6%	5%
Pakistani	3%	20%	18%	20%	16%	14%
Bangladeshi	1%	8%	7%	8%	6%	6%
Black Caribbean	1%	3%	3%	2%	3%	2%
Black African	2%	13%	11%	12%	9%	8%
Other	1%	9%	7%	9%	7%	6%
Total	100%	100%	100%	100%	100%	100%

Table 28 Comparing mother’s work status for respondents with missing data on key variables measuring change between MCS wave 3 and 4, used in chapter 8 analyses

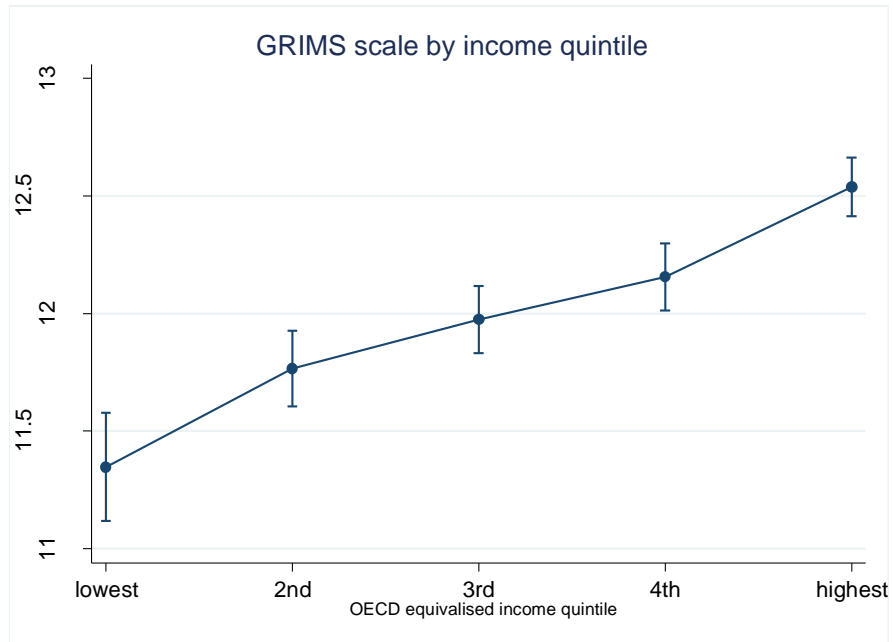
Mother's work status (Wave 3)	full sample	missing change Kessler	missing change life satisfaction	missing change closeness	missing change authoritative	missing change harsh
not working	43%	79%	76%	77%	70%	69%
working part-time	45%	15%	18%	16%	22%	24%
working full-time	12%	6%	6%	6%	8%	7%
Total	100%	100%	100%	100%	100%	100%

Table 29 Comparing mother’s age for respondents with missing data on key variables measuring change between MCS wave 3 and 4, used in chapter 8 analyses

Mother's age *wave 3	full sample	missing change Kessler	missing change life satisfaction	missing change closeness	missing change authoritative	missing change harsh
18 to 24	8%	7%	8%	7%	8%	9%
25 to 34	45%	53%	53%	53%	49%	52%
35 to 44	45%	36%	36%	37%	40%	36%
45 plus	3%	3%	3%	3%	3%	3%
Total	100%	100%	100%	100%	100%	100%

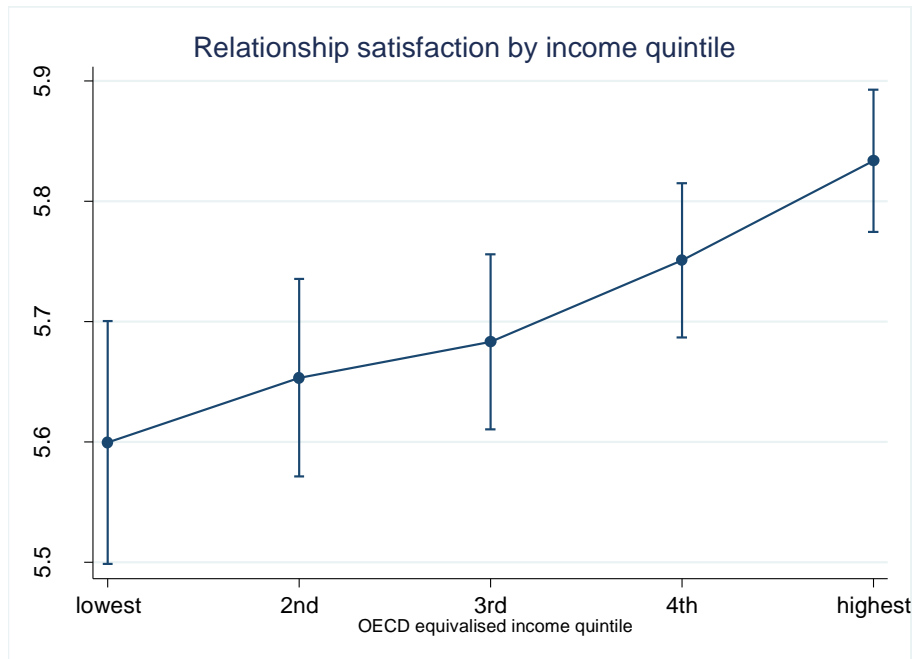
Appendix 4 How does the GRIMS scale and relationship satisfaction vary by income group?

1. GRIMS scale and income MCS wave 3



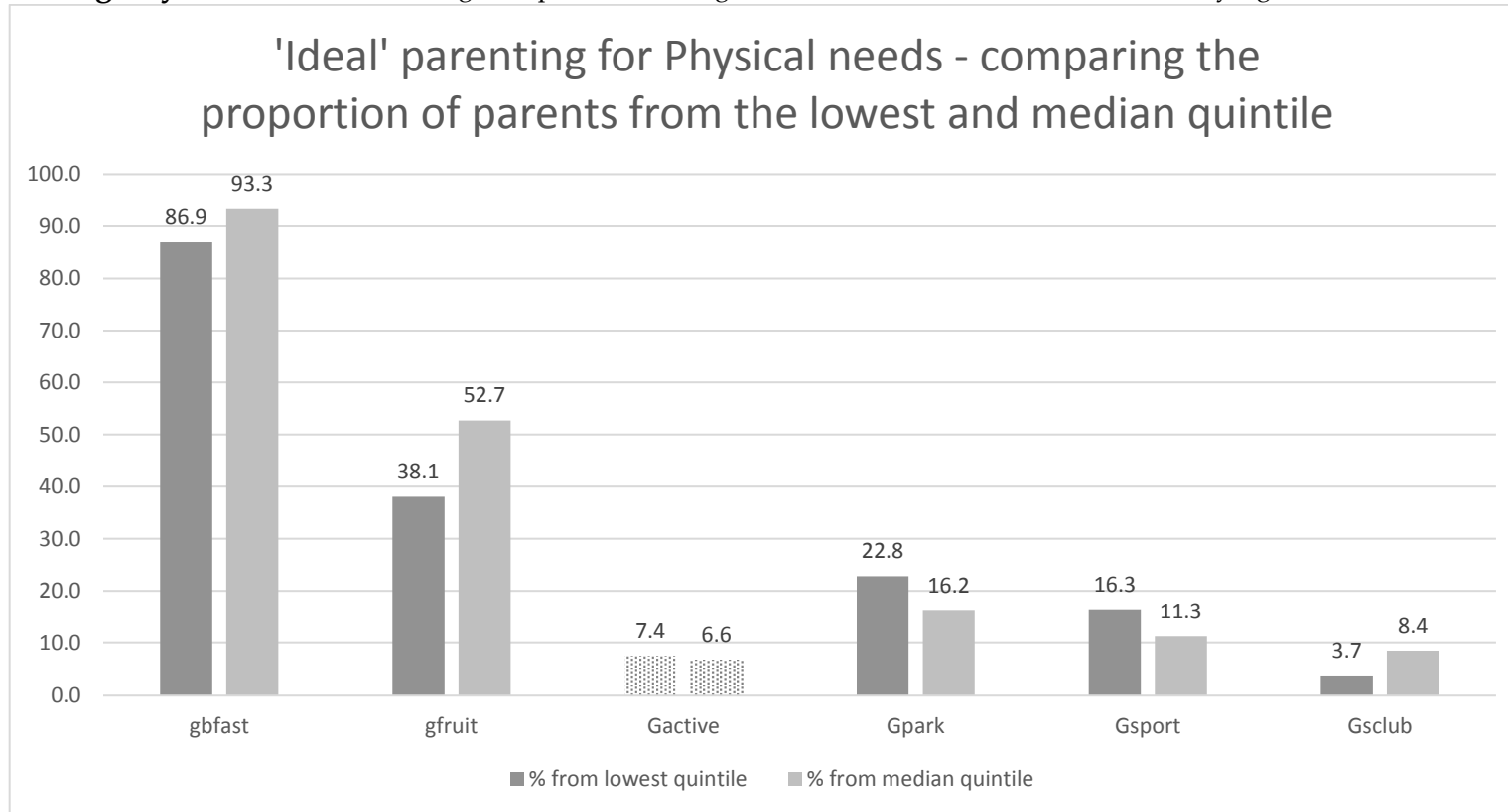
As can be seen from the bivariate regression results mothers whose income falls into the top three income quintiles have slightly higher scores on the GRIMS scale.

2. Relationship satisfaction and income MCS wave 3

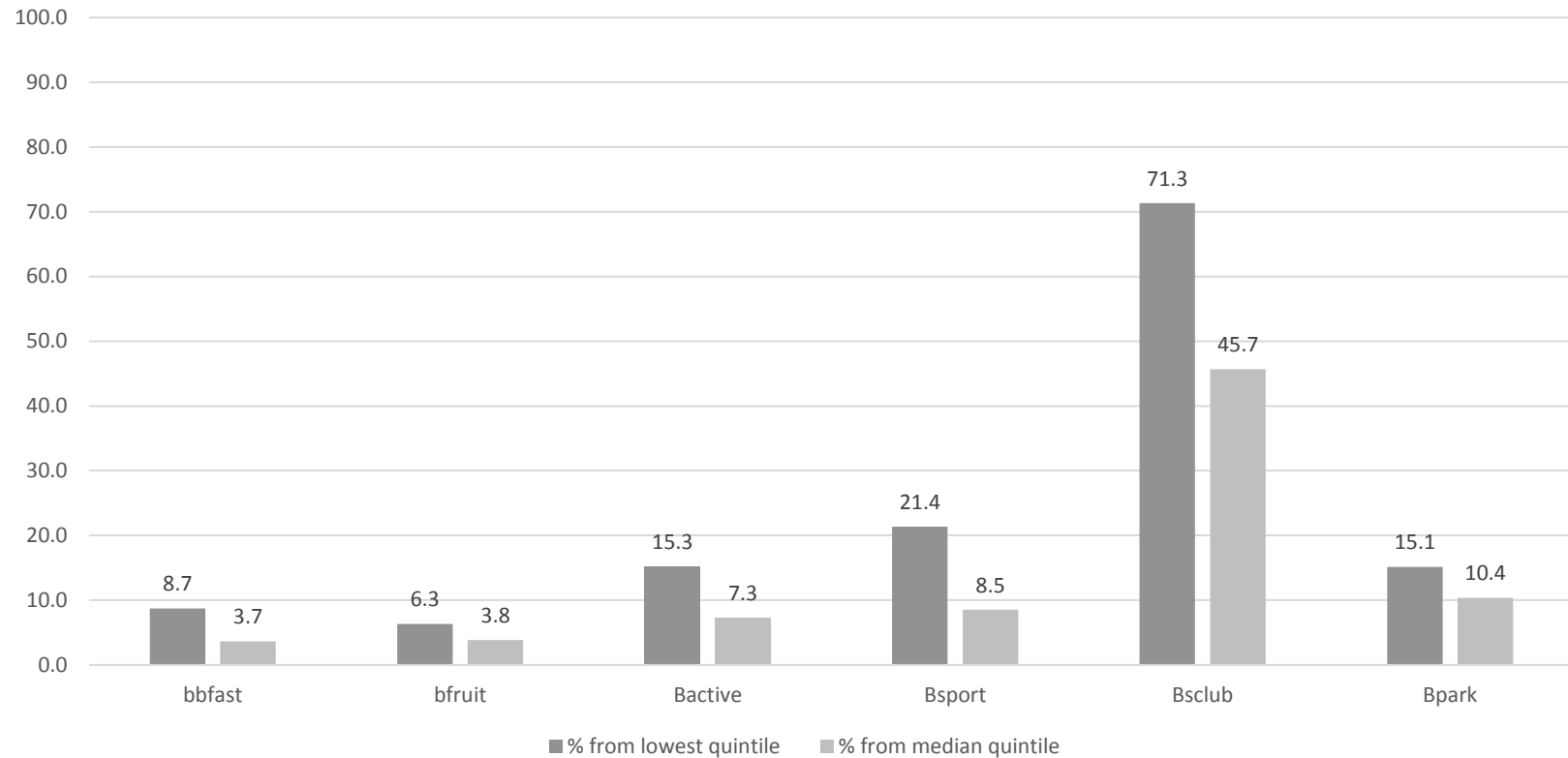


There is a weaker association between income and relationship satisfaction, although it still follows the same pattern with higher income being associated with higher relationship satisfaction, as can be seen from the confidence intervals only the highest income quintile group is significantly different from the lowest income group.

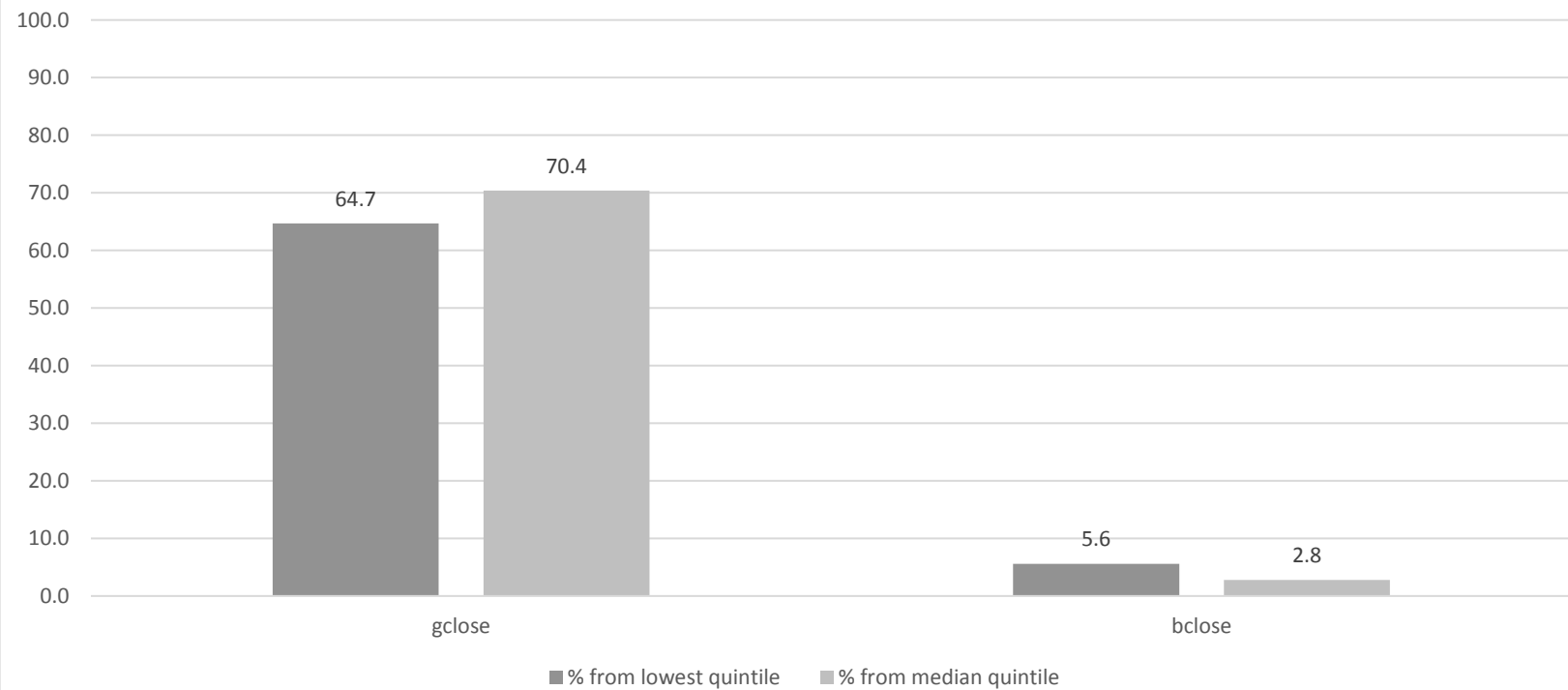
Appendix 5 Bar charts comparing lowest quintile and median quintile proportions for 'ideal' and 'poor' parenting behaviours in MCS wave 3 (age 5 years) Note: bars with lighter speckled shading denote differences that are not statistically significant at the level of 5%.



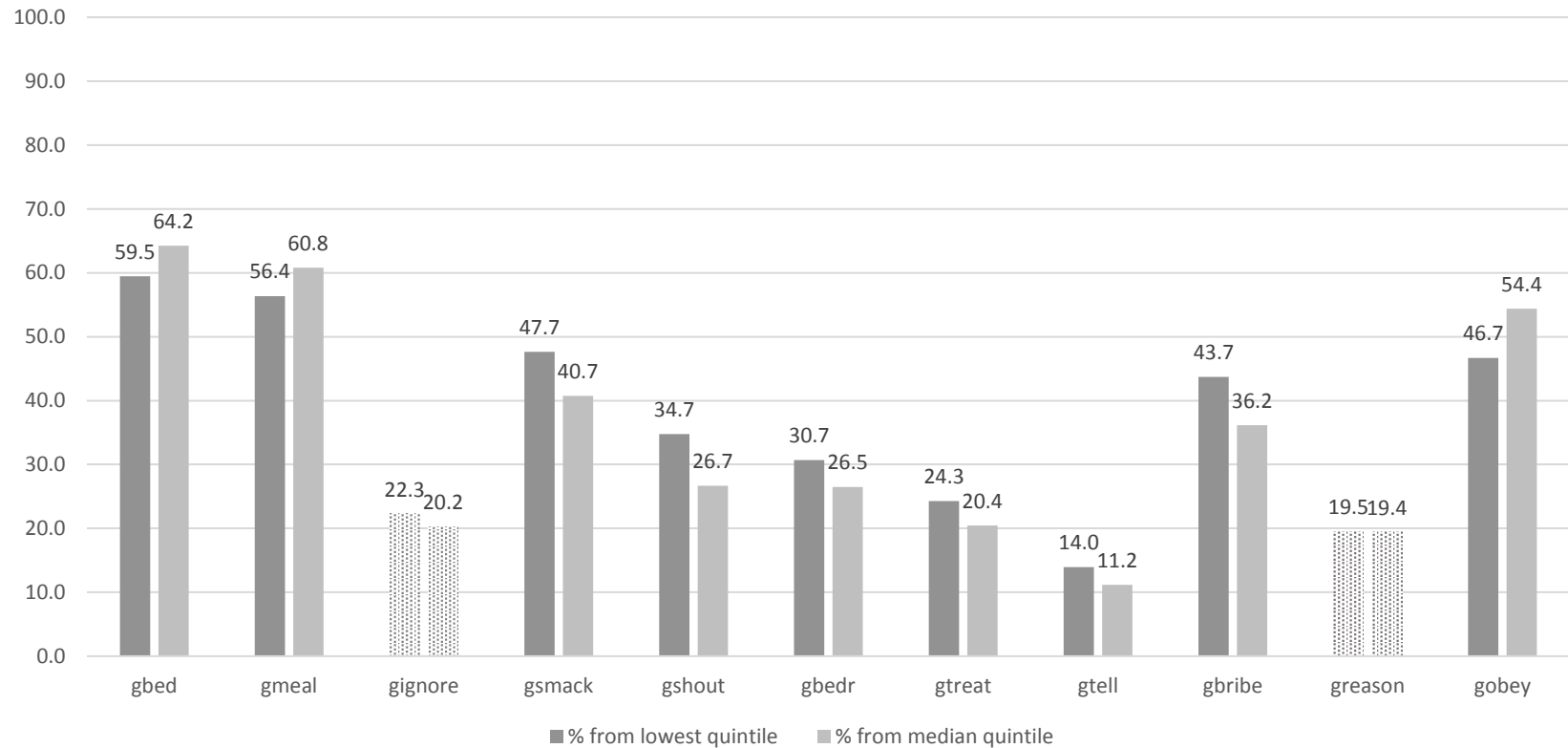
'Poor' parenting for Physical needs - comparing the proportion of parents from the lowest and median quintile



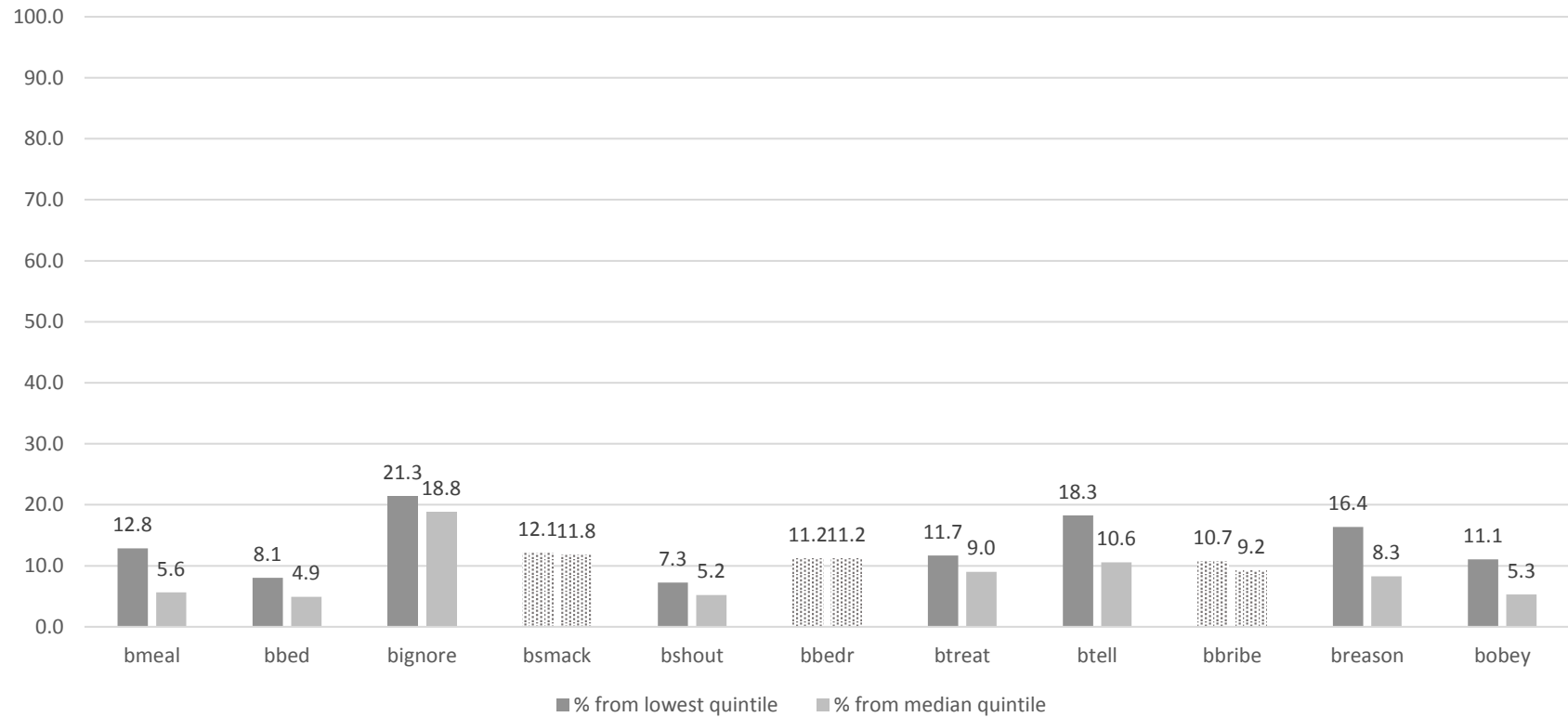
How close feel to child - comparing the proportion of parents from the lowest and median quintile



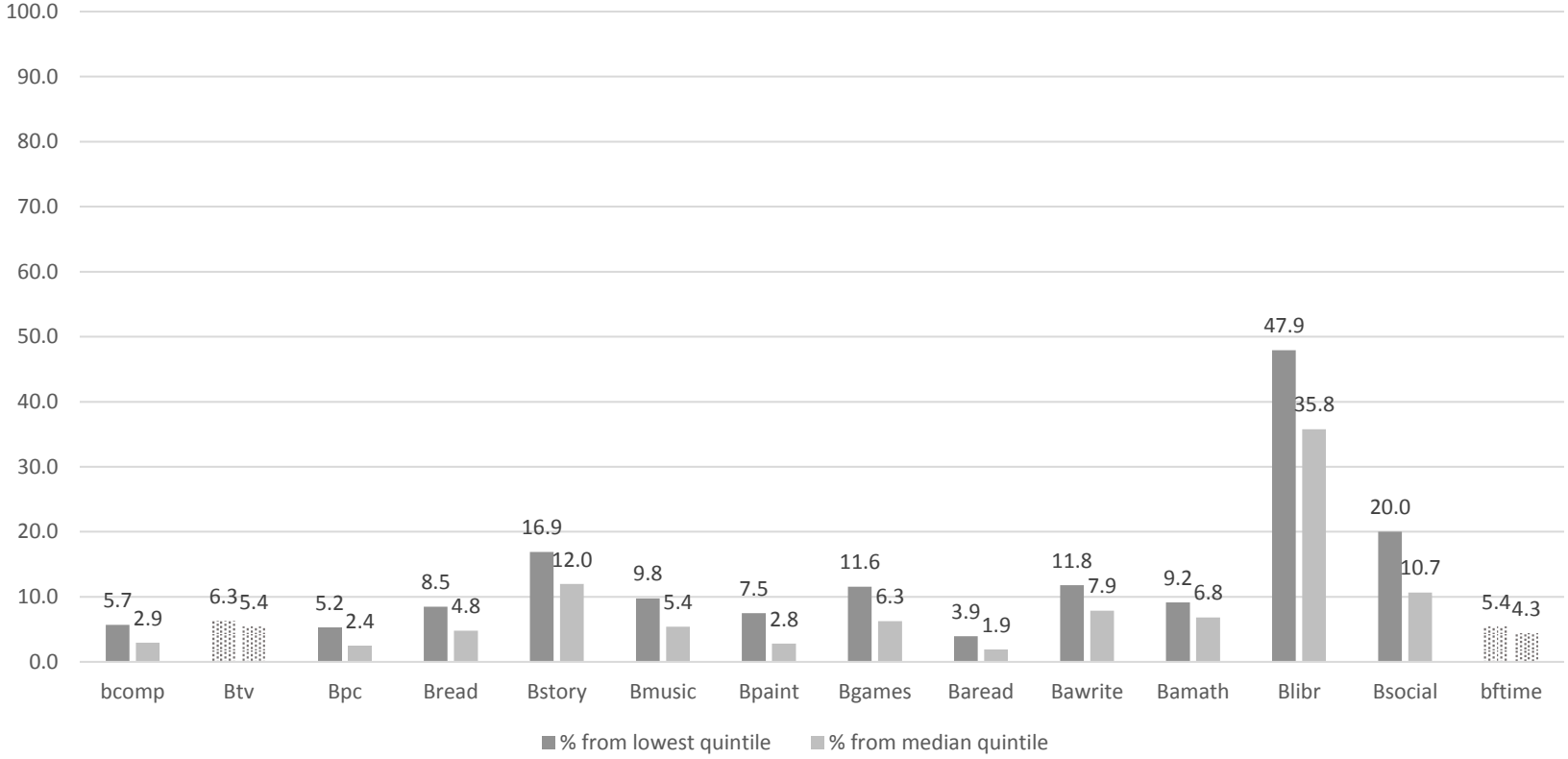
'Ideal' parenting for discipline- comparing the proportion of parents from the lowest and median quintile



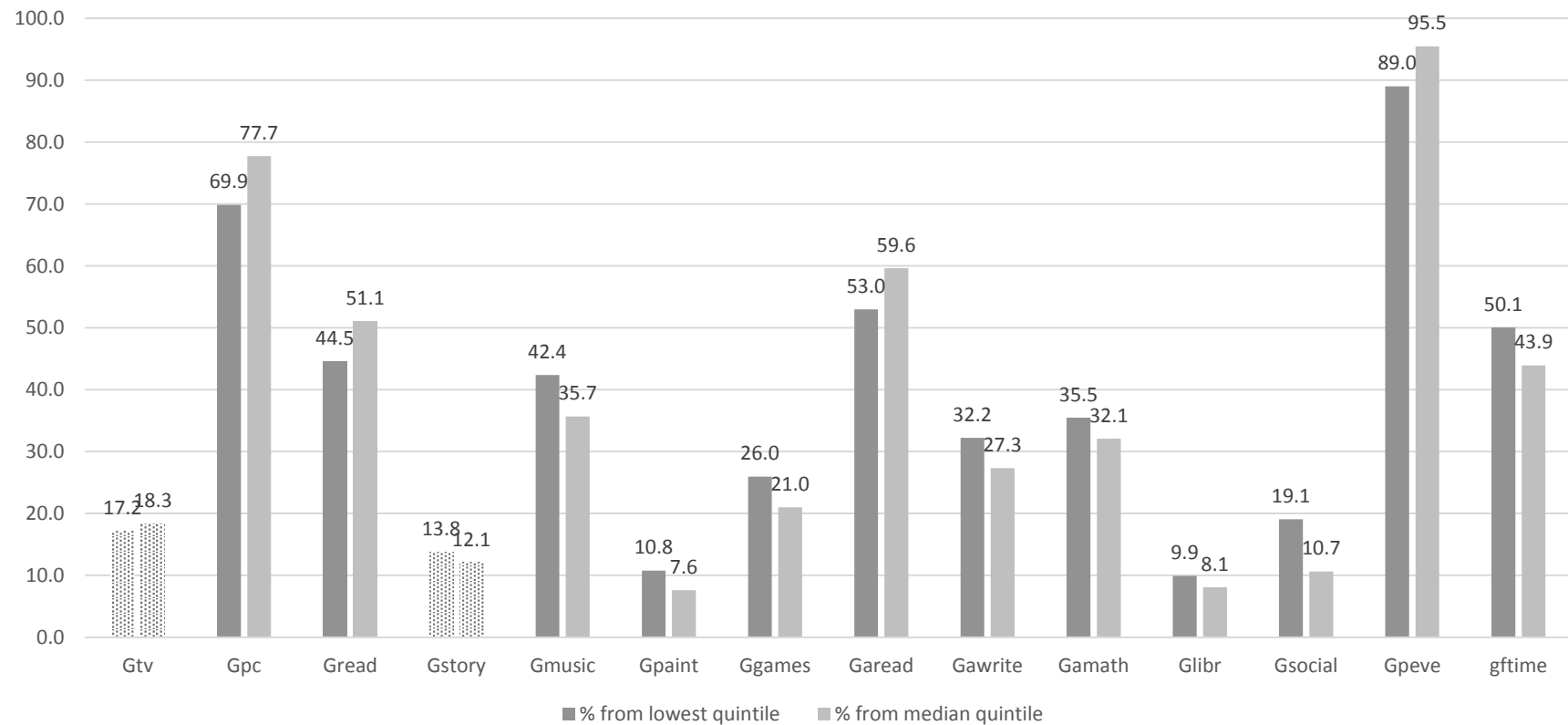
'Poor' parenting for discipline- comparing the proportion of parents from the lowest and median quintile



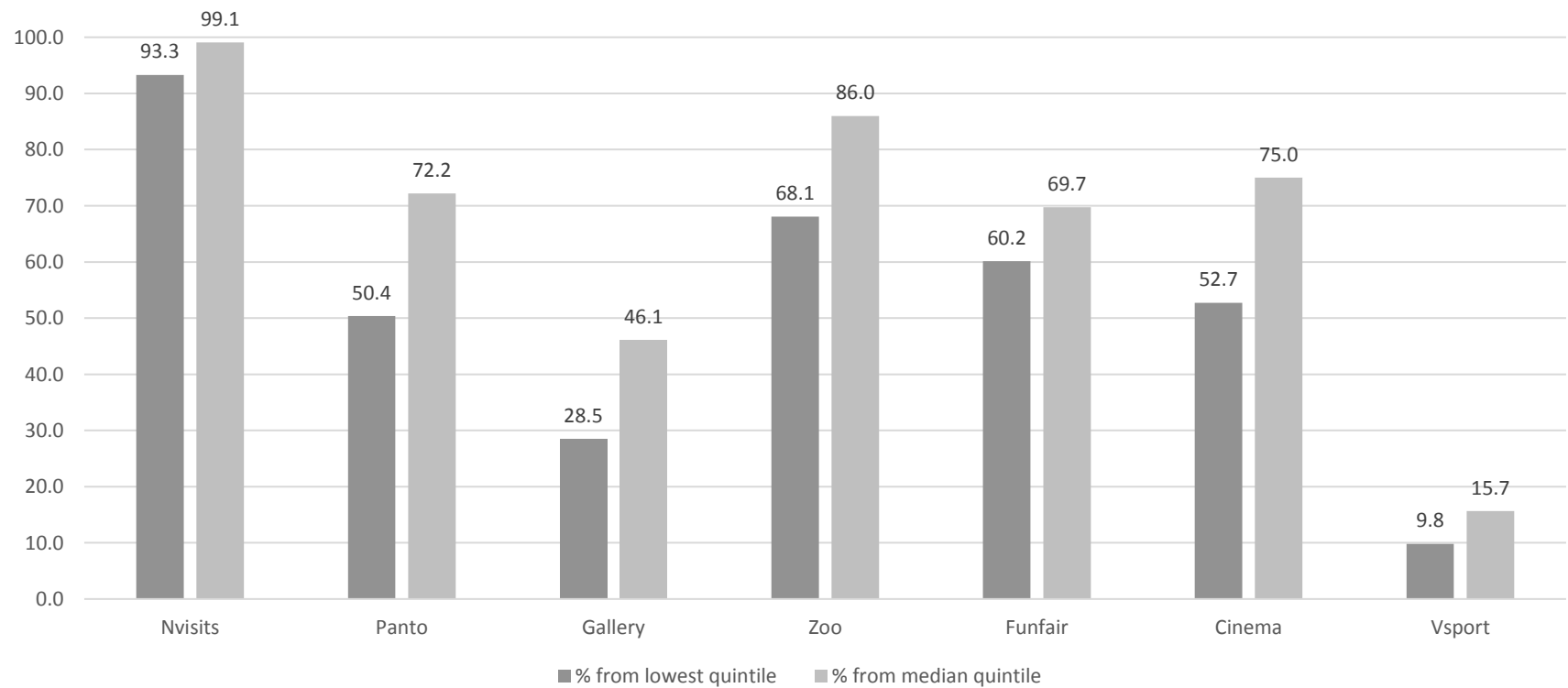
'Poor' parenting for Cognitive stimulation- comparing the proportion of parents from the lowest and median quintile



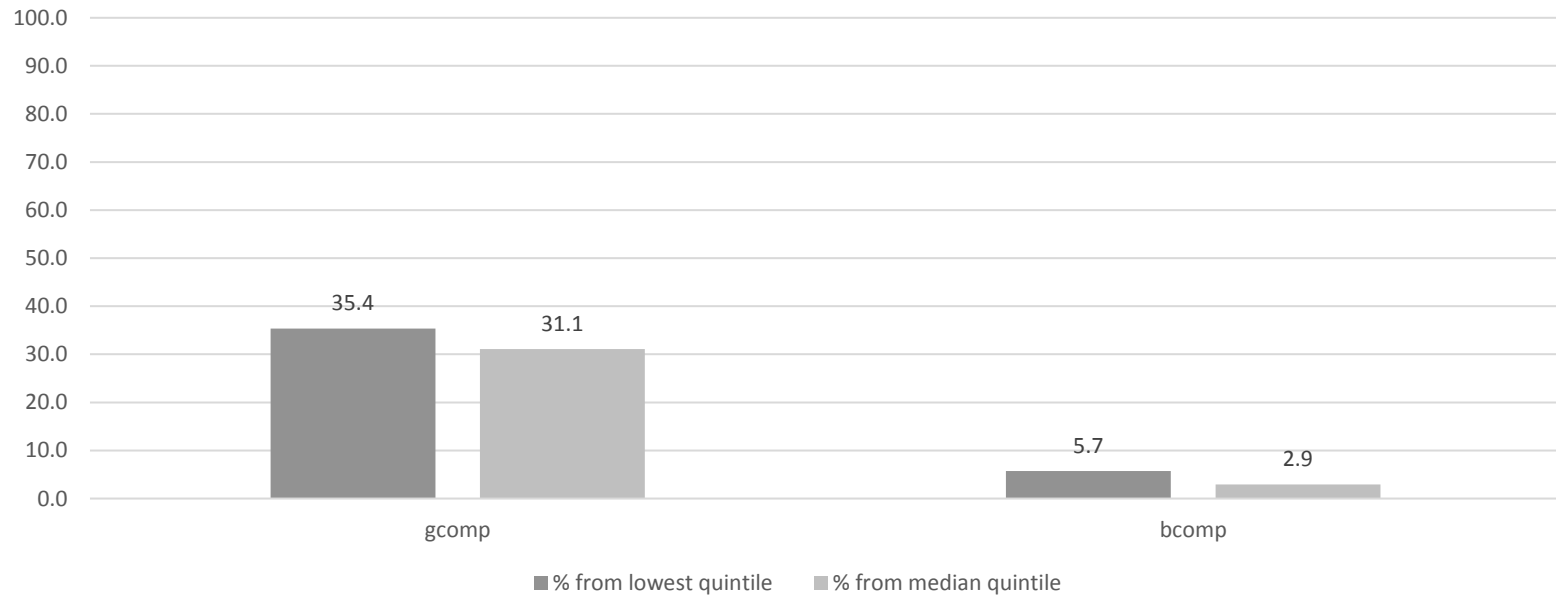
'Ideal' parenting for Cognitive stimulation- comparing the proportion of parents from the lowest and median quintile



Trips out - comparing the proportion of parents from the lowest and median quintile



Confidence in parenting- comparing the proportion of parents from the lowest and median quintile



Key

bactive	main never plays sports or physically active games with child
bamath	someone at home helps child with maths once/twice a month or less
baread	someone at home helps child with reading once/twice a month or less
bawrite	someone at home helps child with writing once/twice a month or less
bbed	child never has regular bedtime (term-time)
bbedr	never sends child to bedroom/naughty chair when naughty
bbfast	child has breakfast 3 times a week or less
bbribe	Often or daily bribes child when naughty
bclose	Fairly or not very close
bcomp	not very good or person who has some trouble being a parent
bfruit	child has no portions of fruit a day
bftime	Family does indoor activities together around once a month or less
bgames	main plays toys/games with child less than once a month or never
bignore	ignores child often or daily when naughty
blibr	child visits library less than once a year or never
bmeal	child never has meals at regular times
bmusic	main does musical activities with child not at all or less than once a month
bobey	makes sure child obeys instructions less than half the time or never
bpaint	main never paints/draws with child
bpark	main takes child to park/playground less than once a month or never
bpc	plays on computer for three hours or more
bread	main reads to child once or twice a month or less

breason	rarely or never reasons with child when naughty
bsclub	Child goes to sports club/class less than once a week or not at all
bshout	shouts at child often or daily when naughty
bsmack	smacks child often or daily when naughty
bsocial	child never spends time with friends outside school
bsport	main/partner does sport/exercise with child less than once a year or never
bstory	main never tells child stories
btell	Rarely or never tells child off when naughty
btreat	Never takes away treats when naughty
btv	watches TV for three hours or more
cinema	whether been to cinema in past year
funfair	whether been to theme park/funfair in past year
gactive	main plays sports or physically active games with child once a week
gallery	whether been to gallery/museum/historical site in past year
gamath	someone at home helps child with maths everyday
garead	someone at home helps child with reading everyday
gawrite	someone at home helps child with writing every day
gbed	child always has regular bedtime (term-time)
gbedr	sends child to bedroom/naughty chair often or daily when naughty
gbfast	child has breakfast every day
gbribe	Never bribes child when naughty
gclose	Extremely close to child
gcomp	very good or better than average parent

gfruit	child has three or more portions of fruit a day
gftime	Family does indoor activities together every day or almost every day
ggames	main plays toys/games with child several times a week or more
gignore	never or rarely ignores child when naughty
glibr	child visits library once a month or more
gmeal	child always has meals at regular times
gmusic	main does musical activities with child every day or several times a week
gobey	makes sure child obeys instructions all of the time
gpaint	main paints/draws with child every day or several times a week
gpark	main takes child to park/playground once a week or more
gpc	plays on computer for less than an hour or never
gpeve	someone at home has been to a parents evening this school year
gread	main reads to child every day
greason	often of daily reasons with child when naughty
gsclub	Child goes to sports club/class twice a week or more
gshout	never or rarely shouts at child when naughty
gsmack	never smacks child when naughty
gsocial	child spends time with friends outside school once a week or more
gsport	main/partner does sport/exercise with child once a week or more
gstory	main tells child stories several times a week or everyday
gtell	Tells child off often or daily when naughty
gtreat	Often or daily takes away treats when naughty
gtv	watches TV for less than an hour or never

nvisits	visited at least one place listed
panto	whether been to play/panto/concert/circus past 12 months
vsport	whether been to professional sporting event as spectator in past year
zoo	whether been to zoo/aquarium/wildlife reserve or farm in past year

Appendix 6 Summary table of results from logistic regressions and showing proportions of respondents from the lowest and median income quintile group for all binary parenting measures in MCS wave 3

Parenting type	ideal' or 'poor'	variable	Lowest quintile significantly different from median?	Different only for lowest quintiles?	lowest quintile more positive than median?	overrepresented in both 'ideal' and 'poor' categories?	Proportion from lowest quintile %	proportion from median quintile %	absolute difference (percentage points)	relative difference %
Physical	Ideal	gbfast	yes	no	no	no	87.0	93.3	-6.3	-6.8
Physical	Ideal	gfruit	yes	no	no	no	38.5	53.1	-14.6	-27.5
Physical	Ideal	gactive	no	na	na	no	7.4	6.5	0.9	14.1
Physical	Ideal	gpark	yes	yes	yes	yes	22.8	16.2	6.6	40.4
Physical	Ideal	gsport	yes	no	yes	yes	16.7	11.3	5.4	48.4
Physical	Ideal	gsclub	yes	no	no	no	3.7	8.4	-4.7	-55.6
Physical	Below- average	bbfast	yes	no	no	no	8.8	3.6	5.2	142.7
Physical	Below- average	bfruit	yes	no	no	no	6.3	3.8	2.5	65.1
Physical	Below- average	bactive	yes	no	no	no	15.3	7.2	8.1	113.3
Physical	Below- average	bsport	yes	no	no	yes	21.1	8.5	12.6	148.8
Physical	Below- average	bsclub	yes	no	no	no	70.8	45.3	25.6	56.5
Physical	Below- average	bpark	yes	no	no	yes	15.2	10.4	4.8	45.9
Emotional	Ideal	gclose	yes	no	no	no	64.7	70.6	-5.9	-8.4
Emotional	Below- average	bclose	yes	yes	no	no	5.6	2.8	2.8	101.5
Discipline	Ideal	gbed	yes	yes	no	no	59.5	64.1	-4.6	-7.2
Discipline	Ideal	gmeal	yes	yes	no	no	56.2	60.6	-4.5	-7.4

Parenting type	ideal' or 'poor'	variable	Lowest quintile significantly different from median?	Different only for lowest quintiles?	lowest quintile more positive than median?	overrepresented in both 'ideal' and 'poor' categories?	Proportion from lowest quintile %	proportion from median quintile %	absolute difference (percentage points)	relative difference %
Discipline	Ideal	gignore	no	na	na	no	22.0	19.8	2.2	11.3
Discipline	Ideal	gsmack	yes	U-shape	yes	no	47.6	40.7	6.9	17.0
Discipline	Ideal	gshout	yes	yes	yes	yes	34.4	26.5	7.9	29.9
Discipline	Ideal	gbedr	yes	no	yes	no	30.8	26.4	4.4	16.6
Discipline	Ideal	gtreat	yes	no	yes	yes	24.6	20.5	4.1	20.0
Discipline	Ideal	gtell	yes	yes	yes	yes	14.1	11.2	2.9	25.4
Discipline	Ideal	gbribe	yes	no	yes	no	43.7	35.8	7.9	22.0
Discipline	Ideal	greason	no	na	na	no	19.8	19.6	0.2	0.9
Discipline	Ideal	gobey	yes	yes	no	no	46.9	54.5	-7.6	-14.0
Discipline	Below- average	bmeal	yes	no	no	no	12.9	5.6	7.3	130.2
Discipline	Below- average	bbed	yes	no	no	no	8.1	4.8	3.3	69.4
Discipline	Below- average	bignore	yes	no	no	no	21.6	18.9	2.7	14.1
Discipline	Below- average	bsmack	no	na	na	no	12.0	11.7	0.3	2.3
Discipline	Below- average	bshout	yes	no	no	yes	7.2	5.2	1.9	36.6
Discipline	Below- average	bbedr	no	na	na	no	10.9	11.2	-0.3	-2.4
Discipline	Below- average	btreat	yes	yes	no	yes	11.4	8.9	2.6	28.9
Discipline	Below- average	btell	yes	no	no	yes	18.2	10.2	7.9	77.8
Discipline	Below- average	bbribe	no	na	na	no	10.6	9.4	1.2	12.8

Parenting type	ideal' or 'poor'	variable	Lowest quintile significantly different from median?	Different only for lowest quintiles?	lowest quintile more positive than median?	overrepresented in both 'ideal' and 'poor' categories?	Proportion from lowest quintile %	proportion from median quintile %	absolute difference (percentage points)	relative difference %
Discipline	Below- average	breason	yes	no	no	no	16.0	8.1	7.9	96.4
Discipline	Below- average	bobey	yes	yes	no	no	10.8	5.3	5.6	105.5
Confidence	Ideal	gcomp	yes	yes	yes	yes	35.3	31.0	4.4	14.0
Confidence	Below- average	bcomp	yes	yes	no	yes	5.7	3.0	2.7	91.6
Cognitive	Below- average	btv	no	na	na	no	6.4	5.4	1.0	19.2
Cognitive	Below- average	bpc	yes	no	no	no	5.2	2.4	2.9	119.8
Cognitive	Below- average	bread	yes	no	no	no	8.0	4.4	3.6	81.3
Cognitive	Below- average	bstory	yes	yes	no	no	16.7	11.8	4.9	41.8
Cognitive	Below- average	bmusic	yes	yes	no	yes	8.9	5.3	3.6	69.0
Cognitive	Below- average	bpaint	yes	yes	no	yes	7.2	2.6	4.6	179.1
Cognitive	Below- average	bgames	yes	no	no	yes	11.5	6.2	5.2	83.9
Cognitive	Below- average	baread	yes	no	no	no	3.7	1.8	1.9	107.2
Cognitive	Below- average	bawrite	yes	yes	no	yes	11.6	7.9	3.7	46.9
Cognitive	Below- average	bamath	yes	no	no	yes	8.9	6.9	2.0	29.0
Cognitive	Below- average	blibr	yes	no	no	yes	47.6	35.3	12.3	34.9
Cognitive	Below- average	bsocial	yes	no	no	yes	19.7	10.5	9.2	87.7
Cognitive	Below- average	bftime	no	na	na	no	5.5	4.3	1.2	27.5
Cognitive	Ideal	gtv	no	na	na	no	17.3	18.3	-1.0	-5.6

Parenting type	ideal' or 'poor'	variable	Lowest quintile significantly different from median?	Different only for lowest quintiles?	lowest quintile more positive than median?	overrepresented in both 'ideal' and 'poor' categories?	Proportion from lowest quintile %	proportion from median quintile %	absolute difference (percentage points)	relative difference %
Cognitive	Ideal	gpc	yes	no	no	no	70.0	77.5	-7.6	-9.8
Cognitive	Ideal	gread	yes	no	no	no	45.3	51.3	-5.9	-11.6
Cognitive	Ideal	gstory	no	na	na	no	14.0	12.1	1.9	15.8
Cognitive	Ideal	gmusic	yes	yes	yes	yes	43.2	35.8	7.4	20.5
Cognitive	Ideal	gpaint	yes	no (marginal)	yes	yes	11.0	7.7	3.2	41.6
Cognitive	Ideal	ggames	yes	no (marginal)	yes	yes	26.1	21.2	5.0	23.4
Cognitive	Ideal	garead	yes	yes	no	no	53.6	59.7	-6.1	-10.2
Cognitive	Ideal	gawrite	yes	no	yes	yes	32.5	27.2	5.3	19.4
Cognitive	Ideal	gamath	yes	no	yes	yes	35.8	32.0	3.8	11.8
Cognitive	Ideal	glibr	yes	yes	yes	yes	9.9	8.2	1.7	21.3
Cognitive	Ideal	gsocial	yes	no	yes	yes	19.4	10.5	8.8	84.0
Cognitive	Ideal	gpeve	yes	no	no	no	89.1	95.6	-6.5	-6.8
Cognitive	Ideal	gftime	yes	yes	yes	no	50.0	43.8	6.2	14.2
Cognitive	trips	nvisits	yes	no	no	no	93.5	99.1	-5.6	-5.7
Cognitive	trips	panto	yes	no	no	no	50.8	72.4	-21.6	-29.9
Cognitive	trips	gallery	yes	no	no	no	28.7	46.4	-17.6	-38.1
Cognitive	trips	zoo	yes	no	no	no	68.2	86.0	-17.8	-20.7
Cognitive	trips	funfair	yes	no	no	no	60.7	69.7	-9.0	-12.9

Parenting type	ideal' or 'poor'	variable	Lowest quintile significantly different from median?	Different only for lowest quintiles?	lowest quintile more positive than median?	overrepresented in both 'ideal' and 'poor' categories?	Proportion from lowest quintile %	proportion from median quintile %	absolute difference (percentage points)	relative difference %
Cognitive	trips	cinema	yes	no	no	no	53.5	75.4	-21.9	-29.1
Cognitive	trips	vsport	yes	no	no	no	10.0	15.8	-5.8	-37.0

Key

N.B. variables where there was no statistically significant difference between the lowest and median quintile are shaded out.

variable label	variable description	variable label	variable description
gbfast	child has breakfast every day	bbfast	child has breakfast 4 times a week or less
gfruit	child has three or more portions of fruit a day	bfruit	child has no portions of fruit a day
gmeal	child always has meals at regular times	bmeal	child has meals at regular times sometimes or never

gbed	child always has regular bedtime (term-time)	bbed	child never has regular bedtime (term-time)
gclose	Extremely close to child	bclose	Fairly or not very close
gcomp	a very good parent	bcomp	not very good or person who has some trouble being a parent
gignore	never ignores child when naughty	bignore	ignores child often or daily when naughty
gsmack	never smacks child when naughty	bsmack	smacks child sometimes, often or daily when naughty
gshout	never or rarely shouts at child when naughty	bshout	shouts at child daily when naughty
gbedr	sends child to bedroom/naughty chair often or daily when naughty	bbedr	never sends child to bedroom/naughty chair when naughty
gtreat	Often or daily takes away treats when naughty	btreat	Never takes away treats when naughty
gtell	Tells child off daily when naughty	btell	Rarely or never tells child off when naughty
gbribe	Never bribes child when naughty	bbribe	Often or daily bribes child when naughty
greason	reasons with child daily when naughty	breason	rarely or never reasons with child when naughty
gobey	makes sure child obeys instructions all of the time	bobey	makes sure child obeys instructions less than half the time or

gtv	watches TV for less than an hour or never
gpc	plays on computer for less than an hour or never
gread	main reads to child every day
gstory	main tells child stories everyday
gmusic	main does musical activities with child every day
gpaint	main paints/draws with child every day
gactive	main plays sports or physically active games with child every day
ggames	main plays toys/games with child every day
gpark	main takes child to park/playground several times a week or more
garead	someone at home helps child with reading everyday
gawrite	someone at home helps child with writing every day
gamath	someone at home helps child with maths everyday

btv	watches TV for 5 hours or more
bpc	plays on computer for three hours or more
bread	main reads to child once or twice a month or less
bstory	main never tells child stories
bmusic	main does musical activities with child not at all or less than
bpaint	main never paints/draws with child
bactive	main never plays sports or physically active games with child
bgames	main plays toys/games with child less than once a month or
bpark	main takes child to park/playground less than once a month
baread	someone at home helps child with reading once/twice a month
bawrite	child receives no help at home with writing
bamath	child receives no help at home with maths

glibr	child visits library once/twice a week or more	blibr	child visits library less than once a year or never
gsport	main/partner does sport/exercise with child every day	bsport	main/partner does sport/exercise with child less than once a
nvisits	whether visited any places listed	panto	whether been to play/panto/concert/circus past 12 months
gallery	whether been to gallery/museum/historical site in past year	zoo	whether been to zoo/aquarium/wildlife reserve or farm in pa
funfair	whether been to theme park/funfair in past year	cinema	whether been to cinema in past year
vsport	whether been to professional sporting event as spectator in past year	gpeve	someone at home has been to a parents evening this school y
gsclub	Child goes to sports club/class three days a week or more	bsclub	Child goes to sports club/class less than once a week or not a
gsocial	child spends time with friends outside school every day/almost every day	bsocial	child never spends time with friends outside school
gftime	Family does indoor activities together every day/almost every day	bftime	Family does indoor activities together around once a month

Appendix 7 Inverse prevalence weighting of parenting indices to compare results under a different weighting scheme

I decided not to do use inverse prevalence weighting because it yields some counter-intuitive results in relation to parenting behaviours. For example, with the breakfast variable someone that feeds their child breakfast 6 days a week scores almost as badly as someone who never feeds their child breakfast, and scores worse than someone who feeds their child breakfast only 2 days a week!

Table 30 Example of inverse prevalence weighting for frequency child has breakfast in MCS wave 3

number of days has breakfast	proportions	weights (1/proportion)	negative (because higher scores for this index are better)
none	0.01	111.11	-111.11
one	0.00	476.19	-476.19
two	0.01	95.24	-95.24
three	0.01	78.13	-78.13
four	0.01	71.43	-71.43
five	0.02	51.02	-51.02
six	0.01	107.53	-107.53
seven	0.92	1.08	-1.08

Furthermore, inverse prevalence weighting is more complicated when applied to parenting measures than in the case of material deprivation measures, because the variables have more than two categories so it is not possible to apply one weight to each variable. I would have to weight each category of each variable. This is complicated further because the parenting measures have different numbers of categories but need to be standardised for the index measures so individual items as a whole, rather than categories of items, don't contribute more to the index.

I could recode all variables as binary to make this work but then would have to choose arbitrary cut off points, (and this could not be based on prevalence if that is what is informing the results).

Another reason to steer clear of this approach is because it would exaggerate the differences between parents in the lowest and median quintile – we know it is only a minority of parents, concentrated within the low income group that don't feed their child breakfast every day, but because the distribution is so skewed they would contribute a lot to differences in index scores.

Finally, this approach was rejected for the main analysis because it is not clear that a parenting behaviour is necessarily worse if it is rarer, for example see tables below.

Table 31 Frequency table for how often child goes to sports club in MCS wave 3

How often child goes to a club or class for sport	Freq.	Percent	Cum.
less often or not at all	7,341	49.03	49.03
one day a week	3,977	26.56	75.60
two days a week	2,240	14.96	90.56
three days a week	1,013	6.77	97.33
four days a week	264	1.76	99.09
five or more days a week	136	0.91	100.00
Total	14,971	100.00	

Table 32 Frequency table for how often mother tells stories in MCS wave 3

how often main tells stories to child	Freq.	Percent	Cum.
not at all	1,827	12.21	12.21
less often	2,352	15.72	27.93
once or twice a month	2,348	15.69	43.62
once or twice a week	3,736	24.96	68.58
several times a week	2,722	18.19	86.77
every day	1,980	13.23	100.00
Total	14,965	100.00	

Appendix 8 Individual regressions for all items of parenting index measures

N.B adjusted models include mother's education level, mother's age, mother's work status, whether one or two parent household, mother's ethnic group and number of siblings.

PHYSICAL NEEDS INDEX

Table 33 How many days child eats breakfast - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.748 ***		-0.417 ***	
	[0.09]		[0.11]	
2nd	-0.44 ***		-0.294 **	
	[0.10]		[0.11]	
4th	0.37 **		0.277 *	
	[0.13]		[0.13]	
highest	0.523 ***		0.357 *	
	[0.14]		[0.15]	
N	14696		14696	

* p<0.05, ** p<0.01, *** p<0.001

Table 34 Portions of fruit each day - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.587 ***		-0.256 ***	
	[0.06]		[0.07]	
2nd	-0.284 ***		-0.102	
	[0.07]		[0.07]	
4th	0.245 ***		0.142 *	
	[0.06]		[0.06]	
highest	0.631 ***		0.414 ***	
	[0.06]		[0.06]	
N	14696		14696	

* p<0.05, ** p<0.01, *** p<0.001

Table 35 How often main does physical activities with child - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted
income quintile			
lowest	-0.283 ***		0.023
	[0.07]		[0.08]
2nd	-0.159 **		-0.026
	[0.06]		[0.06]
4th	-0.028		-0.103 *
	[0.05]		[0.05]
highest	0.138 **		0.013
	[0.05]		[0.05]
N	14696		14696

* p<0.05, ** p<0.01, *** p<0.001

Table 36 How often child goes to sports club - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted
income quintile			
lowest	-0.283 ***		0.023
	[0.07]		[0.08]
2nd	-0.159 **		-0.026
	[0.06]		[0.06]
4th	-0.028		-0.103 *
	[0.05]		[0.05]
highest	0.138 **		0.013
	[0.05]		[0.05]
N	14696		14696

* p<0.05, ** p<0.01, *** p<0.001

Table 37 How often main takes child to park or playground - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted
income quintile			
lowest	0.198 **		0.116
	[0.06]		[0.08]
2nd	0.026		0.008
	[0.06]		[0.06]
4th	-0.04		-0.047
	[0.05]		[0.05]
highest	0.046		0.034
	[0.05]		[0.05]
N	14696		14696

* p<0.05, ** p<0.01, *** p<0.001

Table 38 How often main plays physically active games with child - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.226	***	-0.012	
	[0.07]		[0.08]	
2nd	-0.156	**	-0.051	
	[0.06]		[0.06]	
4th	0.06		-0.008	
	[0.05]		[0.05]	
highest	0.225	***	0.112	*
	[0.05]		[0.05]	
N	14696		14696	

* p<0.05, ** p<0.01, *** p<0.001

AUTHORITATIVE DISCIPLINE

Table 39 How often reasons with child when naughty - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.333	***	-0.107	
	[0.06]		[0.07]	
2nd	-0.237	***	-0.116	*
	[0.05]		[0.05]	
4th	0.11	*	0.023	
	[0.05]		[0.05]	
highest	0.244	***	0.057	
	[0.06]		[0.05]	
N	13537		13537	

* p<0.05, ** p<0.01, *** p<0.001

Table 40 How often sends child to bedroom or naughty chair when naughty - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	0.089		0.021	
	[0.06]		[0.07]	
2nd	0.054		0.025	
	[0.06]		[0.06]	
4th	-0.143	*	-0.085	
	[0.06]		[0.06]	
highest	-0.179	***	-0.041	
	[0.05]		[0.05]	
N	13537		13537	

* p<0.05, ** p<0.01, *** p<0.001

Table 41 How often take away treats when naughty - ordinal logistic regression results for MCS wave 3

	unadjusted	adjusted
income quintile		
lowest	0.009 [0.06]	0.007 [0.07]
2nd	0.012 [0.06]	0.014 [0.07]
4th	-0.003 [0.05]	0.033 [0.05]
highest	-0.096 [0.05]	-0.001 [0.06]
N	13537	13537

* p<0.05, ** p<0.01, *** p<0.001

Table 42 How often tell child off when naughty - ordinal logistic regression results for MCS wave 3

	unadjusted	adjusted
income quintile		
lowest	-0.251 *** [0.06]	-0.202 ** [0.07]
2nd	-0.092 [0.07]	-0.056 [0.07]
4th	0.096 [0.05]	0.083 [0.05]
highest	0.188 ** [0.06]	0.183 ** [0.06]
N	13537	13537

* p<0.05, ** p<0.01, *** p<0.001

Table 43 How often makes sure child obeys instructions - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.454	***	-0.357	***
	[0.06]		[0.07]	
2nd	-0.201	**	-0.148	*
	[0.06]		[0.06]	
4th	0.064		0.023	
	[0.06]		[0.06]	
highest	0.12		0.05	
	[0.06]		[0.07]	
N	13537		13537	

* p<0.05, ** p<0.01, *** p<0.001

HARSH OR PERMISSIVE DISCIPLINE

Table 44 How often smacks child when naughty - ordinal logistic regression results for MCS wave 3

	unadjusted	adjusted
income quintile		
lowest	-0.209 ** [0.06]	-0.245 *** [0.07]
2nd	-0.013 [0.06]	-0.045 [0.06]
4th	-0.121 * [0.06]	-0.072 [0.06]
highest	-0.387 *** [0.06]	-0.236 *** [0.07]
N	13578	13578

* p<0.05, ** p<0.01, *** p<0.001

Table 45 How often shouts at child when naughty - ordinal logistic regression results for MCS wave 3

	unadjusted	adjusted
income quintile		
lowest	-0.203 *** [0.06]	-0.185 ** [0.07]
2nd	-0.023 [0.06]	-0.016 [0.06]
4th	0.038 [0.05]	0.062 [0.06]
highest	-0.008 [0.06]	0.076 [0.06]
N	13578	13578

* p<0.05, ** p<0.01, *** p<0.001

Table 46 How often bribes child when naughty - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.201 ***		-0.207 **	
	[0.06]		[0.07]	
2nd	-0.109		-0.112	
	[0.06]		[0.06]	
4th	0.141 *		0.146 **	
	[0.05]		[0.06]	
highest	0.163 **		0.19 **	
	[0.06]		[0.06]	
N	13578		13578	

* p<0.05, ** p<0.01, *** p<0.001

Table 47 How often ignores child when naughty - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.03		-0.077	
	[0.06]		[0.07]	
2nd	0.021		0.01	
	[0.05]		[0.06]	
4th	0.006		0.017	
	[0.05]		[0.05]	
highest	-0.046		-0.019	
	[0.05]		[0.06]	
N	13578		13578	

* p<0.05, ** p<0.01, *** p<0.001

ROUTINE

Table 48 How often child has regular meal times - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted
income quintile			
lowest	-0.285 ***		-0.128
	[0.06]		[0.07]
2nd	-0.092		-0.03
	[0.06]		[0.06]
4th	0.04		0.004
	[0.06]		[0.06]
highest	0.075		0.013
	[0.06]		[0.06]
N	14724		14724

* p<0.05, ** p<0.01, *** p<0.001

Table 49 How often child has regular bed times - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted
income quintile			
lowest	-0.283 ***		-0.164 *
	[0.07]		[0.08]
2nd	-0.13 *		-0.078
	[0.06]		[0.06]
4th	0.071		0.059
	[0.05]		[0.06]
highest	0.123		0.128
	[0.07]		[0.07]
N	14724		14724

* p<0.05, ** p<0.01, *** p<0.001

TRIPS OUT

Table 50 Whether child visited theme park or funfair in past year - binary logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.422 ***		-0.338 ***	
	[0.06]		[0.07]	
2nd	-0.245 ***		-0.202 **	
	[0.07]		[0.07]	
4th	0.177 **		0.144 *	
	[0.07]		[0.07]	
highest	0.142 *		0.121	
	[0.07]		[0.07]	
N	14725		14725	

* p<0.05, ** p<0.01, *** p<0.001

Table 51 Whether child been to cinema in past year - binary logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.99 ***		-0.545 ***	
	[0.08]		[0.09]	
2nd	-0.61 ***		-0.373 ***	
	[0.07]		[0.07]	
4th	0.413 ***		0.247 ***	
	[0.07]		[0.07]	
highest	0.7 ***		0.408 ***	
	[0.08]		[0.09]	
N	14725		14725	

* p<0.05, ** p<0.01, *** p<0.001

Table 52 whether child visited museum, art gallery or historical site in past year - binary logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.763 ***		-0.345 ***	
	[0.07]		[0.08]	
2nd	-0.388 ***		-0.161 *	
	[0.06]		[0.06]	
4th	0.399 ***		0.204 **	
	[0.06]		[0.06]	
highest	0.991 ***		0.539 ***	
	[0.08]		[0.08]	
N	14725		14725	

* p<0.05, ** p<0.01, *** p<0.001

Table 53 Whether child been to a play, pantomime, music concert, circus or other live show in past year - binary logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.938 ***		-0.361 ***	
	[0.07]		[0.08]	
2nd	-0.516 ***		-0.209 **	
	[0.07]		[0.07]	
4th	0.47 ***		0.248 **	
	[0.07]		[0.08]	
highest	0.975 ***		0.551 ***	
	[0.09]		[0.09]	
N	14725		14725	

* p<0.05, ** p<0.01, *** p<0.001

Table 54 Whether child visited zoo, aquarium, wildlife reserve or farm in past year - binary logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-1.057 ***		-0.577 ***	
	[0.09]		[0.10]	
2nd	-0.63 ***		-0.374 ***	
	[0.08]		[0.09]	
4th	0.159		-0.034	
	[0.10]		[0.10]	
highest	0.772 ***		0.446 ***	
	[0.11]		[0.11]	
N	14725		14725	

* p<0.05, ** p<0.01, *** p<0.001

Table 55 whether child been to a professional sporting event as a spectator in the past year - binary logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.537 ***		-0.162	
	[0.10]		[0.12]	
2nd	-0.284 **		-0.117	
	[0.09]		[0.09]	
4th	0.227 **		0.156	
	[0.08]		[0.08]	
highest	0.309 ***		0.223 *	
	[0.08]		[0.09]	
N	14725		14725	

* p<0.05, ** p<0.01, *** p<0.001

PLAY ACTIVITIES

Table 56 How often main reads to child - ordinal logistic regression results for MCS wave 3

	unadjusted		adjusted	
income quintile				
lowest	-0.359 ***		-0.184 **	
	[0.06]		[0.07]	
2nd	-0.264 ***		-0.161 **	
	[0.06]		[0.06]	
4th	0.1		-0.037	
	[0.06]		[0.06]	
highest	0.436 ***		0.171 **	
	[0.06]		[0.06]	
N	14712		14712	

* p<0.05, ** p<0.01, *** p<0.001

Table 57 How often main tells stories to child - ordinal logistic regression results for MCS wave 3

		unadjusted	adjusted
income quintile			
	lowest	0.014 [0.06]	0.12 [0.07]
	2nd	0.014 [0.06]	0.073 [0.06]
	4th	-0.012 [0.05]	-0.074 [0.06]
	highest	0.037 [0.06]	-0.1 [0.07]
N		14712	14712

Table 58 How often main does musical activities with child - ordinal logistic regression results for MCS wave 3

		unadjusted	adjusted
income quintile			
	lowest	0.176 ** [0.07]	0.086 [0.08]
	2nd	0.137 [0.07]	0.121 [0.07]
	4th	-0.053 [0.06]	-0.024 [0.06]
	highest	-0.018 [0.06]	0.055 [0.06]
N		14712	14712

* p<0.05, ** p<0.01, *** p<0.001

Table 59 How often main draws or paints with child - ordinal logistic regression results for MCS wave 3

		unadjusted	adjusted
income quintile			
	lowest	0.02 [0.06]	0.052 [0.08]
	2nd	0.002 [0.06]	0.026 [0.06]
	4th	-0.06 [0.05]	-0.103 [0.06]
	highest	0.011 [0.06]	-0.082 [0.07]
N		14712	14712

* p<0.05, ** p<0.01, *** p<0.001

Table 60 How often main plays with toys or games indoors with child - ordinal logistic regression results for MCS wave 3

	unadjusted	adjusted
income quintile		
lowest	-0.002 [0.07]	0.166 * [0.08]
2nd	-0.013 [0.06]	0.07 [0.06]
4th	-0.056 [0.05]	-0.123 * [0.06]
highest	0.112 * [0.05]	-0.009 [0.06]
N	14712	14712

* p<0.05, ** p<0.01, *** p<0.001

Table 61 How often child spends time with friends outside of school - ordinal logistic regression results for MCS wave 3

	unadjusted	adjusted
income quintile		
lowest	0.009 [0.07]	0.119 [0.08]
2nd	0.023 [0.06]	0.088 [0.06]
4th	0.065 [0.05]	0.058 [0.05]
highest	0.162 *** [0.05]	0.17 *** [0.05]
N	14712	14712

* p<0.05, ** p<0.01, *** p<0.001

Table 62 Frequency of family activities - ordinal logistic regression results for MCS wave 3

		unadjusted		adjusted
income quintile				
	lowest	0.189	**	0.093
		[0.06]		[0.08]
	2nd	0.031		0.011
		[0.06]		[0.06]
	4th	-0.024		-0.034
		[0.06]		[0.06]
	highest	-0.012		-0.045
		[0.06]		[0.07]
N		14712		14712

* p<0.05, ** p<0.01, *** p<0.001

INVOLVEMENT IN EDUCATION

Table 63 How often someone at home helps with reading - ordinal logistic regression results for MCS wave 3

		unadjusted		adjusted	
income quintile					
	lowest	-0.37	***	-0.187	**
		[0.06]		[0.07]	
	2nd	-0.213	***	-0.126	
		[0.06]		[0.07]	
	4th	0.055		-0.016	
		[0.06]		[0.06]	
	highest	0.098		-0.014	
		[0.06]		[0.06]	
N		14539		14539	

* p<0.05, ** p<0.01, *** p<0.001

Table 64 How often someone at home helps with writing - Ordinal logistic regression results for MCS wave 3

	unadjusted	adjusted	
income quintile			
lowest	0.059 [0.06]	0.171 [0.07]	*
2nd	-0.006 [0.06]	0.039 [0.06]	
4th	-0.096 [0.05]	-0.131 [0.06]	*
highest	-0.159 ** [0.06]	-0.193 ** [0.06]	**
N	14539	14539	

* p<0.05, ** p<0.01, *** p<0.001

Table 65 How often someone at home helps with maths - Ordinal logistic regression results for MCS wave 3

	unadjusted	adjusted	
income quintile			
lowest	0.08 [0.06]	0.138 [0.07]	*
2nd	0.018 [0.06]	0.045 [0.06]	
4th	-0.065 [0.06]	-0.091 [0.06]	
highest	-0.14 * [0.06]	-0.186 ** [0.06]	**
N	14539	14539	

* p<0.05, ** p<0.01, *** p<0.001

Table 66 How often child has visited library in the past year - Ordinal logistic regression results for MCS wave 3

		unadjusted		adjusted
income quintile				
	lowest	-0.327	***	0.012
		[0.07]		[0.08]
	2nd	-0.135	*	0.042
		[0.06]		[0.07]
	4th	0.23	***	0.083
		[0.05]		[0.05]
	highest	0.409	***	0.087
		[0.06]		[0.06]
N		14539		14539

* p<0.05, ** p<0.01, *** p<0.001

Table 67 Whether someone at home has been to a parents evening this school year (excluding not applicable) - Binary logistic regression results for MCS wave 3

		unadjusted		adjusted	
income quintile					
	lowest	-0.951	***	-0.431	**
		[0.12]		[0.15]	
	2nd	-0.63	***	-0.403	**
		[0.12]		[0.13]	
	4th	0.406	*	0.269	
		[0.16]		[0.16]	
	highest	0.349	*	0.133	
		[0.16]		[0.17]	
N		13524		13524	

* p<0.05, ** p<0.01, *** p<0.001

TV/PC HOURS

Table 68 How much TV child watches on a typical week day - ordinal logistic regression results for MCS wave 3

	unadjusted	adjusted
income quintile		
lowest	-0.297 *** [0.07]	-0.227 ** [0.08]
2nd	-0.141 * [0.07]	-0.084 [0.07]
4th	0.154 * [0.06]	0.101 [0.06]
highest	0.595 *** [0.07]	0.424 *** [0.07]
N	14716	14716

* p<0.05, ** p<0.01, *** p<0.001

Table 69 How long child plays on computer for on a typical week day - ordinal logistic regression for MCS wave 3

	unadjusted	adjusted
income quintile		
lowest	-0.114 [0.06]	-0.13 [0.07]
2nd	-0.149 ** [0.06]	-0.142 * [0.06]
4th	0.01 [0.05]	-0.02 [0.05]
highest	0.241 *** [0.06]	0.161 ** [0.06]
N	14716	14716

* p<0.05, ** p<0.01, *** p<0.001

Appendix 9 Sensitivity Analysis of Discipline Measures

In order to factor out the frequency of naughtiness of the child and measure how frequently different discipline strategies are used as a proportion of overall discipline behaviours, I first created a variable for the overall discipline score (without obey as this item is slightly different to the others and removing it allows for an equal number of 'good' and 'bad' discipline types), by simply summing the scores for each discipline behaviour together. For this score the higher the score, the greater the frequency of any discipline behaviours. The score has a minimum of 0 (if answered 'never' to all discipline types) and a maximum of 32 (if answered 'every day' to all discipline types).

I then created two subcategories of this score: total score for harsh or permissive discipline behaviour and total score for authoritative discipline behaviours. Again both these score measure the frequency of these behaviours (with a minimum of 0 and a maximum of 16), with higher scores representing more frequent use of these discipline scores).

In order to net out the child's behaviour (e.g. a parent may use all discipline techniques every day because their child is naughty everyday), I then created two more variables to show of all discipline behaviours used, the proportion of these that are harsh/permissive and the proportion of these that are authoritative.

I then estimated linear (OLS) regression models, with and without the potential explanatory factors, to check the findings from the main results regarding differences in discipline behaviours between parents in the lowest and median income quintile.

As can be seen from the two tables below, in the unadjusted model there is no significant difference in the proportion of discipline behaviours that are harsh or permissive, or authoritative between parents in the lowest and median income quintiles. This suggests that although the main results

show that parents in the lowest income group report doing both these types of discipline behaviours *less frequently* than parents with median incomes, in terms of their overall discipline behaviours they do not report using either types of discipline a greater proportion of the time.

In the adjusted model the difference becomes significant, although the coefficient is very small: The results suggest that parents in the lowest quintile use harsh or permissive discipline techniques as a slightly *smaller* proportion of their overall discipline and authoritative discipline techniques as a slightly greater proportion of their overall discipline techniques, than parents in the median quintile.

Table 70 Regression results for proportion of discipline behaviours that are harsh or permissive in MCS wave 3

		Unadjusted	Adjusted	
Income quintile	lowest	-0.003 [0.00]	-0.009 [0.00]	*
	2nd	0.004 [0.00]	0 [0.00]	
	4th	0.001 [0.00]	0.003 [0.00]	
	highest	-0.005 [0.00]	0 [0.00]	
	Maternal age	25 to 34		0.007 [0.00]
	35 to 44		0.008 [0.00]	
	45 plus		-0.008 [0.01]	
Maternal education	NVQ level 1		-0.008 [0.01]	
	NVQ level 2		-0.014 [0.00]	**
	NVQ level 3		-0.016 [0.00]	***
	NVQ level 4		-0.023 [0.00]	***
	NVQ level 5		-0.026 [0.01]	***
Siblings	one		0.012 [0.00]	***
	two		0.011 [0.00]	**
	three or more		0.002 [0.00]	
Family composition	One parent/carer		0 [0.00]	
Maternal ethnic group	Mixed		0.03 [0.01]	*
	Indian		0.042 [0.01]	***
	Pakistani		0.058 [0.01]	***
	Bangladeshi		0.059 [0.01]	***
	Black Caribbean		0.024 [0.01]	
	Black African		0.001 [0.01]	
	Other Ethnic group		0.043 [0.01]	***
Maternal work status	part-time		0.003 [0.00]	
	full time		-0.005 [0.00]	
	Constant	0.368 [0.00]	0.364 [0.01]	***
	R-squared	0.001	0.02	
	N	13384	13384	

* p<0.05, ** p<0.01, *** p<0.001

Table 71 Regression results for proportion of discipline behaviours that are authoritative in MCS wave 3

		Unadjusted	Adjusted	
Income quintile	lowest	0.003 [0.00]	0.009 [0.00]	*
	2nd	-0.004 [0.00]	0 [0.00]	
	4th	-0.001 [0.00]	-0.003 [0.00]	
	highest	0.005 [0.00]	0 [0.00]	
	Maternal age	25 to 34		-0.007 [0.00]
	35 to 44		-0.008 [0.00]	
	45 plus		0.008 [0.01]	
Maternal education	NVQ level 1		0.008 [0.01]	
	NVQ level 2		0.014 [0.00]	**
	NVQ level 3		0.016 [0.00]	***
	NVQ level 4		0.023 [0.00]	***
	NVQ level 5		0.026 [0.01]	***
Siblings	one		-0.012 [0.00]	***
	two		-0.011 [0.00]	**
	three or more		-0.002 [0.00]	
Family composition	One parent/carer		0 [0.00]	
Maternal ethnic group	Mixed		-0.03 [0.01]	*
	Indian		-0.042 [0.01]	***
	Pakistani		-0.058 [0.01]	***
	Bangladeshi		-0.059 [0.01]	***
	Black Caribbean		-0.024 [0.01]	
	Black African		-0.001 [0.01]	
	Other Ethnic group		-0.043 [0.01]	***
	Maternal work status	part-time		-0.003 [0.00]
full time			0.005 [0.00]	
	Constant	0.632 [0.00]	0.636 [0.01]	***
	R-squared	0.001	0.02	
	N	13384	13384	

* p<0.05, ** p<0.01, *** p<0.001

Appendix 10 Summary of regression results for other explanatory variables

Table 72 showing significance of each explanatory factor for each parenting index measure in MCS wave 3

	Physical needs	Closeness	Authoritative	Harsh or permissive	Routine	Trips out	Play activities	Educational activities	TV hours	Confidence
Maternal age	✓ (oldest only)	✓	✓	✓ (oldest only)	✓ (oldest only)	✓ (second oldest only)	✓	n/s	n/s	n/s
Maternal education	✓	✓	✓	n/s	✓	✓	✓	✓	✓	n/s
Siblings	✓	✓	✓	✓	✓	✓	✓	✓	n/s	✓
One or two parents	✓	n/s	✓	✓	n/s	✓	n/s	✓	n/s	✓
Maternal ethnic group	✓	✓	✓	n/s	✓	✓	✓	✓ (Indian only)	n/s	✓
Maternal work status	✓ (full-time only)	✓ (part-time only)	n/s	✓ (full-time only)	✓ (full-time only)	✓	✓	✓ (full-time only)	✓ (full-time only)	✓ (full-time only)

Table 73 Summary of regression results for other explanatory factors and each parenting measures in MCS wave 3

	Physical needs	Closeness	Authoritative	Harsh or permissive*	Routine	Trips out	Play activities	Educational activities	TV hours*	Confidence
Mother's age higher	Lower (oldest only)	Higher	Lower (two oldest groups only)	Lower (oldest only)	Lower (oldest only)	Higher (second oldest only)	lower	n/s	n/s	n/s
Mother's education higher	Higher	Higher	Higher	n/s	Higher	Higher	Higher	Higher	Lower (NVQ 3+)	n/s
Greater number of siblings	Lower	Lower	Higher	Higher	Higher	Lower (if more than one sibling)	Lower	Lower	n/s	Lower
Living with one parent/carer	Lower	n/s	Higher	Higher	n/s	Higher	Lower	Lower	n/s	Lower
Maternal ethnic group (other than white)	Lower	Lower	Lower	n/s	Lower	Lower	Lower	Higher (Indian only)	n/s	Higher
Mother working	Lower (full-time only)	Higher (part-time only)	n/s	Lower (full-time only)	Lower (full-time only)	Higher	Lower	Lower (full-time only)	Higher (full-time only)	Lower (full-time only)

*for these measures scoring higher is negative for parenting i.e. using more harsh/permissive discipline or child spending more hours watching TV/computer games.

Appendix 11 Introducing potential explanatory factors to binary parenting measures that are non-linear or in the opposite direction to expected

Table 74 Results from adjusted model for binary parenting variables that were non-linear (over-represented in both 'ideal' and 'poor' categories) in MCS wave 3

variable	Q1 significantly different from Q3?	Over-represented?	difference for Q1 only?	Still over-represented at both ends?	Adjusted Q1 probability	Adjusted Q3 probability
Gpark	yes	yes	yes	yes	0.20	0.17
Bpark	yes	yes	yes		0.14	0.10
Gsport	yes	yes	no	yes	0.15	0.11
Bsport	yes	yes	yes		0.13	0.10
gshout	yes	yes	yes	ideal only	0.33	0.27
bshout	no	n/a	n/a		0.06	0.05
gtreat	no	n/a	n/a	neither sig	0.22	0.20
btreat	no	n/a	n/a		0.11	0.10
gtell	no	n/a	n/a	poor only	0.12	0.11
btell	yes	yes	no		0.15	0.11
gcomp	no	n/a	n/a	poor only	0.33	0.32
bcomp	yes	yes	yes		0.04	0.03
Bmusic	no	n/a	n/a	neither sig	0.07	0.06
Gmusic	no	n/a	n/a		0.39	0.36
Bpaint	no	n/a	n/a	ideal only	0.04	0.03
Gpaint	yes	yes	no		0.10	0.08
Bgames	no	n/a	n/a	ideal only	0.07	0.07
Ggames	yes	yes	no		0.26	0.21
Bawrite	no	n/a	n/a	ideal only	0.09	0.08
Gawrite	yes	yes	no		0.32	0.27
Bamath	no	n/a	n/a	neither sig	0.07	0.07
Gamath	no	n/a	n/a		0.35	0.32
Blibr	no	n/a	n/a	neither sig	0.38	0.37
Glibr	no	n/a	n/a		0.09	0.09
Bsocial	no	n/a	n/a	ideal only	0.13	0.12
Gsocial	yes	yes	no		0.16	0.11

Table 75 Results from adjusted model for binary parenting variables where parents in the lowest quintile were over-represented in ideal categories in MCS wave 3

variable	Q1 still over-represented compared with Q3?	Adjusted Q1 probability	Adjusted Q3 probability
Gpark	yes	0.20	0.17
Gsport	yes	0.15	0.11
gsmack	yes	0.49	0.42
gshout	yes	0.33	0.27
gbedr	no	0.27	0.26
gtreat	no	0.22	0.20
gtell	no	0.12	0.11
gbribe	yes	0.43	0.36
gcomp	no	0.33	0.32
Gmusic	no	0.39	0.36
Gpaint	yes	0.10	0.08
Ggames	yes	0.26	0.21
Gawrite	yes	0.32	0.27
	marginal		
Gamath	(p=0.056)	0.35	0.32
Glibr	no	0.09	0.09
Gsocial	yes	0.16	0.11
gftime	no	0.48	0.45

Appendix 12 Regression results for different types of hardship and parenting behaviours

1. Regression results for meeting physical needs in MCS wave 3

Persistent poverty & Physical needs	Bivariate		Adjusted		Debt & Physical needs	Bivariate		Adjusted	
	persistent poverty	-0.577	***	-0.143		***	Debt	-0.366	***
constant	[0.04]		[0.04]		constant	[0.03]		[0.03]	
R-squared	0.143	***	-0.149	**	R-squared	0.089	***	-0.163	**
N	[0.02]		[0.05]		N	[0.02]		[0.05]	
	0.048		0.142			0.018		0.14	
	12383		12383			14276		14276	
Material deprivation & Physical needs	Bivariate		Adjusted		Subjective hardship & Physical needs	Bivariate		Adjusted	
	deprivation	-0.449	***	-0.181		***	subjective hardship	-0.321	***
constant	[0.03]		[0.03]		constant	[0.03]		[0.03]	
R-squared	0.101	***	-0.161	**	R-squared	0.066	***	-0.2	***
N	[0.02]		[0.05]		N	[0.02]		[0.05]	
	0.028		0.142			0.01		0.139	
	14295		14295			14296		14296	

* p<0.05, ** p<0.01, *** p<0.001

Crowding & Physical needs			Damp & Physical needs		
	Bivariate	Adjusted		Bivariate	Adjusted
Crowded	-0.415 *** [0.04]	0.025 [0.04]	Damp	-0.319 *** [0.04]	-0.157 *** [0.04]
constant	0.068 *** [0.02]	-0.225 *** [0.05]	constant	0.056 ** [0.02]	-0.197 *** [0.05]
R-squared	0.014	0.138	R-squared	0.007	0.14
N	14298	14298	N	14295	14295
Poor/unsafe area & Physical needs			Area observation & Physical needs		
	Bivariate	Adjusted		Bivariate	Adjusted
poor/unsafe area	-0.433 *** [0.04]	-0.174 *** [0.04]	interviewer felt uncomfortable	-0.507 *** [0.05]	-0.189 *** [0.04]
constant	0.071 *** [0.02]	-0.19 *** [0.05]	constant	0.077 *** [0.02]	-0.195 *** [0.06]
R-squared	0.016	0.14	R-squared	0.023	0.145
N	14284	14284	N	11360	11360

* p<0.05, ** p<0.01, *** p<0.001

IMD (England) & Physical needs				
	Bivariate		Adjusted	
IMD worst decile	-0.524 ***		-0.168 ***	
	[0.05]		[0.04]	
constant	0.065 **		-0.177 **	
	[0.02]		[0.06]	
R-squared	0.029		0.15	
N	8968		8968	

* p<0.05, ** p<0.01, *** p<0.001

2. Regression results for parent-child relationship in MCS wave 3

Persistent poverty & Closeness					Debt & Closeness				
	Bivariate		Adjusted			Bivariate		Adjusted	
persistent poverty	-0.227 ***		-0.103 *		Debt	-0.125 ***		-0.052	
	[0.04]		[0.04]			[0.03]		[0.03]	
constant	0.039 **		-0.135 *		constant	0.021		-0.138 **	
	[0.01]		[0.06]			[0.01]		[0.05]	
R-squared	0.007		0.029		R-squared	0.002		0.03	
N	11864		11864		N	13577		13577	

* p<0.05, ** p<0.01, *** p<0.001

Material deprivation & Closeness			Subjective hardship & Closeness		
	Bivariate	Adjusted		Bivariate	Adjusted
deprivation	-0.153 *** [0.03]	-0.072 * [0.03]	subjective hardship	-0.105 ** [0.04]	-0.061 [0.04]
constant	0.025 * [0.01]	-0.134 ** [0.05]	constant	0.013 [0.01]	-0.149 ** [0.05]
R-squared	0.003	0.03	R-squared	0.001	0.029
N	13584	13584	N	13585	13585

* p<0.05, ** p<0.01, *** p<0.001

Damp & Closeness			Crowding & Closeness		
	Bivariate	Adjusted		Bivariate	Adjusted
damp	-0.221 *** [0.04]	-0.154 *** [0.04]	Crowded	-0.36 *** [0.04]	-0.183 *** [0.05]
constant	0.019 [0.01]	-0.136 ** [0.05]	constant	0.031 * [0.01]	-0.13 * [0.05]
R-squared	0.003	0.031	R-squared	0.01	0.031
N	13587	13587	N	13589	13589

* p<0.05, ** p<0.01, *** p<0.001

Poor/unsafe area & Closeness			Interviewer observation & Closeness		
	Bivariate	Adjusted		Bivariate	Adjusted
poor/unsafe area	-0.142 *** [0.04]	-0.056 [0.04]	interviewer felt uncomfortable	-0.153 *** [0.04]	-0.052 [0.04]
constant	0.015 [0.01]	-0.148 ** [0.05]	constant	0.024 [0.01]	-0.134 * [0.06]
R-squared	0.002	0.029	R-squared	0.002	0.028
N	13579	13579	N	10816	10816

* p<0.05, ** p<0.01, *** p<0.001

IMD (England) & Closeness		
	Bivariate	Adjusted
IMD worst decile	-0.152 *** [0.04]	-0.019 [0.04]
constant	0.009 [0.02]	-0.157 * [0.06]
R-squared	0.002	0.032
N	8349	8349

* p<0.05, ** p<0.01, *** p<0.001

3. Regression results for discipline – authoritative in MCS wave 3

Persistent poverty & Authoritative discipline			Debt & Authoritative discipline		
	Bivariate	Adjusted		Bivariate	Adjusted
persistent poverty	-0.215 *** [0.03]	-0.133 *** [0.03]	debt	0.016 [0.03]	0.08 ** [0.03]
constant	0.063 *** [0.01]	-0.204 ** [0.06]	constant	0.019 [0.01]	-0.336 *** [0.06]
R-squared	0.006	0.042	R-squared	0	0.039
N	11558	11558	N	13221	13221

* p<0.05, ** p<0.01, *** p<0.001

Material deprivation & Authoritative discipline			Subjective hardship & Authoritative discipline		
	Bivariate	Adjusted		Bivariate	Adjusted
deprivation	0.006 [0.03]	0.101 ** [0.03]	subjective hardship	0.071 [0.04]	0.127 *** [0.04]
constant	0.02 [0.01]	-0.339 *** [0.06]	constant	0.014 [0.01]	-0.322 *** [0.06]
R-squared	0	0.04	R-squared	0	0.04
N	13228	13228	N	13230	13230
Damp & Authoritative discipline			Crowding & Authoritative discipline		
	Bivariate	Adjusted		Bivariate	Adjusted
damp	0 [0.04]	0.043 [0.04]	crowded	-0.243 *** [0.04]	-0.086 * [0.04]
constant	0.021 [0.01]	-0.313 *** [0.06]	constant	0.04 *** [0.01]	-0.294 *** [0.06]
R-squared	0	0.039	R-squared	0.004	0.039
N	13233	13233	N	13233	13233

* p<0.05, ** p<0.01, *** p<0.001

Poor/unsafe area & Authoritative discipline			Interviewer observation & Authoritative discipline		
	Bivariate	Adjusted		Bivariate	Adjusted
poor/unsafe area	-0.058 [0.04]	0.019 [0.04]	interviewer felt uncomfortable	-0.134 ** [0.04]	-0.042 [0.04]
constant	0.026 * [0.01]	-0.31 *** [0.06]	constant	0.031 ** [0.01]	-0.294 *** [0.07]
R-squared	0	0.039	R-squared	0.001	0.042
N	13224	13224	N	10528	10528
IMD (England) & Authoritative discipline					
	Bivariate	Adjusted			
IMD worst decile	-0.184 *** [0.04]	-0.066 [0.04]			
constant	0.035 * [0.01]	-0.308 *** [0.07]			
R-squared	0.003	0.044			
N	8078	8078			

* p<0.05, ** p<0.01, *** p<0.001

4. Regression results for discipline – harsh or permissive in MCS wave 3

Persistent poverty & Harsh/Permissive discipline			Debt & Harsh/Permissive discipline		
	Bivariate	Adjusted		Bivariate	Adjusted
persistent poverty	0.056 [0.03]	0.066 [0.04]	debt	-0.087 ** [0.03]	-0.103 *** [0.03]
constant	-0.028 * [0.01]	0.182 ** [0.07]	constant	0.001 [0.01]	0.231 *** [0.06]
R-squared	0	0.012	R-squared	0.001	0.013
N	11597	11597	N	13260	13260
* p<0.05, ** p<0.01, *** p<0.001					
Material deprivation & Harsh/Permissive discipline			Subjective hardship & Harsh/Permissive discipline		
	Bivariate	Adjusted		Bivariate	Adjusted
deprivation	-0.064 * [0.03]	-0.085 ** [0.03]	subjective hardship	-0.075 * [0.04]	-0.085 * [0.04]
constant	-0.002 [0.01]	0.221 *** [0.06]	constant	-0.003 [0.01]	0.205 *** [0.06]
R-squared	0.001	0.012	R-squared	0.001	0.012
N	13267	13267	N	13267	13267

Damp & Harsh/Permissive discipline	Bivariate		Adjusted		Crowding & Harsh/Permissive discipline	Bivariate		Adjusted	
	damp	-0.122	**	[0.04]		-0.127	**	[0.04]	crowded
constant	-0.002		[0.01]	0.213	***	[0.06]	constant	-0.014	0.2
R-squared	0.001			0.013			R-squared	0	0.012
N	13270			13270			N	13271	13271
Poor/unsafe area & Harsh/Permissive discipline	Bivariate		Adjusted		Interviewer observation & Harsh/Permissive discipline	Bivariate		Adjusted	
	poor/unsafe area	-0.068	*	[0.03]		-0.078	*	[0.04]	interviewer felt uncomfortable
constant	-0.005		[0.01]	0.207	***	[0.06]	constant	-0.021	0.163
R-squared	0			0.012			R-squared	0	0.011
N	13262			13262			N	10567	10567

* p<0.05, ** p<0.01, *** p<0.001

IMD (England) & Harsh/Permissive discipline	Bivariate	Adjusted	
IMD worst decile	0.039 [0.03]	0.038 [0.03]	
constant	-0.012 [0.01]	0.215 [0.07]	**
R-squared	0	0.014	
N	8121	8121	

* p<0.05, ** p<0.01, *** p<0.001

5. Regression results for discipline – routine in MCS wave 3

Persistent poverty & Routine	Bivariate		Adjusted		Debt & Routine	Bivariate		Adjusted	
	persistent poverty	-0.314 [0.03]	***	-0.134 [0.03]		***	debt	-0.284 [0.03]	***
constant	0.099 [0.01]	***	-0.28 [0.07]	***	constant	0.073 [0.01]	***	-0.287 [0.06]	***
R-squared	0.014		0.047		R-squared	0.011		0.049	
N	12404		12404		N	14301		14301	

* p<0.05, ** p<0.01, *** p<0.001

Material deprivation & Routine					Subjective hardship & Routine		
	Bivariate	Adjusted	Bivariate	Adjusted			
deprivation	-0.252 *** [0.03]	-0.117 *** [0.03]	subjective hardship	-0.25 *** [0.03]	-0.15 *** [0.04]		
constant	0.069 *** [0.01]	-0.315 *** [0.06]	constant	0.056 *** [0.01]	-0.33 *** [0.06]		
R-squared	0.009	0.047	R-squared	0.006	0.047		
N	14321	14321	N	14321	14321		

* p<0.05, ** p<0.01, *** p<0.001

Damp & Routine					Crowding & Routine		
	Bivariate	Adjusted	Bivariate	Adjusted			
damp	-0.198 *** [0.04]	-0.127 *** [0.04]	crowded	-0.206 *** [0.04]	-0.053 [0.04]		
constant	0.044 *** [0.01]	-0.333 *** [0.06]	constant	0.048 *** [0.01]	-0.344 *** [0.06]		
R-squared	0.003	0.046	R-squared	0.004	0.045		
N	14321	14321	N	14324	14324		

* p<0.05, ** p<0.01, *** p<0.001

Poor/unsafe area & Routine	Bivariate		Adjusted		Interviewer observation & Routine	Bivariate		Adjusted	
	poor/unsafe area	-0.243	***	-0.117		**	interviewer felt uncomfortable	-0.299	***
constant	0.052	***	-0.33	***	constant	0.057	***	-0.391	***
R-squared	0.005		0.046		R-squared	0.008		0.052	
N	14309		14309		N	11382		11382	

* p<0.05, ** p<0.01, *** p<0.001

IMD (England) & Routine	Bivariate		Adjusted	
IMD worst decile	-0.272	***	-0.119	**
constant	0.059	***	-0.32	***
R-squared	0.008		0.051	
N	8990		8990	

* p<0.05, ** p<0.01, *** p<0.001

6. Regression results for cognitive stimulation – trips out in MCS wave 3

Persistent poverty & Trips out			Debt & Trips out		
	Bivariate	Adjusted		Bivariate	Adjusted
persistent poverty	-0.867 *** [0.03]	-0.317 *** [0.03]	debt	-0.487 *** [0.03]	-0.163 *** [0.03]
constant	0.21 *** [0.02]	-0.49 *** [0.06]	constant	0.115 *** [0.02]	-0.583 *** [0.05]
R-squared	0.108	0.241	R-squared	0.032	0.244
N	12405	12405	N	14302	14302

* p<0.05, ** p<0.01, *** p<0.001

Material deprivation & Trips out			Subjective hardship & Trips out		
	Bivariate	Adjusted		Bivariate	Adjusted
deprivation	-0.665 *** [0.03]	-0.284 *** [0.02]	subjective hardship	-0.372 *** [0.03]	-0.115 *** [0.03]
constant	0.143 *** [0.02]	-0.55 *** [0.05]	constant	0.079 *** [0.02]	-0.624 *** [0.05]
R-squared	0.06	0.251	R-squared	0.014	0.242
N	14322	14322	N	14322	14322

* p<0.05, ** p<0.01, *** p<0.001

Damp & Trips out					Crowding & Trips out				
	Bivariate		Adjusted			Bivariate		Adjusted	
damp	-0.37	***	-0.115	***	crowded	-0.712	***	-0.172	***
	[0.03]		[0.03]			[0.04]		[0.04]	
constant	0.068	***	-0.625	***	constant	0.102	***	-0.616	***
	[0.02]		[0.05]			[0.02]		[0.05]	
R-squared	0.01		0.242		R-squared	0.042		0.243	
N	14322		14322		N	14325		14325	

* p<0.05, ** p<0.01, *** p<0.001

Poor/unsafe area & Trips out					Interviewer observation & Trips out				
	Bivariate		Adjusted			Bivariate		Adjusted	
poor/unsafe area	-0.476	***	-0.108	***	interviewer felt uncomfortable	-0.66	***	-0.221	***
	[0.03]		[0.03]			[0.04]		[0.04]	
constant	0.082	***	-0.624	***	constant	0.121	***	-0.596	***
	[0.02]		[0.05]			[0.02]		[0.06]	
R-squared	0.019		0.243		R-squared	0.038		0.238	
N	14309		14309		N	11385		11385	

* p<0.05, ** p<0.01, *** p<0.001

IMD (England) & Trips out	Bivariate		Adjusted	
	IMD worst decile	-0.565	***	-0.057
	[0.05]		[0.03]	
constant	0.077	***	-0.644	***
	[0.02]		[0.06]	
R-squared	0.034		0.25	
N	8993		8993	

* p<0.05, ** p<0.01, *** p<0.001

7. Regression results for cognitive stimulation – play activities in MCS wave 3

Persistent poverty & Play activities	Bivariate		Adjusted		Debt & Play Activities	Bivariate		Adjusted	
	persistent poverty	-0.157	***	0.008			debt	-0.099	***
	[0.04]		[0.04]			[0.03]		[0.03]	
constant	0.003		0.337	***	constant	-0.006		0.339	***
	[0.02]		[0.06]			[0.02]		[0.05]	
R-squared	0.004		0.085		R-squared	0.001		0.086	
N	12395		12395		N	14289		14289	

* p<0.05, ** p<0.01, *** p<0.001

Material deprivation & Play activities	Bivariate		Adjusted		Subjective hardship & Play activities	Bivariate		Adjusted	
	deprivation	-0.185	***	-0.122		***	subjective hardship	-0.156	***
	[0.03]		[0.03]			[0.04]		[0.03]	
constant	0.007		0.347	***	constant	-0.006		0.324	***
	[0.02]		[0.05]			[0.02]		[0.05]	
R-squared	0.005		0.088		R-squared	0.002		0.087	
N	14309		14309		N	14310		14310	

* p<0.05, ** p<0.01, *** p<0.001

Damp & Play activities	Bivariate		Adjusted		Crowding & Play activities	Bivariate		Adjusted	
	damp	-0.202	***	-0.155		***	crowded	-0.315	***
	[0.04]		[0.04]			[0.04]		[0.04]	
constant	-0.007		0.33	***	constant	0.005		0.3	***
	[0.02]		[0.05]			[0.02]		[0.05]	
R-squared	0.003		0.088		R-squared	0.008		0.087	
N	14309		14309		N	14312		14312	

* p<0.05, ** p<0.01, *** p<0.001

Poor/unsafe area & Play activities	Bivariate		Adjusted		Interviewer observation & Play activities	Bivariate		Adjusted	
	poor/unsafe area	-0.187	***	-0.11		**	interviewer felt uncomfortable	-0.089	
constant	-0.005		0.326	***	constant	-0.017		0.297	***
R-squared	0.003		0.087		R-squared	0.001		0.084	
N	14297		14297		N	11371		11371	

* p<0.05, ** p<0.01, *** p<0.001

IMD (England) & Play activities	Bivariate		Adjusted	
	IMD worst decile	-0.088		0.093
constant	-0.063	***	0.269	***
R-squared	0.001		0.095	
N	8978		8978	

* p<0.05, ** p<0.01, *** p<0.001

8. Regression results for cognitive stimulation – educational involvement in MCS wave 3

Persistent poverty & Educational involvement			Debt & Educational involvement		
	Bivariate	Adjusted		Bivariate	Adjusted
persistent poverty	-0.291 *** [0.03]	-0.076 * [0.04]	debt	-0.22 *** [0.03]	-0.09 ** [0.03]
constant	0.068 *** [0.01]	-0.111 [0.06]	constant	0.044 *** [0.01]	-0.144 * [0.06]
R-squared	0.013	0.041	R-squared	0.007	0.042
N	12247	12247	N	14121	14121

* p<0.05, ** p<0.01, *** p<0.001

Material deprivation & Educational involvement			Subjective hardship & Educational involvement		
	Bivariate	Adjusted		Bivariate	Adjusted
deprivation	-0.271 *** [0.03]	-0.13 *** [0.03]	subjective hardship	-0.202 *** [0.03]	-0.111 *** [0.03]
constant	0.052 *** [0.01]	-0.137 * [0.06]	constant	0.031 * [0.01]	-0.162 ** [0.06]
R-squared	0.011	0.044	R-squared	0.004	0.043
N	14142	14142	N	14142	14142

Damp & Educational involvement			Crowding & Educational involvement		
	Bivariate	Adjusted		Bivariate	Adjusted
damp	-0.143 *** [0.04]	-0.053 [0.04]	crowded	-0.162 *** [0.04]	0.033 [0.04]
constant	0.021 [0.01]	-0.171 ** [0.06]	constant	0.024 [0.01]	-0.184 ** [0.06]
R-squared	0.002	0.042	R-squared	0.002	0.042
N	14143	14143	N	14145	14145

* p<0.05, ** p<0.01, *** p<0.001

Poor/unsafe area & Educational involvement			Interviewer observation & Educational activities		
	Bivariate	Adjusted		Bivariate	Adjusted
poor/unsafe area	-0.219 *** [0.03]	-0.085 * [0.03]	interviewer felt uncomfortable	-0.219 *** [0.04]	-0.064 [0.04]
constant	0.029 * [0.01]	-0.163 ** [0.06]	constant	0.048 *** [0.01]	-0.141 * [0.07]
R-squared	0.004	0.042	R-squared	0.005	0.04
N	14130	14130	N	11249	11249

* p<0.05, ** p<0.01, *** p<0.001

IMD (England) & Educational activities	Bivariate		Adjusted	
	IMD worst decile	-0.157	***	0.015
	[0.04]		[0.04]	
constant	0.034	*	-0.16	*
	[0.02]		[0.07]	
R-squared	0.003		0.047	
N	8918		8918	

* p<0.05, ** p<0.01, *** p<0.001

9. Regression results for cognitive stimulation – hours of television and computers in MCS wave 3

Persistent poverty and TV/PC hours	Bivariate		Adjusted		Debt & TV/PC hours	Bivariate		Adjusted	
	persistent poverty	-0.258	***	-0.129		***	debt	-0.216	***
	[0.03]		[0.04]			[0.03]		[0.03]	
constant	0.057	**	-0.113		constant	0.045	*	-0.136	*
	[0.02]		[0.06]			[0.02]		[0.05]	
R-squared	0.009		0.025		R-squared	0.006		0.024	
N	12398		12398		N	14295		14295	

* p<0.05, ** p<0.01, *** p<0.001

Material deprivation & TV/PC hours					Subjective hardship & TV/PC hours		
	Bivariate		Adjusted			Bivariate	Adjusted
deprivation	-0.178 *** [0.03]		-0.081 ** [0.03]		subjective hardship	-0.044 [0.03]	0.023 [0.03]
constant	0.04 * [0.02]		-0.157 ** [0.06]		constant	0.017 [0.02]	-0.188 *** [0.05]
R-squared	0.004		0.022		R-squared	0	0.022
N	14314		14314		N	14314	14314

* p<0.05, ** p<0.01, *** p<0.001

Damp & TV/PC hours					Crowding & PC/TV hours		
	Bivariate		Adjusted			Bivariate	Adjusted
damp	-0.182 *** [0.04]		-0.12 ** [0.04]		crowded	-0.25 *** [0.04]	-0.174 *** [0.04]
constant	0.026 [0.02]		-0.167 ** [0.05]		constant	0.034 [0.02]	-0.158 ** [0.05]
R-squared	0.002		0.023		R-squared	0.005	0.023
N	14314		14314		N	14317	14317

* p<0.05, ** p<0.01, *** p<0.001

Poor/unsafe area & TV/PC hours	Bivariate		Adjusted		Interviewer observation & TV/PC hours	Bivariate		Adjusted	
	poor/unsafe area	-0.212	***	-0.12		**	interviewer felt uncomfortable	-0.229	***
constant	0.031		-0.164	**	constant	0.02		-0.242	***
R-squared	0.004		0.023		R-squared	0.004		0.028	
N	14302		14302		N	11380		11380	

* p<0.05, ** p<0.01, *** p<0.001

IMD (England) & TV/PC hours	Bivariate		Adjusted	
	IMD worst decile	-0.305	***	-0.205
constant	0.044		-0.15	*
R-squared	0.01		0.027	
N	8986		8986	

* p<0.05, ** p<0.01, *** p<0.001

10. Regression results for confidence in parenting in MCS wave 3

Persistent poverty & Confidence			Debt & Confidence		
	Bivariate	Adjusted		Bivariate	Adjusted
persistent poverty	-0.04 [0.04]	0.001 [0.04]	debt	-0.218 *** [0.03]	-0.195 *** [0.03]
constant	-0.023 [0.01]	0.049 [0.07]	constant	0.006 [0.01]	0.116 [0.06]
R-squared	0	0.016	R-squared	0.006	0.02
N	11809	11809	N	13515	13515

* p<0.05, ** p<0.01, *** p<0.001

Material deprivation & Confidence			Subjective hardship & Confidence		
	Bivariate	Adjusted		Bivariate	Adjusted
deprivation	-0.246 *** [0.03]	-0.249 *** [0.03]	subjective hardship	-0.257 *** [0.04]	-0.251 *** [0.04]
constant	0.01 [0.01]	0.125 * [0.06]	constant	-0.002 [0.01]	0.077 [0.06]
R-squared	0.008	0.023	R-squared	0.006	0.021
N	13522	13522	N	13524	13524

* p<0.05, ** p<0.01, *** p<0.001

Damp & Confidence			Crowding & Confidence	
	Bivariate	Adjusted	Bivariate	Adjusted
damp	-0.146 *** [0.04]	-0.143 *** [0.04]	crowded -0.043 [0.04]	-0.103 ** [0.04]
constant	-0.016 [0.01]	0.066 [0.06]	constant	-0.023 [0.01]
R-squared	0.001	0.017	R-squared	0 0.017
N	13525	13525	N	13527 13527

* p<0.05, ** p<0.01, *** p<0.001

Poor/unsafe area & Confidence			Interviewer observation & Confidence	
	Bivariate	Adjusted	Bivariate	Adjusted
poor/unsafe area	-0.134 *** [0.04]	-0.116 ** [0.04]	interviewer felt uncomfortable -0.143 *** [0.04]	-0.131 ** [0.04]
constant	-0.016 [0.01]	0.065 [0.06]	constant	-0.005 [0.01]
R-squared	0.001	0.017	R-squared	0.002 0.018
N	13518	13518	N	10769 10769

* p<0.05, ** p<0.01, *** p<0.001

IMD (England) & Confidence	Bivariate	Adjusted
IMD worst decile	0.016 [0.04]	0.018 [0.04]
constant	-0.029 [0.01]	0.059 [0.07]
R-squared	0	0.02
N	8305	8305

* p<0.05, ** p<0.01, *** p<0.001

Appendix 13 Table showing summary of regression results for different measures of hardship and parenting, restricting the sample to the lowest three income quintiles in MCS wave 3

Hardship measures	Physical needs	Closeness	Authoritative	Harsh or permissive	Routine	Trips out	Play activities	Educational activities	TV/PC hours	Confidence
Lowest vs median income	worse	n/s	worse	better	worse	worse	n/s	n/s	worse	n/s
Persistent poverty	worse	worse	worse	n/s	worse	worse	n/s	N/S	worse	n/s
Debt	worse	n/s	better	worse	worse	worse	worse	worse	worse	worse
Material deprivation	worse	N/S	better	worse	worse	worse	worse	worse	N/S	worse
Subjective hardship	worse	n/s	better	N/S	worse	worse	worse	worse	n/s	worse
Crowded	n/s	worse	worse	n/s	n/s	worse	n/s	n/s	worse	worse
Damp	worse	worse	n/s	worse	worse	worse	worse	n/s	worse	worse
Poor/unsafe area	worse	n/s	n/s	worse	worse	worse	worse	worse	worse	worse
Negative area observation	worse	n/s	n/s	n/s	worse	worse	n/s	n/s	N/S	worse
IMD worst decile	worse	n/s	n/s	n/s	worse	n/s	N/S	n/s	worse	n/s

N.B. Any changes to original results are highlighted by boxes, where N/S indicates a previously significant result that is no longer significant at 5% and 'worse' represents a previously insignificant result, now significant.

Appendix 14 Summary of regressions results for different measures of hardship and parenting, controlling for income in MCS wave 3

Hardship measures	Physical needs	Closeness	Authoritative	Harsh or permissive	Routine	Trips out	Play activities	Educational activities	TV/PC hours	Confidence
Debt	worse	n/s	better	worse	worse	worse	worse	worse	worse	worse
Material deprivation	worse	N/S	better	worse	worse	worse	worse	worse	N/S	worse
Subjective hardship	worse	n/s	better	worse	worse	N/S	worse	worse	n/s	worse
Crowded	n/s	worse	N/S	n/s	n/s	worse	n/s	n/s	worse	worse
Damp	worse	worse	n/s	worse	worse	worse	worse	n/s	worse	worse
Poor/unsafe area	worse	n/s	n/s	worse	worse	worse	worse	worse	worse	worse
Negative area observation	worse	n/s	n/s	n/s	worse	worse	n/s	n/s	N/S	worse
IMD worst decile	worse	n/s	n/s	n/s	worse	n/s	N/S	n/s	worse	n/s

N.B. Any changes to original results are highlighted by boxes, where N/S indicates a previously significant result that is no longer significant at 5% and 'worse' represents a previously insignificant result, now significant.

Appendix 15 Interactions between hardship experiences

Table 76 Table showing interaction between deprivation and income for each parenting measure in MCS wave 3

	physical b/se	close b/se	auth. b/se	harsh b/se	routine b/se	visits b/se	play b/se	educ b/se	TV b/se	confid. b/se
deprivation	-0.15 * [0.07]	-0.036 [0.08]	0.072 [0.07]	-0.118 [0.07]	-0.187 * [0.08]	-0.074 [0.06]	-0.174 * [0.07]	-0.03 [0.07]	-0.057 [0.09]	-0.206 [0.07]
lowest	-0.126 ** [0.04]	-0.036 [0.04]	-0.157 *** [0.04]	0.17 *** [0.04]	-0.111 ** [0.04]	-0.248 *** [0.03]	0.075 [0.04]	0.028 [0.04]	-0.13 ** [0.05]	0.007 [0.04]
2nd	-0.059 [0.03]	-0.006 [0.03]	-0.061 [0.04]	0.03 [0.03]	-0.037 [0.03]	-0.15 *** [0.03]	0.076 * [0.04]	-0.031 [0.03]	-0.056 [0.04]	-0.023 [0.03]
4th	0.044 [0.03]	0.016 [0.03]	0.007 [0.03]	-0.037 [0.03]	0.031 [0.03]	0.122 *** [0.03]	-0.062 * [0.03]	0.019 [0.03]	0.026 [0.03]	0.032 [0.03]
highest	0.196 *** [0.02]	0.015 [0.03]	0.044 [0.03]	-0.026 [0.03]	0.059 [0.03]	0.229 *** [0.03]	0.002 [0.03]	-0.029 [0.03]	0.18 *** [0.03]	0.05 [0.03]
depr # lowest	0.059 [0.09]	-0.042 [0.09]	0.085 [0.09]	-0.043 [0.08]	0.118 [0.09]	-0.184 * [0.07]	0.047 [0.09]	-0.139 [0.09]	0.07 [0.11]	-0.047 [0.09]
depr # 2nd	-0.09 [0.09]	0.021 [0.10]	0.06 [0.10]	0.041 [0.09]	0.102 [0.09]	-0.176 * [0.08]	-0.025 [0.09]	-0.118 [0.09]	-0.028 [0.11]	0.003 [0.08]
depr # 4th	0.006 [0.13]	-0.223 [0.14]	0.051 [0.10]	0.052 [0.11]	0.032 [0.12]	-0.128 [0.10]	0.216 [0.13]	-0.124 [0.12]	-0.136 [0.16]	-0.156 [0.12]
depr # highest	0.158 [0.15]	0.104 [0.21]	-0.116 [0.16]	0.293 [0.15]	0.334 * [0.16]	-0.247 [0.15]	0.278 [0.19]	0.203 [0.11]	-0.337 [0.26]	-0.341 [0.20]
constant	-0.125 * [0.05]	-0.122 * [0.05]	-0.268 *** [0.07]	0.154 * [0.07]	-0.273 *** [0.07]	-0.434 *** [0.06]	0.302 *** [0.06]	-0.132 * [0.07]	-0.117 [0.06]	0.12 [0.06]
R-squared	0.149	0.031	0.042	0.015	0.048	0.266	0.091	0.045	0.028	0.024
N	14276	13572	13218	13255	14301	14302	14289	14122	14294	13509

* p<0.05, ** p<0.01, *** p<0.001

Table 77 Table showing interaction between debt and income for each parenting measure in MCS wave 3

	physical b/se		close b/se		auth. b/se		harsh b/se		routine b/se		visits b/se		play b/se		educ b/se		TV b/se		confid. b/se
debt	-0.262 *** [0.07]		0.022 [0.07]		0.002 [0.07]		0.031 [0.07]		-0.201 ** [0.07]		-0.181 ** [0.07]		-0.075 [0.07]		-0.104 [0.07]		-0.07 [0.08]		-0.048 [0.08]
lowest	-0.157 *** [0.04]		-0.051 [0.04]		-0.162 *** [0.04]		0.173 *** [0.04]		-0.09 * [0.04]		-0.325 *** [0.03]		0.087 * [0.04]		-0.008 [0.04]		-0.107 * [0.04]		0.022 [0.04]
2nd	-0.08 * [0.04]		0.021 [0.03]		-0.071 [0.04]		0.071 * [0.03]		-0.015 [0.03]		-0.194 *** [0.03]		0.062 [0.04]		-0.042 [0.03]		-0.044 [0.04]		0.01 [0.03]
4th	0.034 [0.03]		0.011 [0.03]		0 [0.03]		-0.019 [0.03]		0.037 [0.03]		0.102 *** [0.03]		-0.041 [0.03]		0.01 [0.03]		0.025 [0.03]		0.039 [0.03]
highest	0.19 *** [0.03]		0.019 [0.03]		0.036 [0.03]		-0.001 [0.03]		0.069 * [0.03]		0.216 *** [0.03]		0.009 [0.03]		-0.04 [0.03]		0.182 *** [0.03]		0.062 [0.03]
debt # lowest	0.234 ** [0.08]		-0.045 [0.08]		0.144 [0.09]		-0.162 [0.09]		0.064 [0.09]		0.126 [0.07]		-0.048 [0.08]		0.011 [0.09]		0.014 [0.09]		-0.187 [0.10]
debt # 2nd	0.104 [0.08]		-0.127 [0.10]		0.114 [0.10]		-0.211 * [0.09]		0.021 [0.09]		0.116 [0.08]		0.02 [0.09]		0.012 [0.09]		-0.064 [0.09]		-0.179 [0.11]
debt # 4th	0.078 [0.14]		-0.113 [0.12]		0.113 [0.14]		-0.191 [0.13]		-0.029 [0.12]		0.075 [0.11]		-0.157 [0.14]		-0.065 [0.14]		-0.168 [0.13]		-0.111 [0.15]
debt # highest	0.114 [0.15]		-0.008 [0.14]		0.019 [0.13]		-0.307 [0.16]		0.085 [0.14]		-0.09 [0.12]		0.174 [0.15]		0.278 * [0.13]		-0.188 [0.18]		-0.041 [0.14]
_cons	-0.113 * [0.05]		-0.127 * [0.06]		-0.26 *** [0.07]		0.144 * [0.07]		-0.26 *** [0.06]		-0.438 *** [0.06]		0.294 *** [0.06]		-0.126 [0.07]		-0.107 [0.06]		0.102 [0.06]
R-squared	0.147		0.03		0.041		0.016		0.05		0.261		0.088		0.043		0.028		0.021
N	14261		13568		13214		13251		14285		14286		14274		14106		14279		13505

* p<0.05, ** p<0.01, *** p<0.001

Table 78 Table showing interaction between subjective hardship and income for all parenting measures in MCS wave 3

	physical b/se		close b/se		auth. b/se		harsh b/se		routine b/se		visits b/se		play b/se		educ b/se		TV b/se		confid. b/se	
mafi	-0.136 [0.07]	*	-0.087 [0.07]		-0.015 [0.08]		-0.053 [0.08]		-0.243 [0.08]	**	-0.021 [0.07]		-0.001 [0.07]		-0.058 [0.08]		0.089 [0.06]		-0.242 [0.08]	**
lowest	-0.132 [0.04]	***	-0.059 [0.04]		-0.155 [0.04]	***	0.15 [0.04]	***	-0.106 [0.04]	**	-0.302 [0.03]	***	0.093 [0.04]	*	0.014 [0.04]		-0.117 [0.04]	**	-0.03 [0.04]	
2nd	-0.088 [0.04]	*	-0.003 [0.03]		-0.066 [0.04]		0.027 [0.03]		-0.04 [0.03]		-0.187 [0.03]	***	0.074 [0.04]	*	-0.052 [0.03]		-0.06 [0.03]		-0.014 [0.03]	
4th	0.041 [0.03]		0 [0.03]		-0.003 [0.03]		-0.028 [0.03]		0.021 [0.03]		0.114 [0.03]	***	-0.039 [0.03]		0.009 [0.03]		0.028 [0.03]		0.02 [0.03]	
highest	0.198 [0.03]	***	0.011 [0.03]		0.033 [0.03]		-0.016 [0.03]		0.055 [0.03]		0.221 [0.03]	***	0.018 [0.03]		-0.034 [0.03]		0.183 [0.03]	***	0.045 [0.03]	
mafi#lowest	0.065 [0.08]		0.052 [0.09]		0.212 [0.09]	*	-0.087 [0.09]		0.116 [0.10]		-0.081 [0.08]		-0.18 [0.09]	*	-0.143 [0.10]		-0.035 [0.09]		0.049 [0.11]	
mafi#2nd	0.034 [0.09]		0.026 [0.10]		0.173 [0.12]		0.014 [0.11]		0.124 [0.10]		0.002 [0.10]		-0.133 [0.10]		-0.004 [0.11]		-0.069 [0.09]		-0.085 [0.11]	
mafi#4th	0.066 [0.11]		0.045 [0.13]		0.187 [0.13]		-0.1 [0.12]		0.223 [0.12]		-0.007 [0.10]		-0.104 [0.11]		0.012 [0.10]		-0.07 [0.11]		0.094 [0.13]	
mafi#highest	-0.135 [0.16]		0.03 [0.22]		0.389 [0.15]	**	-0.273 [0.19]		0.202 [0.17]		0.079 [0.12]		-0.003 [0.19]		0.116 [0.17]		0.096 [0.14]		-0.259 [0.19]	
_cons	-0.144 [0.05]	**	-0.126 [0.05]	*	-0.244 [0.07]	***	0.136 [0.07]	*	-0.281 [0.06]	***	-0.464 [0.06]	***	0.271 [0.06]	***	-0.145 [0.07]	*	-0.137 [0.06]	*	0.087 [0.06]	
R-squared	0.146		0.03		0.043		0.014		0.049		0.26		0.089		0.044		0.027		0.022	
N	14278		13574		13221		13256		14302		14303		14291		14123		14295		13512	

* p<0.05, ** p<0.01, *** p<0.001

Appendix 16 Summary of regression results for different types of hardship and parenting, using the most restricted sample (n=6,670) in MCS wave 3

Hardship measures	Physical needs	Closeness	Authoritative	Harsh or permissive	Routine	Trips out	Play activities	Educational activities	TV/PC hours	Confidence
Lowest vs median income	worse	n/s	worse	better	worse	worse	n/s	n/s	worse	n/s
Persistent poverty	worse	N/S	worse	n/s	worse	worse	n/s	N/S	worse	n/s
Debt	worse	WORSE	N/S	N/S	worse	worse	worse	worse	worse	worse
Material deprivation	worse	N/S	N/S	N/S	worse	worse	worse	worse	N/S	worse
Subjective hardship	worse	n/s	N/S	N/S	worse	worse	worse	worse	n/s	worse
Crowded	n/s	worse	N/S	n/s	n/s	worse	n/s	n/s	worse	N/S
Damp	worse	worse	n/s	N/S	worse	N/S	worse	n/s	worse	worse
Poor/unsafe area	worse	n/s	n/s	worse	worse	worse	worse	N/S	worse	worse
Negative area observation	worse	n/s	n/s	n/s	worse	worse	n/s	n/s	N/S	worse
IMD worst decile	worse	n/s	n/s	n/s	worse	n/s	N/S	n/s	worse	n/s

N.B. Any changes to original results are highlighted by boxes, where N/S indicates a previously significant result that is no longer significant at 5% and 'WORSE' represents a previously insignificant result, now significant.

Appendix 17 Model diagnostics – Does the data meet the assumptions of SEM?

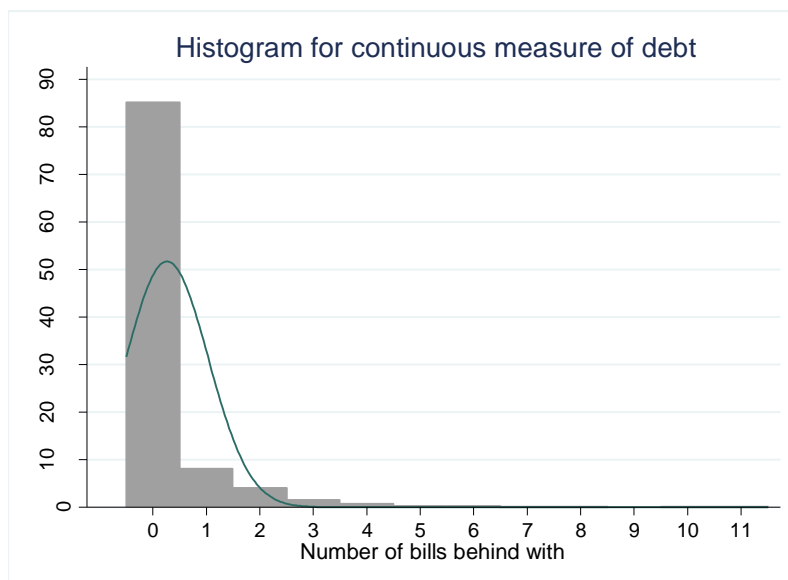
1) Multivariate normal distribution of variables in MCS wave 3

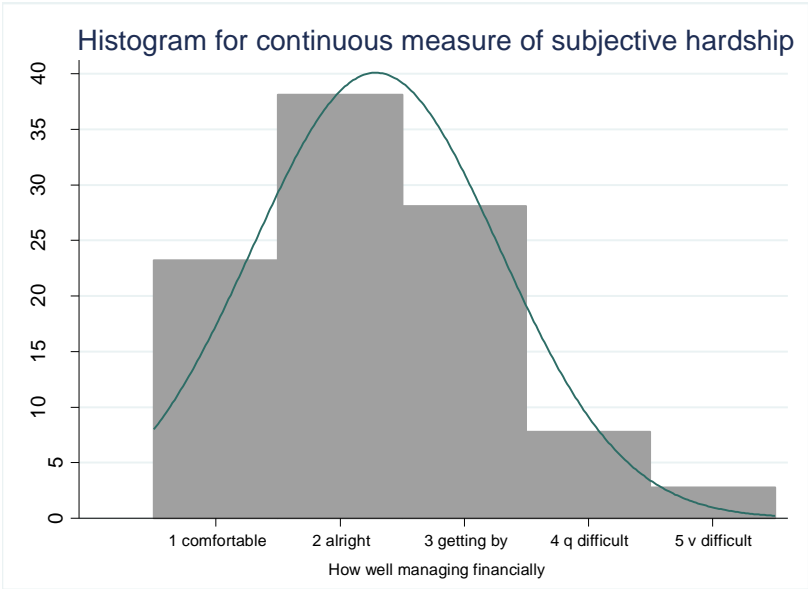
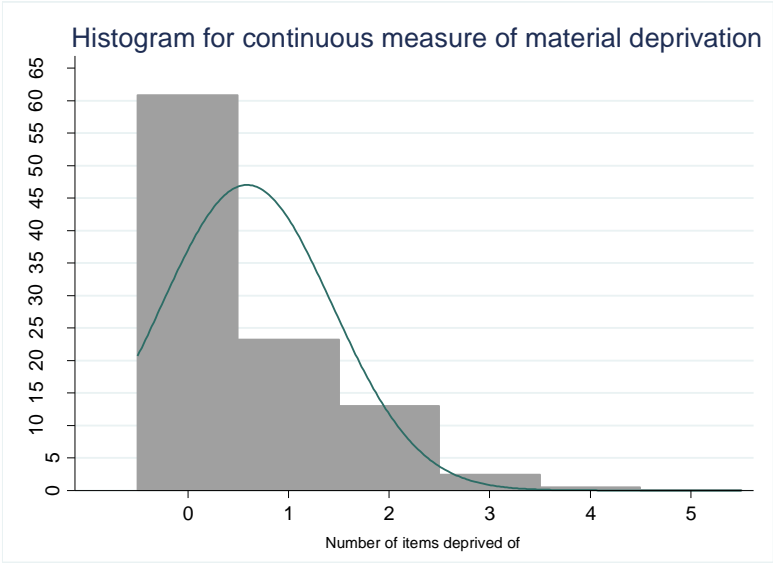
Table 79 Table 1 Sample distribution for demographic variables (covariates) in MCS wave 3

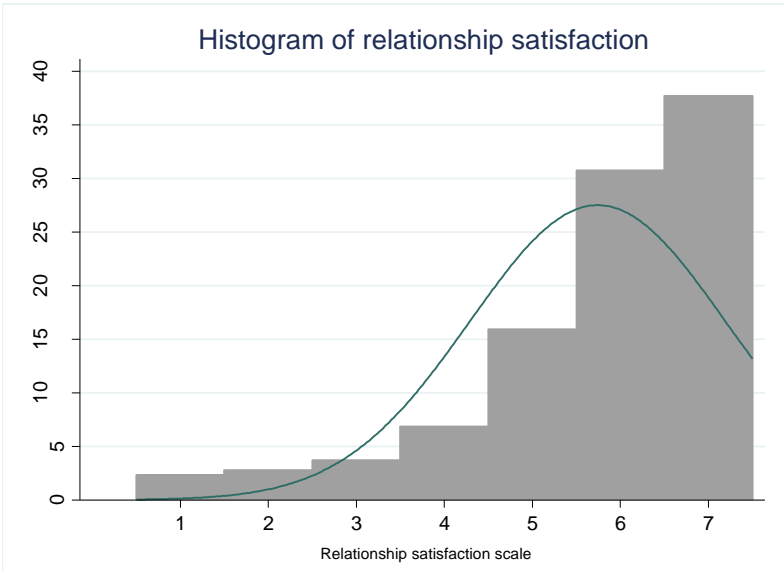
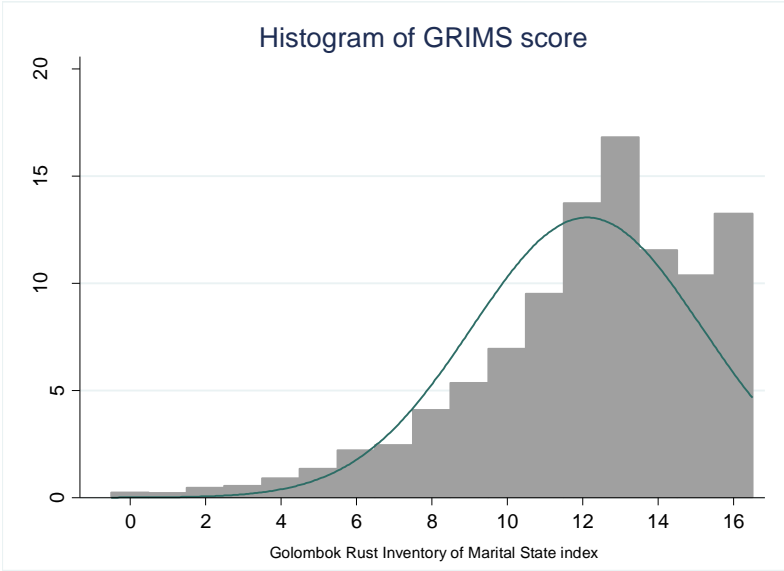
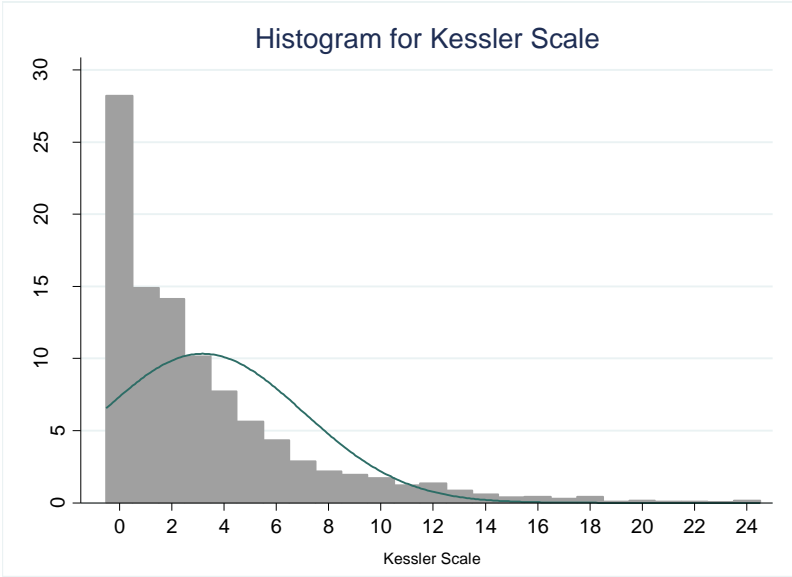
Variable	Frequency	Percent (weighted)
Mother's age		
18 to 24	1,051	7.3%
25 to 34	6,479	44.2%
35 to 44	6,473	46.0%
45 plus	368	2.6%
Total	14,371	
Mother's education		
none of these/overseas qualifications	2,240	13.7%
NVQ level 1	1,095	7.7%
NVQ level 2	3,933	28.6%
NVQ level 3	2,135	14.5%
NVQ level 4	4,202	30.3%
NVQ level 5	766	5.3%
Total	14,371	
Number of siblings in household		
none	2,368	16.4%
one	6,722	48.3%
two	3,418	23.6%
three or more	1,863	11.7%
Total	14,371	
Household composition		
Two parents/carers	11,501	80.2%
One parent/carers	2,870	19.8%
Total	14,371	
Mother's ethnicity		
White	12,320	88.9%
Mixed	135	1.0%
Indian	364	1.9%
Pakistani	597	2.9%
Bangladeshi	238	0.9%
Black Caribbean	185	1.2%
Black African	288	1.7%
Other incl Chinese	244	1.5%
Total	14,371	
Mother's working status		
not working	6,227	41.9%
working part-time	6,237	45.3%
working full time	1,907	12.8%
Total	14,371	

One of the assumptions of maximum likelihood estimation is that the variables follow a multivariate normal distribution. Some of the variables are categorical (these are recoded as continuous as shown in Table 37 of the main document) – these relate to demographics of the mothers/households and therefore, with survey weights, are reflective of the population they represent.

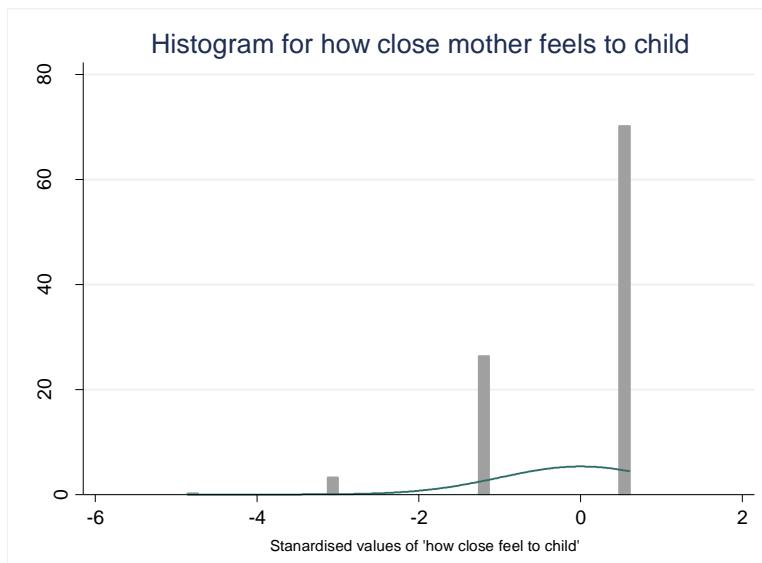
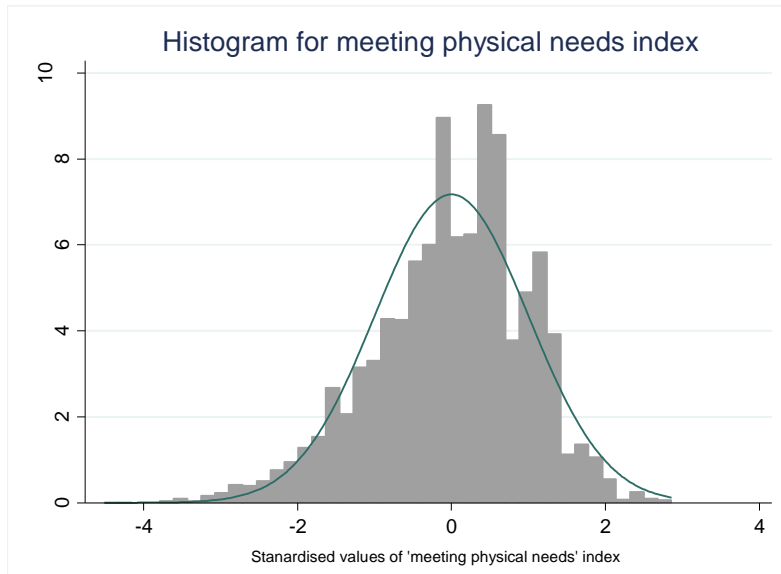
Histograms for the continuous variables are shown below. For these variables it is more problematic that the distribution is skewed. The consequences of this and methods to deal with non-normally distributed variables in SEM is discussed in the main text of the thesis.

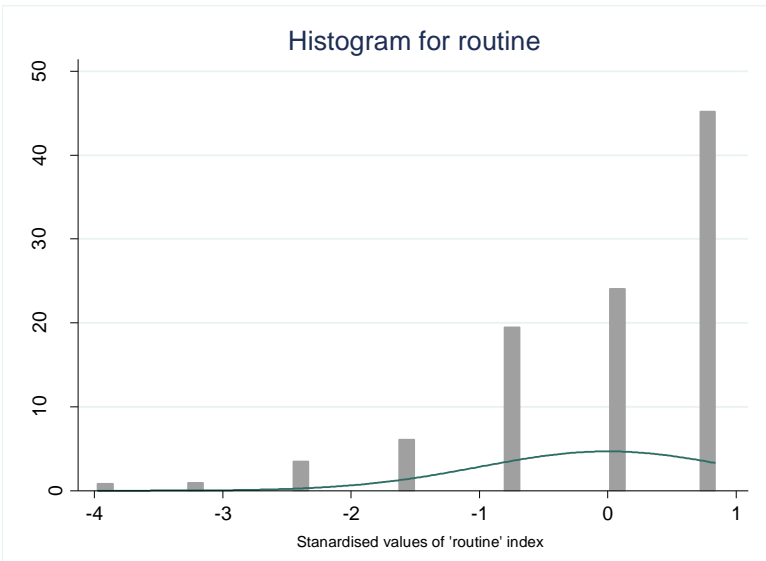
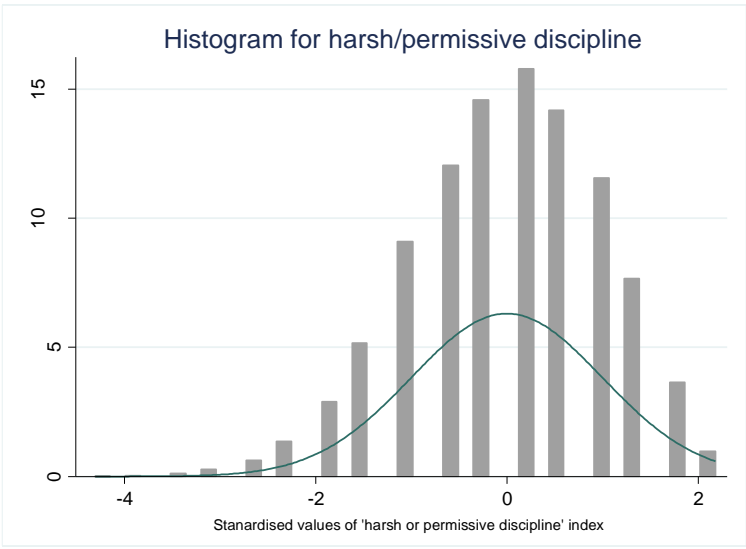
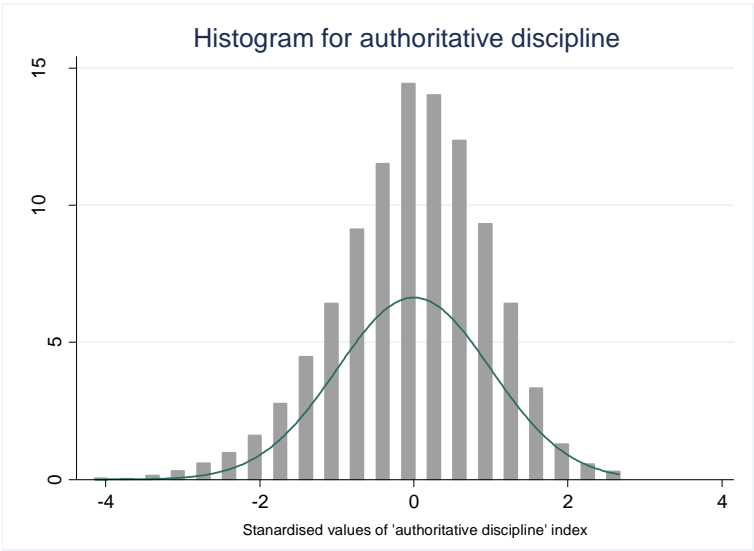


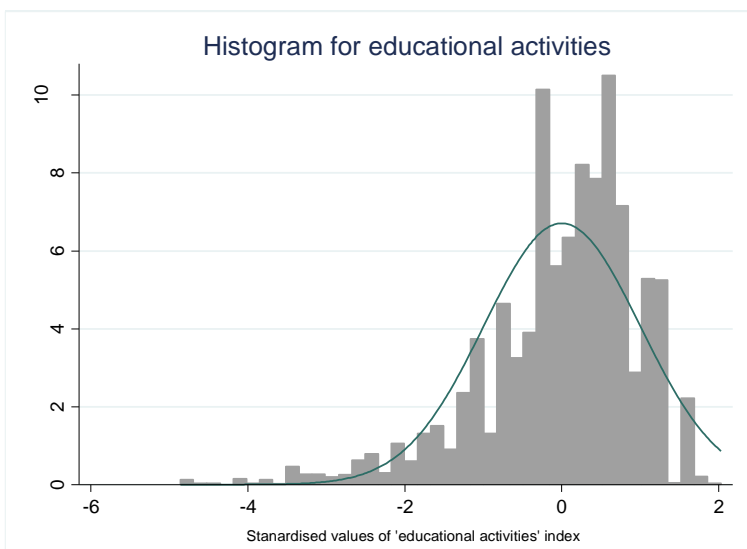
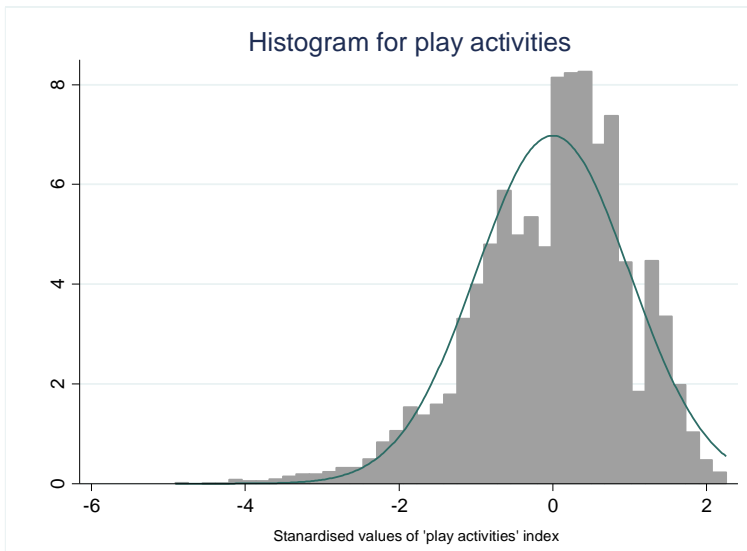
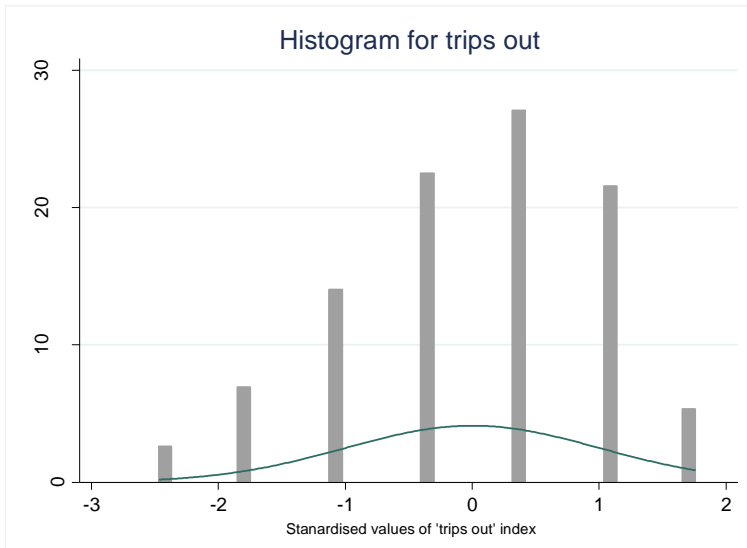


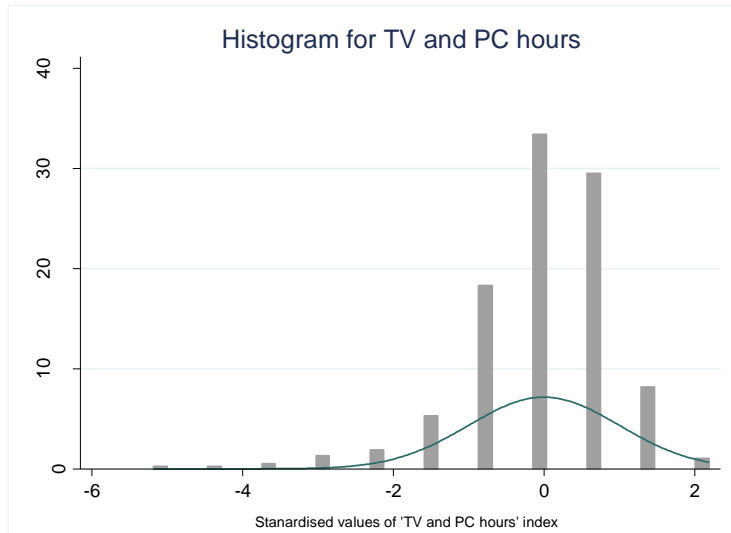


Dependent variables in MCS wave 3









2) Checks for missing data

As shown in Appendix 3, the following variables have 5% or more missing:

Mechanisms

- Kessler scale
- Life satisfaction
- GRIMS score
- Relationship satisfaction

Dependent variables

- Closeness to the child
- Authoritative discipline
- Harsh/permissive discipline

As discussed in 4.3 of the main thesis these variables are unlikely to meet the assumption of missing at random (MAR) as it is plausible to assume that non-response might be associated with the measure itself i.e. feeling less close to the child might make a mother less likely to answer the question about how close she feels to her child. Implications of missing data and how this can bias the results are discussed in chapter 4. Strategies for dealing with missing data in SEM are discussed in the main text in chapter 8.

3) Checking for collinearity

As can be seen from the tables below there are no problems of collinearity between the independent variables (including covariates and mediating

variables). The variance inflation factor (VIF) is well below the standard cut off of 10.0 (Kline, 2011:53). None of the tolerance values are below the cut off of 0.1 (which would indicate extreme multivariate collinearity) and the squared multiple correlation values are all below the standard of 0.9 (Ibid).

Table 80 Testing for collinearity in the full sample in MCS wave 3

Variable	VIF	SQRT	Tolerance	R-
		VIF		Squared
Number of bills behind with	1.25	1.12	0.7979	0.2021
Number of items deprived of	1.65	1.28	0.6074	0.3926
Subjective hardship	1.56	1.25	0.6402	0.3598
Kessler scale	1.32	1.15	0.7581	0.2419
Life satisfaction	1.35	1.16	0.7381	0.2619
Mother's age	1.2	1.1	0.8302	0.1698
Mother's education	1.25	1.12	0.7991	0.2009
Number of siblings	1.15	1.07	0.8679	0.1321
One parent household	1.24	1.12	0.8037	0.1963
Ethnicity white	1.02	1.01	0.9817	0.0183
Mother's work hours	1.22	1.11	0.8169	0.1831
Mean VIF	1.29			

Table 81 Testing for collinearity in the relationship subsample in MCS wave 3

Variable	VIF	SQRT	Tolerance	R-
		VIF		Squared
Number of bills behind with	1.2	1.1	0.8307	0.1693
Number of items deprived of	1.51	1.23	0.6622	0.3378
Subjective hardship	1.45	1.21	0.6881	0.3119
Kessler scale	1.36	1.16	0.7372	0.2628
Life satisfaction	1.65	1.28	0.6077	0.3923
GRIMS score	1.64	1.28	0.6086	0.3914
Relationship satisfaction	1.71	1.31	0.586	0.414
Mother's age	1.14	1.07	0.8786	0.1214
Mother's education	1.2	1.1	0.8299	0.1701
Number of siblings	1.12	1.06	0.8921	0.1079
Ethnicity white	1.02	1.01	0.9806	0.0194
Mother's work hours	1.18	1.09	0.8478	0.1522
Mean VIF	1.35			

Table 82 Correlation matrix for continuous hardship measures in MCS wave 3

	debt	deprivation	subjective	crowding	damp	bad area	unsafe area
debt	1						
deprivation	0.35	1					
subjective	0.37	0.54	1				
crowding	0.11	0.21	0.17	1			
damp	0.12	0.16	0.15	0.12	1		
bad area	0.18	0.27	0.24	0.19	0.15	1	
unsafe area	0.17	0.22	0.22	0.13	0.15	0.61	1
observations	14,451						

Noticeably, debt, deprivation and subjective hardship are fairly highly correlated with each other and unsafe area (based on interviewer observation) is very highly correlated with the other area measure 'bad area' (the mother thinks it is a bad area to bring up children or feels unsafe in the area). All other correlations are fairly low (0.1 – 0.2).

Appendix 18 The Measurement Model for Economic Hardship

Exploratory factor analysis

I estimate an exploratory factor analysis (EFA) with 2 factors as having tested 3 factors it became clear that with 3 factors it is a Heywood case. All Stata output is presented below. The variable names refer to the following:

- debtc = debt
- deprc = material deprivation
- mafic = subjective hardship (how well managing financially)
- peroom = crowding measure (number of people per room)
- dampc = problems with damp
- charea = negative characteristics of the area (mother feels it is not a good area to bring up children or feels unsafe in the area)
- unsafec = interviewer felt unsafe in the area

```
. factor debtc deprc mafic peroom dampc charea unsafec, factors(2) ml
(obs=14,451)
Iteration 0: log likelihood = -1184.1567
Iteration 1: log likelihood = -85.293862
Iteration 2: log likelihood = -80.492632
Iteration 3: log likelihood = -80.441292
Iteration 4: log likelihood = -80.439768
Iteration 5: log likelihood = -80.439716
Iteration 6: log likelihood = -80.439714

Factor analysis/correlation
Method: maximum likelihood
Rotation: (unrotated)
Log likelihood = -80.43971

Number of obs = 14,451
Retained factors = 2
Number of params = 13
Schwarz's BIC = 285.4
(Akaike's) AIC = 186.879
```

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	1.85970	0.99417	0.6824	0.6824
Factor2	0.86553	.	0.3176	1.0000

```
LR test: independent vs. saturated: chi2(21) = 1.8e+04 Prob>chi2 = 0.0000
LR test: 2 factors vs. saturated: chi2(8) = 160.83 Prob>chi2 = 0.0000
```

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Uniqueness
debtc	0.3343	0.3507	0.7652
deprc	0.5007	0.5370	0.4609
mafic	0.4811	0.5625	0.4521
peroom	0.2598	0.1079	0.9209
dampc	0.2193	0.0978	0.9423
charea	0.8418	-0.2865	0.2092
unsafec	0.6645	-0.1856	0.5240

A distinction between these two factors is not very clear to interpret – debtc, deprc and mafic load roughly equally onto each. The two area measures, charea and unsafec load highly onto the first factor and debtc, deprc and mafic load fairly highly onto both (although slightly higher onto the second factor).

There is also high uniqueness for the two housing variables peroom and dampc, which means they are not well represented by the factors.

When I remove these two housing variables (peroom and dampc) and estimate again with 2 factors it is now a Heywood case. I therefore re-estimate without these two housing variables but this time with one factor:

```

Factor analysis/correlation
Method: maximum likelihood
Rotation: (unrotated)

Log likelihood = -2610.276

Number of obs = 14,456
Retained factors = 1
Number of params = 5
Schwarz's BIC = 5268.45
(Akaike's) AIC = 5230.55

```

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	1.61714	.	1.0000	1.0000

```

LR test: independent vs. saturated: chi2(10) = 1.6e+04 Prob>chi2 = 0.0000
LR test: 1 factor vs. saturated: chi2(5) = 5219.41 Prob>chi2 = 0.0000

```

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
debtc	0.4833	0.7664
deprc	0.7050	0.5030
mafic	0.6988	0.5117
charea	0.4629	0.7858
unsafec	0.4290	0.8160

Now with only one factor there are higher levels of uniqueness for the area based measures (charea and unsafec) as well as debtc. As I know the area measures are highly correlated with each other I remove these two variables with high uniqueness and estimate a one factor model with debt, deprivation and subjective hardship (in the knowledge that these three measures are correlated highly together and therefore may be capturing the underlying latent variable 'hardship').

```

. factor debtc deprc mafic, factors(1) ml
(obs=14,477)
Iteration 0: log likelihood = -546.90196
Iteration 1: log likelihood = -.13422271
Iteration 2: log likelihood = -3.121e-07

```

```

Factor analysis/correlation
Method: maximum likelihood
Rotation: (unrotated)

Log likelihood = -3.12e-07

Number of obs = 14,477
Retained factors = 1
Number of params = 3
Schwarz's BIC = 28.741
(Akaike's) AIC = 6

```

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	1.32272	.	1.0000	1.0000

```

LR test: independent vs. saturated: chi2(3) = 7689.14 Prob>chi2 = 0.0000
(the model with 1 factors is saturated)

```

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
debtc	0.4829	0.7668
deprc	0.7209	0.4803
mafic	0.7549	0.4302

Debt is not as well represented by the factor and has a high uniqueness. Still, the AIC and BIC is much smaller than the previous model suggesting a better fit. With one factor it is not possible to estimate a model with only two indicators as it is under-identified. I therefore keep all three measures of hardship and now, having used EFA to explore the data and the best model for the data. I estimate a confirmatory factor analysis (CFA), which will be the measurement model incorporated into the structural equation model.

Confirmatory factor analysis

Because only three items are used for this one factor model the model is just-identified which means it is not possible to absolute obtain goodness of fit statistics. However, the relatively high factor loadings (particularly for deprivation and managing financially) suggest this is a meaningful measure of the latent variable 'Hardship' and according to the comparative fit indices from the EFA this was the best model. Below are the results from the CFA both standardised and unstandardised as is common practice. These results are clearer to interpret in the path diagram also below.

Table 83 CFA Results for latent hardship measure in MCS wave 3

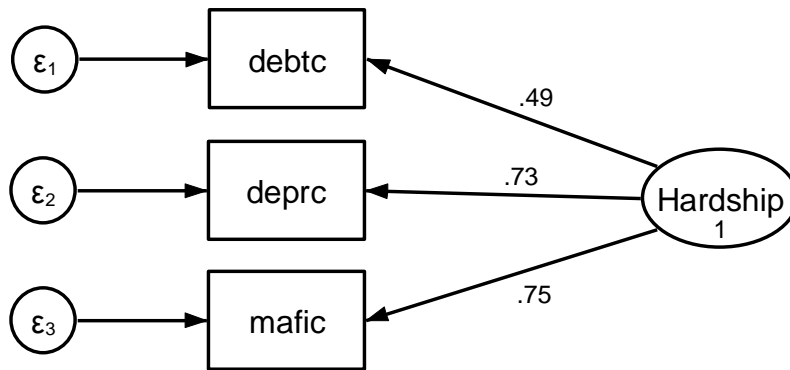
	Coef.	Standard error	t	P>t	95% confidence interval
Measurement					
debtc <-					
Hardship	1	(constrained)			
_cons	0.2717931	0.0106046	25.63	0	0.2509435 0.2926427
deprc <-					
Hardship	1.58151	0.0635157	24.9	0	1.456633 1.706387
_cons	0.5722312	0.0133102	42.99	0	0.5460623 0.5984002
mafic <-					
Hardship	1.938441	0.0840898	23.05	0	1.773114 2.103769
_cons	2.275754	0.0147789	153.99	0	2.246697 2.30481

Table 84 CFA standardised results for latent hardship measure in MCS wave 3

	Coef.	Standard error	t	P>t	95% confidence interval
Measurement					
debtc <-					
Hardship	0.4884999	0.0112497	43.42	0	0.4663821 0.5106177
_cons	0.3432936	0.0069612	49.32	0	0.3296073 0.3569798
deprc <-					
Hardship	0.7311047	0.0126629	57.74	0	0.7062084 0.7560011
_cons	0.6839779	0.0105313	64.95	0	0.6632725 0.7046834
mafic <-					
Hardship	0.7493188	0.0136591	54.86	0	0.7224639 0.7761736
_cons	2.274584	0.0185151	122.85	0	2.238182 2.310986

In terms of how to scale the factor I decided to fix the factor to 1, rather than one of the factor loadings, as this standardises the latent variable measure. The numbers on the arrow paths from the latent variable to the observed items are the factor loadings. These describe the relationship between the latent variable 'Hardship' and each of its indicators and can be interpreted in a similar way to regression coefficients; because the latent variable is standardised they can be interpreted as a one unit increase in the latent variable 'Hardship' is associated with 0.49 standard deviation increase in debt ('debtc'), 0.73 standard deviations increase in deprivation ('deprc') and 0.75 standard deviations increase in feeling poor ('mafic').

CFA path diagram of results



Appendix 19 Correlation Matrices for all variables included in SEM analyses

1. Pearson correlations between hardship variables in MCS wave 3 used in the hardship measurement model

	debt	deprivation	subjective
debt	1		
deprivation	0.35	1	
subjective	0.37	0.54	1
observations	14,282		

2. Pearson correlations between mediating variables in MCS wave 3 used in structural equation models for full sample

	kessler	satisfaction
kessler	1	
satisfaction	-0.43	1
observations	13,439	

3. Pearson correlations between mediating variables in MCS wave 3 used in structural equation models for subsample of mothers in a relationship

	Kessler	satisfaction	GRIMS	relationship satisfaction
Kessler	1			
satisfaction	-0.42	1		
GRIMS	-0.39	0.47	1	
Relationship satisfaction	-0.32	0.53	0.56	1
observations	10,537			

4. Pearson correlations for all variables in MCS wave 3 included in the full sample structural equation models

	debt	deprivation	subjective	kessler	satisfaction	physical	close	authoritative
debt	1							
deprivation	0.36	1						
subjective	0.37	0.54	1					
kessler	0.24	0.29	0.28	1				
satisfaction	-0.21	-0.26	-0.32	-0.43	1			
physical	-0.11	-0.20	-0.16	-0.15	0.13	1		
close	-0.05	-0.08	-0.06	-0.17	0.13	0.11	1	
authoritative	0.03	0.00	0.01	0.06	-0.06	0.08	-0.01	1
harsh	-0.05	-0.03	-0.04	-0.18	0.13	0.10	0.15	-0.44
routine	-0.09	-0.10	-0.11	-0.14	0.11	0.21	0.07	0.06
visits	-0.14	-0.29	-0.19	-0.13	0.07	0.34	0.12	0.11
play	-0.04	-0.08	-0.06	-0.09	0.08	0.43	0.19	0.04
educational	-0.06	-0.09	-0.07	-0.10	0.08	0.27	0.12	0.03
TV	-0.05	-0.07	-0.07	-0.06	0.05	0.12	0.03	0.02
mother age	-0.16	-0.21	-0.14	-0.07	0.09	0.07	0.04	-0.04
mother educ	-0.17	-0.29	-0.23	-0.14	0.08	0.26	0.06	0.13
siblings	0.05	0.08	0.05	0.06	0.04	-0.11	-0.09	-0.03
single parent	0.21	0.32	0.28	0.16	-0.28	-0.11	0.01	-0.02
mother								
ethnicity	0.06	0.11	0.09	0.07	-0.02	-0.14	-0.10	-0.11
mother work	-0.16	-0.28	-0.18	-0.15	0.05	0.10	0.07	0.04

	harsh	routine	visits	play	educational	TV	mother age	mother educ
harsh	1							
routine	0.10	1						
visits	0.01	0.12	1					
play	0.15	0.13	0.20	1				
educational	0.11	0.12	0.18	0.36	1			
TV	0.03	0.08	0.07	0.05	0.04	1		
mother age	0.04	0.00	0.18	-0.07	0.05	0.08	1	
mother educ	-0.01	0.13	0.37	0.10	0.15	0.12	0.25	1
siblings	-0.01	0.00	-0.16	-0.16	-0.09	-0.01	0.15	-0.13
single parent	0.01	-0.08	-0.13	0.04	-0.07	-0.04	-0.22	-0.20
mother ethnicity	0.01	-0.07	-0.16	-0.12	0.01	-0.03	0.02	0.00
mother work	0.02	0.02	0.25	-0.01	0.07	0.04	0.17	0.33

	siblings	single parent	mother ethnicity	mother work
siblings	1			
single parent	-0.13	1		
mother ethnicity	0.05	0.04	1	
mother work	-0.23	-0.14	-0.06	1
Observations	12,649			

5. Pearson correlations for all variables in MCS wave 3 included in the relationship subsample structural equation models

	debt	deprivation	subjective	kessler	satisfaction	GRIMS	relationship satisfaction	physical
debt	1							
deprivation	0.33	1						
subjective	0.33	0.50	1					
kessler	0.21	0.25	0.25	1				
satisfaction	-0.16	-0.21	-0.26	-0.42	1			
GRIMS	-0.13	-0.18	-0.20	-0.39	0.47	1		
relationship satisfaction	-0.10	-0.12	-0.15	-0.31	0.53	0.56	1	
physical	-0.11	-0.19	-0.15	-0.14	0.10	0.13	0.07	1
close	-0.05	-0.09	-0.08	-0.16	0.14	0.14	0.10	0.11
authoritative	0.02	0.00	0.01	0.07	-0.06	-0.03	-0.04	0.08
harsh	-0.04	-0.03	-0.05	-0.18	0.13	0.17	0.12	0.08
routine	-0.07	-0.08	-0.09	-0.11	0.10	0.11	0.07	0.20
visits	-0.14	-0.27	-0.18	-0.10	0.05	0.06	0.00	0.33
play	-0.05	-0.10	-0.07	-0.09	0.08	0.12	0.06	0.44
educational	-0.05	-0.07	-0.06	-0.08	0.05	0.08	0.05	0.25
TV	-0.06	-0.07	-0.07	-0.06	0.05	0.06	0.03	0.13
mother age	-0.15	-0.19	-0.11	-0.06	0.05	-0.01	0.00	0.07
mother education	-0.16	-0.26	-0.21	-0.12	0.05	0.07	0.01	0.26
siblings	0.08	0.13	0.10	0.06	0.01	-0.02	0.01	-0.12
ethnicity	0.05	0.10	0.09	0.07	-0.01	-0.03	-0.01	-0.15
mother work	-0.12	-0.22	-0.13	-0.13	0.03	0.03	0.00	0.08

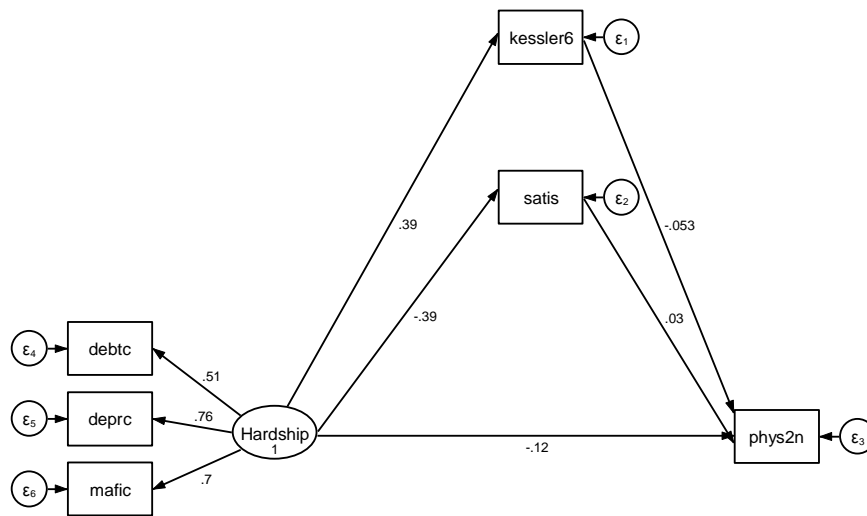
	close	authoritative	harsh	routine	visits	play	educational	TV
close	1							
authoritative	-0.01	1						
harsh	0.15	-0.45	1					
routine	0.07	0.07	0.09	1				
visits	0.11	0.10	0.01	0.10	1			
play	0.19	0.05	0.13	0.12	0.20	1		
educational	0.11	0.02	0.09	0.11	0.17	0.35	1	
TV	0.03	0.02	0.02	0.07	0.07	0.05	0.04	1
mother age	0.05	-0.04	0.04	-0.02	0.17	-0.05	0.02	0.08
mother education	0.06	0.13	-0.02	0.12	0.35	0.11	0.13	0.12
siblings	-0.09	-0.03	-0.01	-0.01	-0.16	-0.15	-0.10	-0.01
ethnicity	-0.10	-0.13	0.01	-0.07	-0.17	-0.11	0.01	-0.04
mother work	0.07	0.03	0.03	-0.01	0.22	0.00	0.07	0.03

	mother age	mother education	siblings	ethnicity	mother work
mother age	1				
mother education	0.22	1			
siblings	0.09	-0.15	1		
ethnicity	-0.01	-0.02	0.05	1	
mother work	0.14	0.29	-0.26	-0.07	1
observations	9,989				

Appendix 20 Robustness SEM with most-restricted sample

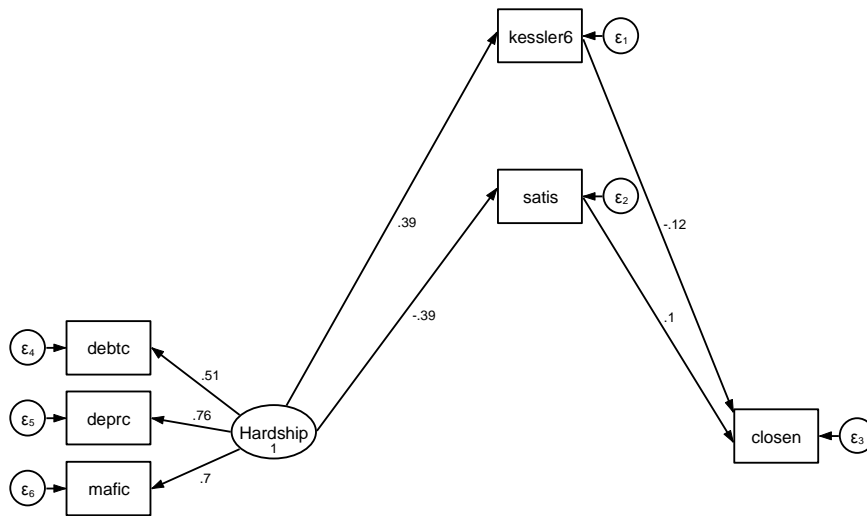
Below path diagrams for each parenting measure display results for the most restricted sample (non-missing data on all measures used). Where there are any differences to the main sample these are described in notes below the diagram.

1. Physical needs

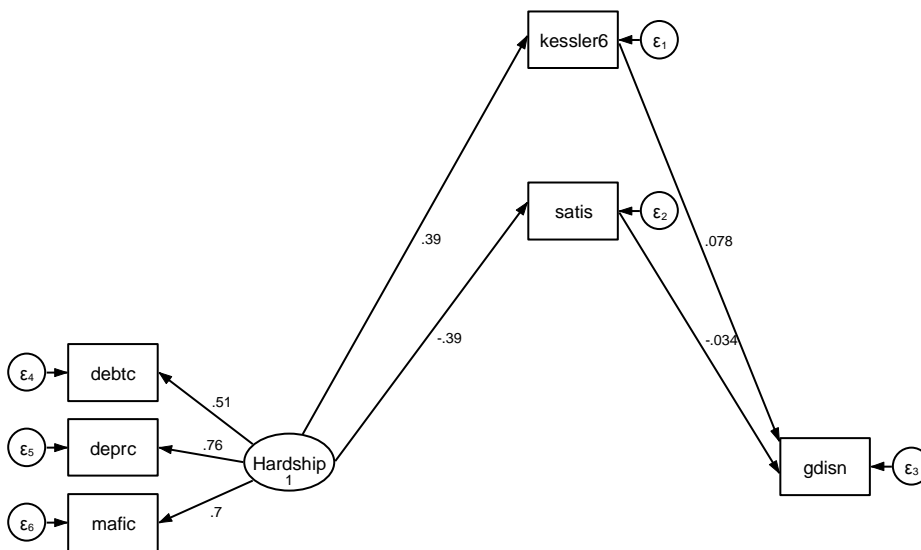


Results are the same as for the main sample although the path from life satisfaction (satis) to physical needs (phys2n) is now marginally significant ($p=0.018$).

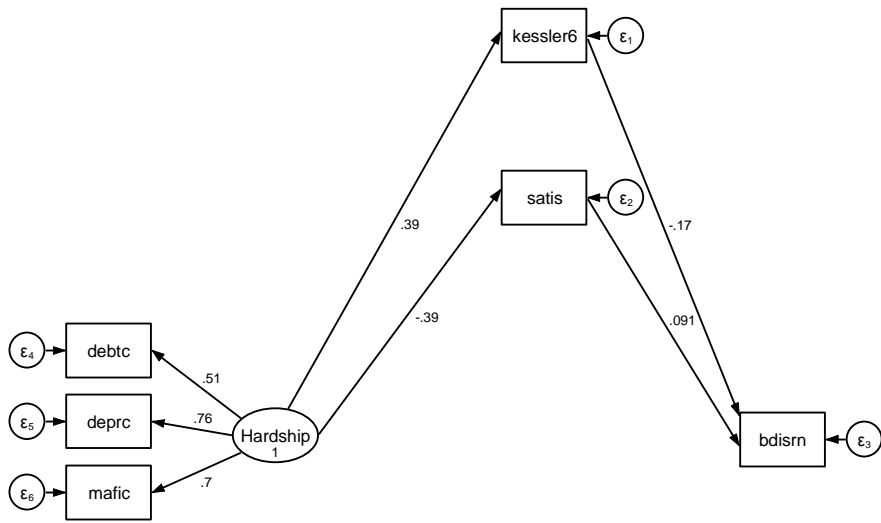
2. Closeness



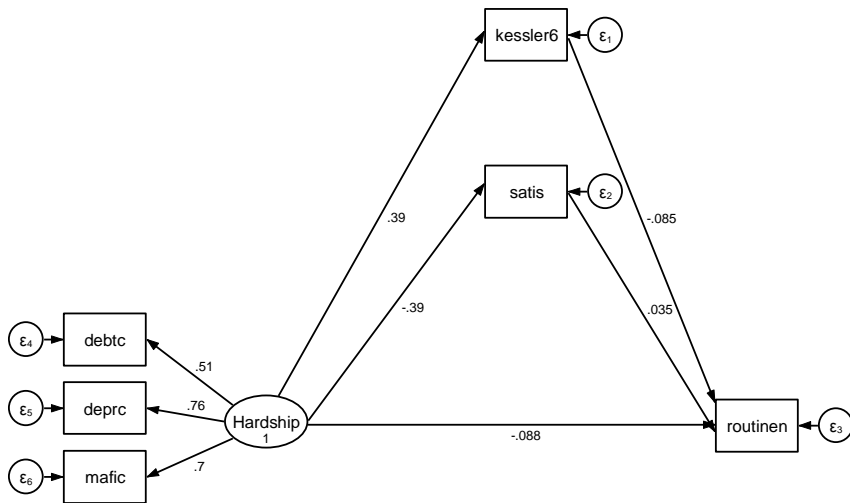
3. Authoritative discipline



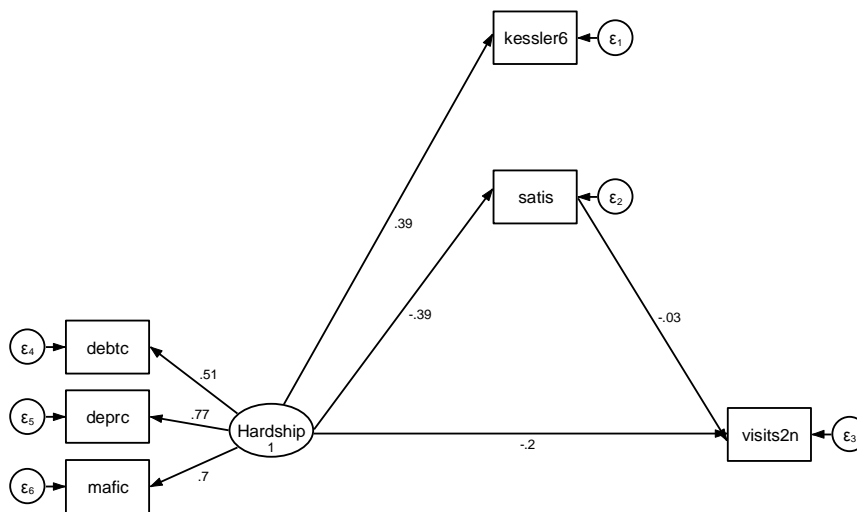
4. Harsh or permissive discipline



5. Routine

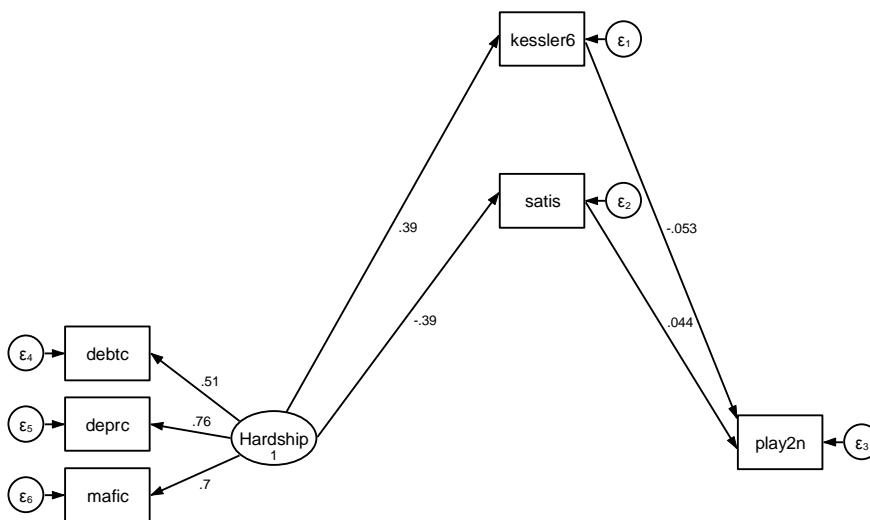


6. Trips outside the home

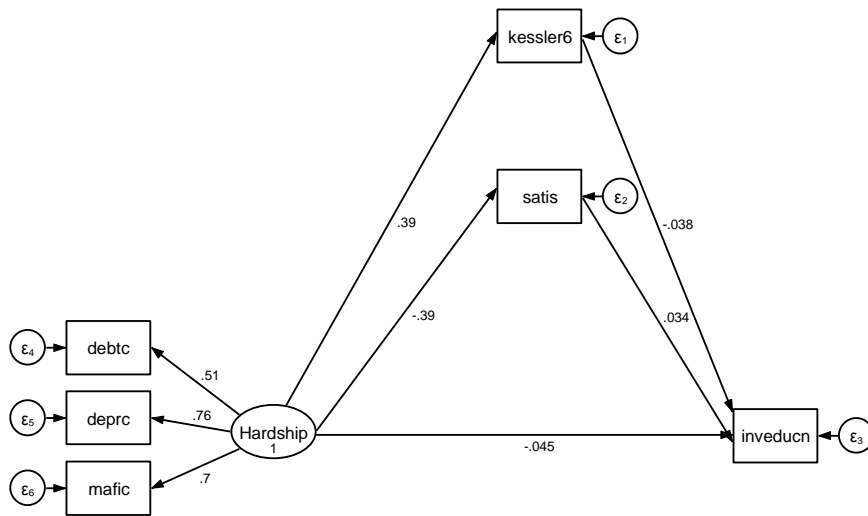


The direct effect is the same but for the most restricted sample the indirect effect via life satisfaction (satis) is now significant.

7. Play activities

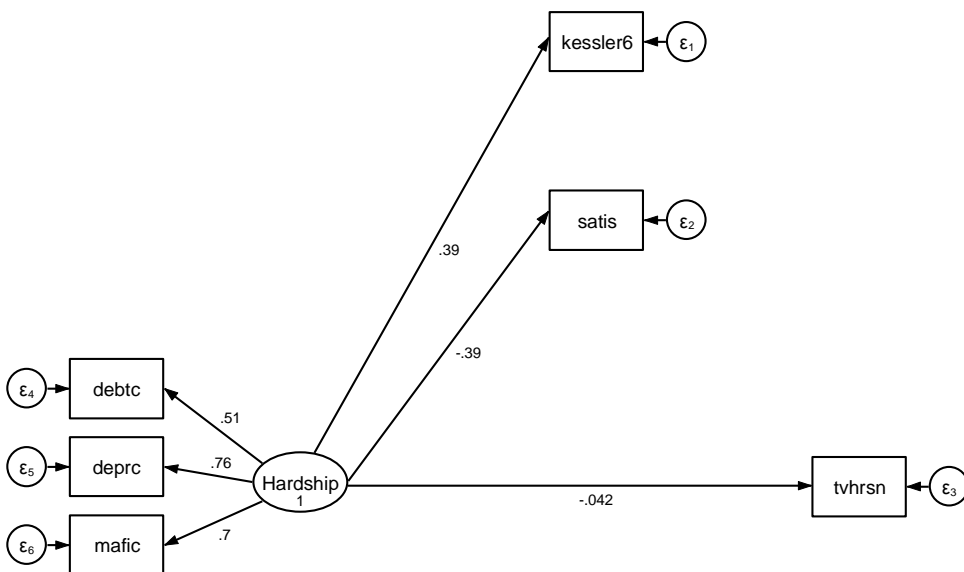


8. Educational activities



Overall results are the same although the path coefficient for the direct effect is smaller for the most restricted sample, and the indirect path coefficients are a little larger.

9. Hours of television and computer games



Results are the same however the direct effect is marginally significant ($p=0.017$) for the restricted sample.

Appendix 21 SEM results for full sample

Table 85 SEM results for meeting the child's physical needs MCS wave 3 (N= 13,532)

Physical needs	Coefficient	Standard error	P-value	Std coefficient
Direct effects				
Kessler <- Hardship	3.74	0.21	0.00	0.39
Life satisfaction <- Hardship	-1.93	0.10	0.00	-0.39
Meeting physical needs <- Kessler	-0.01	0.00	0.00	-0.05
Life satisfaction Hardship	0.02	0.01	0.01	0.03
	-0.30	0.04	0.00	-0.12
Total indirect effects				
Hardship	-0.08	0.01	0.00	-0.03
Total effects				
Meeting physical needs <- Mother's age	0.00	0.00	0.16	-0.01
Mother's education	0.15	0.01	0.00	0.22
Number of siblings	-0.08	0.01	0.00	-0.08
One parent/carer	-0.08	0.03	0.01	-0.03
Ethnicity: white	0.40	0.04	0.00	0.12
Mother working (hours)	0.00	0.00	0.00	-0.05
Hardship	-0.37	0.04	0.00	-0.15
Indirect effects (standardised)				
via Kessler	-0.02			
via life satisfaction	-0.01			
Proportions of mediation (standardised)				
Indirect via Kessler	0.13			
Indirect via life satisfaction	0.08			
Total indirect effect	0.21			
Direct effect	0.79			

Table 86 SEM results for closeness to the child in MCS wave 3 (N= 13,525)

Closeness	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.73	0.21	0.00	0.39
Life satisfaction <- Hardship	-1.93	0.10	0.00	-0.39
Closeness <- Kessler	-0.03	0.00	0.00	-0.12
Life satisfaction Hardship	0.05	0.01	0.00	0.10
	0.05	0.04	0.18	0.02
Total indirect effects				
Closeness <- Hardship	-0.22	0.02	0.00	-0.09
Total effects				
Closeness <- Mother's age	0.01	0.00	0.00	0.05
Mother's education	0.01	0.01	0.15	0.02
Number of siblings	-0.09	0.01	0.00	-0.09
One parent/carer	0.09	0.03	0.01	0.03
Ethnicity: white	0.27	0.04	0.00	0.08
Mother working (number of hours)	0.00	0.00	0.47	0.01
Hardship	-0.17	0.04	0.00	-0.07
Indirect effects (standardised)				
via Kessler	-0.05			
via life satisfaction	-0.04			

Table 87 SEM results for authoritative discipline in MCS wave 3 (N= 13,204)

Authoritative discipline	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.72	0.21	0.00	0.39
Life satisfaction <- Hardship	-1.94	0.10	0.00	-0.39
Authoritative discipline <- Kessler	0.02	0.00	0.00	0.08
Life satisfaction Hardship	-0.02	0.01	0.01	-0.03
Hardship	0.08	0.04	0.09	0.03
Total indirect effects				
Authoritative discipline <- Hardship	0.11	0.02	0.00	0.04
Total effects				
Authoritative discipline <- Mother's age	-0.01	0.00	0.00	-0.08
Mother's education	0.10	0.01	0.00	0.15
Number of siblings	-0.01	0.01	0.61	-0.01
One parent/carer	-0.08	0.03	0.01	-0.03
Ethnicity: white	0.43	0.04	0.00	0.12
Mother working (number of hours)	0.00	0.00	0.71	0.00
Hardship	0.18	0.04	0.00	0.07
Indirect effects (standardised)				
via Kessler	0.03			
via life Satisfaction	0.01			

Table 88 SEM results for harsh or permissive discipline in MCS wave 3
(N=13,236)

Harsh/permissive discipline	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.71	0.21	0.00	0.38
Life satisfaction <- Hardship	-1.94	0.10	0.00	-0.38
Harsh/permissive discipline <- Kessler	-0.04	0.00	0.00	-0.17
Life satisfaction Hardship	0.05	0.01	0.00	0.09
	0.07	0.04	0.09	0.03
Total indirect effects				
Harsh/permissive discipline <- Hardship	-0.25	0.02	0.00	-0.10
Total effects				
Harsh/permissive discipline <- Mother's age	0.01	0.00	0.00	0.04
Mother's education	-0.03	0.01	0.00	-0.04
Number of siblings	0.01	0.01	0.63	0.01
One parent/carer	0.09	0.03	0.00	0.04
Ethnicity: white	-0.04	0.03	0.28	-0.01
Mother working (number of hours)	0.00	0.00	0.72	0.00
Hardship	-0.18	0.04	0.00	-0.07
Indirect effects (standardised)				
via Kessler	-0.06			
via Life satisfaction	-0.03			

Table 89 SEM results for routine in MCS wave 3 (N= 13,553)

Routine	Coefficient	Standard error	P-value	Standard. coefficient
Direct effects				
Kessler <- Hardship	3.74	0.21	0.00	0.39
Life satisfaction <- Hardship	-1.94	0.10	0.00	-0.39
Routine <- Kessler	-0.02	0.00	0.00	-0.08
Life satisfaction Hardship	0.02	0.01	0.00	0.04
Hardship	-0.22	0.04	0.00	-0.09
Total indirect effects				
Routine <- Hardship	-0.12	0.01	0.00	-0.05
Total effects				
Routine <- Mother's age	-0.01	0.00	0.00	-0.08
Mother's education	0.08	0.01	0.00	0.12
Number of siblings	0.01	0.01	0.17	0.02
One parent/carer	-0.08	0.03	0.01	-0.03
Ethnicity: white	0.16	0.04	0.00	0.05
Mother working (number of hours)	0.00	0.00	0.00	-0.05
Hardship	-0.34	0.04	0.00	-0.14
Indirect effects (standardised)				
via Kessler	-0.03			
via Life satisfaction	-0.01			
Proportions of mediation (standardised)				
Indirect via Kessler	0.24			
Indirect via life satisfaction	0.10			
Total indirect effect	0.34			
Direct effect	0.66			

Table 90 SEM results for trips out in MCS wave 3 (N= 13,553)

Trips out	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.75	0.21	0.00	0.39
Life satisfaction <- Hardship	-1.94	0.10	0.00	-0.38
Trips out <- Kessler	0.00	0.00	0.32	-0.01
Life satisfaction Hardship	-0.01	0.01	0.02	-0.03
	-0.48	0.04	0.00	-0.19
Total indirect effects				
Trips out <- Hardship	0.02	0.01	0.22	0.01
Total effects				
Trips out <- Mother's age	0.01	0.00	0.00	0.09
Mother's education	0.18	0.01	0.00	0.26
Number of siblings	-0.10	0.01	0.00	-0.11
One parent/carer	0.02	0.03	0.36	0.01
Ethnicity: white	0.38	0.03	0.00	0.11
Mother working (number of hours)	0.00	0.00	0.00	0.06
Hardship	-0.46	0.04	0.00	-0.19

Table 91 SEM results for play activities in MCS wave 3 (N= 13,546)

Play activities	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.74	0.21	0.00	0.39
Life satisfaction <- Hardship	-1.94	0.10	0.00	-0.39
Play activities <- Kessler	-0.01	0.00	0.00	-0.05
Life satisfaction <- Hardship	0.02	0.01	0.00	0.05
	-0.10	0.04	0.02	-0.04
Total indirect effects				
Play activities <- Hardship	-0.10	0.01	0.00	-0.04
Total effects				
Play activities <- Mother's age	-0.02	0.00	0.00	-0.10
Mother's education	0.08	0.01	0.00	0.12
Number of siblings	-0.13	0.01	0.00	-0.13
One parent/carer	0.12	0.03	0.00	0.05
Ethnicity: white	0.33	0.03	0.00	0.10
Mother working (number of hours)	-0.01	0.00	0.00	-0.09
Hardship	-0.20	0.04	0.00	-0.08
Indirect effects (standardised)				
via Kessler	-0.02			
via Life satisfaction	-0.02			

Table 92 SEM result for educational activities in MCS wave 3 (N= 13,386)

Educational activities	Coefficient	Standard error	P-value	Standard. coefficient
Direct effects				
Kessler <- Hardship	3.73	0.21	0.00	0.39
Life satisfaction <- Hardship	-1.94	0.10	0.00	-0.39
Educational activities <- Kessler	-0.01	0.00	0.01	-0.03
Life satisfaction	0.02	0.01	0.00	0.04
Hardship	-0.12	0.04	0.01	-0.05
Total indirect effects				
Educational activities <- Hardship	-0.07	0.01	0.00	-0.03
Total effects				
Educational activities <- Mother's age	0.00	0.00	0.70	0.00
Mother's education	0.08	0.01	0.00	0.12
Number of siblings	-0.08	0.01	0.00	-0.09
One parent/carer	-0.08	0.03	0.01	-0.03
Ethnicity: white	-0.09	0.03	0.01	-0.03
Mother working (number of hours)	0.00	0.00	0.02	-0.02
Hardship	-0.19	0.04	0.00	-0.08
Indirect effects (standardised)				
via Kessler	-0.01			
via Life satisfaction	-0.02			
Proportions of mediation (standardised)				
Indirect via Kessler	0.17			
Indirect via life satisfaction	0.20			
Total indirect effect	0.37			
Direct effect	0.63			

Table 93 SEM results for hours of television in MCS wave 3 (N= 13,548)

TV and PC hours	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.74	0.21	0.00	0.39
Life satisfaction <- Hardship	-1.94	0.10	0.00	-0.39
TV hours<- Kessler	0.00	0.00	0.22	-0.01
Life satisfaction Hardship	0.01	0.01	0.16	0.02
	-0.12	0.04	0.01	-0.05
Total indirect effects				
TV hours<- Hardship	-0.03	0.01	0.02	-0.01
Total effects				
TV hours<- Mother's age	0.01	0.00	0.00	0.04
Mother's education	0.07	0.01	0.00	0.10
Number of siblings	-0.01	0.01	0.37	-0.01
One parent/carer	0.03	0.03	0.36	0.01
Ethnicity: white	0.07	0.04	0.07	0.02
Mother working (number of hours)	0.00	0.00	0.08	-0.02
Hardship	-0.15	0.04	0.00	-0.06

Appendix 22 SEM results for subsample of mothers in a relationship

Table 94 SEM results including relationship mechanisms for physical needs in MCS wave 3 (N= 10,618)

Physical needs	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.87	0.26	0.00	0.35
Life satisfaction <- Hardship	-2.14	0.14	0.00	-0.36
GRIMS scale <- Hardship	-2.96	0.23	0.00	-0.30
Relationship satisfaction <- Hardship	-1.05	0.09	0.00	-0.22
Physical needs <- Kessler	-0.01	0.00	0.08	-0.02
Physical needs <- Life satisfaction	0.01	0.01	0.42	0.01
Physical needs <- GRIMS scale	0.02	0.00	0.00	0.05
Physical needs <- Relationship satisfaction	0.00	0.01	0.99	0.00
Physical needs <- Hardship	-0.42	0.06	0.00	-0.14
Indirect effects				
Hardship	-0.08	0.02	0.00	-0.03
Total effects				
Physical needs <- Kessler	-0.01	0.00	0.08	-0.02
Physical needs <- Life satisfaction	0.01	0.01	0.42	0.01
Physical needs <- GRIMS scale	0.02	0.00	0.00	0.05
Physical needs <- Relationship satisfaction	0.00	0.01	0.99	0.00
Mother's age	-0.01	0.00	0.00	-0.03
Mother's education	0.15	0.01	0.00	0.23
Ethnicity: white	0.45	0.04	0.00	0.13
Mother working (number of hours)	0.00	0.00	0.00	-0.05
Number of siblings	0.00	0.00	0.83	0.00
Hardship	-0.50	0.05	0.00	-0.17
Indirect effects (standardised)				
via GRIMS scale	-0.02			
via relationship satisfaction	0.00			
via Kessler	-0.01			
via life Satisfaction	0.00			

Proportions of mediation (standardised)	
Indirect via GRIMS scale	0.09
Indirect via relationship satisfaction	0.00
Indirect via Kessler	0.05
Indirect via life satisfaction	0.02
Total indirect effect	0.17
Direct effect	0.83

Table 95 SEM results including relationship mechanisms for closeness to child in MCS wave 3 (N= 10,609)

Closeness	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.88	0.26	0.00	0.35
Life satisfaction <- Hardship	-2.20	0.14	0.00	-0.37
GRIMS scale <- Hardship	-2.99	0.23	0.00	-0.30
Relationship satisfaction <- Hardship	-1.07	0.09	0.00	-0.23
Closeness<- Kessler	-0.02	0.00	0.00	-0.08
Life satisfaction	0.04	0.01	0.00	0.07
GRIMS scale	0.03	0.00	0.00	0.08
Relationship satisfaction	0.00	0.01	0.96	0.00
Hardship	0.05	0.05	0.36	0.01
Indirect				
Closeness<- Hardship	-0.25	0.02	0.00	-0.08
Total effects				
Closness <- Mother's age	0.01	0.00	0.01	0.04
Mother's education	0.00	0.01	0.91	0.00
Number of siblings	-0.08	0.01	0.00	-0.08
Ethnicity: white	0.28	0.05	0.00	0.08
Mother working (number of hours)	0.00	0.00	0.38	0.01
Hardship	-0.21	0.05	0.00	-0.06
Indirect effects (standardised)				
via GRIMS scale	-0.02			
via relationship satisfaction	0.00			
via Kessler	-0.03			
via life Satisfaction	-0.03			

Table 96 SEM results including relationship mechanisms for authoritative discipline in MCS wave 3 (N= 10,409)

Authoritative	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.92	0.27	0.00	0.35
Life satisfaction <- Hardship	-2.21	0.14	0.00	-0.38
GRIMS scale <- Hardship	-3.00	0.24	0.00	-0.30
Relationship satisfaction <- Hardship	-1.09	0.09	0.00	-0.23
Authoritative <- Kessler	0.03	0.00	0.00	0.10
Life satisfaction	-0.02	0.01	0.00	-0.04
GRIMS scale	0.00	0.00	0.36	0.01
Relationship satisfaction	0.01	0.01	0.64	0.01
Hardship	0.02	0.06	0.77	0.01
Indirect				
Authoritative <- Hardship	0.14	0.02	0.00	0.05
Total effects				
Authoritative <- Mother's age	-0.01	0.00	0.00	-0.08
Mother's education	0.10	0.01	0.00	0.15
Number of siblings	-0.01	0.01	0.41	-0.01
Ethnicity: white	0.50	0.04	0.00	0.14
Mother working (number of hours)	0.00	0.00	0.43	-0.01
Hardship	0.16	0.05	0.00	0.05
Indirect effects (standardised)				
via GRIMS scale	0.00			
via relationship satisfaction	0.00			
via Kessler	0.04			
via life Satisfaction	0.02			

Table 97 SEM results including relationship mechanisms for harsh/permissive discipline in MCS wave 3 (N= 10,434)

Harsh/permissive	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.88	0.26	0.00	0.35
Life satisfaction <- Hardship	-2.20	0.14	0.00	-0.37
GRIMS scale <- Hardship	-3.05	0.23	0.00	-0.30
Relationship satisfaction <- Hardship	-1.06	0.09	0.00	-0.22
Harsh/permissive <- Kessler	-0.04	0.00	0.00	-0.15
Life satisfaction	0.02	0.01	0.02	0.04
GRIMS scale	0.03	0.00	0.00	0.11
Relationship satisfaction	0.00	0.01	0.94	0.00
Hardship	0.14	0.06	0.02	0.04
Indirect				
Harsh/permissive <- Mother's age	0.00	0.00	0.00	-0.02
Mother's education	0.00	0.00	0.33	0.00
Number of siblings	0.01	0.00	0.07	0.01
Ethnicity: white	0.03	0.01	0.01	0.01
Mother working (number of hours)	0.00	0.00	0.69	0.00
Hardship	-0.31	0.03	0.00	-0.10
Total effects				
Harsh/permissive <- Mother's age	0.01	0.00	0.00	0.05
Mother's education	-0.04	0.01	0.00	-0.05
Number of siblings	0.00	0.01	0.69	0.00
Ethnicity: white	-0.03	0.04	0.41	-0.01
Mother working (number of hours)	0.00	0.00	0.14	0.02
Hardship	-0.17	0.05	0.00	-0.05
Indirect effects (standardised)				
via GRIMS scale	-0.03			
via relationship satisfaction	0.00			
via Kessler	-0.05			
via life Satisfaction	-0.01			

Table 98 SEM results including relationship mechanisms for routine in MCS wave 3 (N= 10,631)

Routine	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.90	0.26	0.00	0.35
Life satisfaction <- Hardship	-2.20	0.14	0.00	-0.37
GRIMS scale <- Hardship	-3.01	0.23	0.00	-0.30
Relationship satisfaction <- Hardship	-1.07	0.09	0.00	-0.23
Routine <- Kessler	-0.01	0.00	0.00	-0.05
Life satisfaction	0.01	0.01	0.05	0.03
GRIMS scale	0.02	0.01	0.00	0.05
Relationship satisfaction	0.00	0.01	0.90	0.00
Hardship	-0.21	0.05	0.00	-0.07
Indirect				
Routine <- Mother's age	0.00	0.00	0.00	-0.01
Mother's education	0.00	0.00	0.27	0.00
Number of siblings	0.00	0.00	0.02	0.00
Ethnicity: white	0.01	0.00	0.06	0.00
Mother working (number of hours)	0.00	0.00	0.54	0.00
Hardship	-0.14	0.02	0.00	-0.05
Total effects				
Routine <- Mother's age	-0.01	0.00	0.00	-0.08
Mother's education	0.08	0.01	0.00	0.12
Number of siblings	0.01	0.01	0.27	0.01
Ethnicity: white	0.17	0.05	0.00	0.05
Mother working (number of hours)	0.00	0.00	0.00	-0.06
Hardship	-0.35	0.05	0.00	-0.12
Indirect effects (standardised)				
via GRIMS scale	-0.02			
via relationship satisfaction	0.00			
via Kessler	-0.02			
via life Satisfaction	-0.01			

Proportions of mediation (standardised)	
Indirect via GRIMS scale	0.14
Indirect via relationship satisfaction	0.00
Indirect via Kessler	0.16
Indirect via life satisfaction	0.09
Total indirect effect	0.40
Direct effect	0.60

Table 99 SEM results including relationship mechanisms for trips out in MCS wave 3 (N= 10,631)

Trips out	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.90	0.26	0.00	0.35
Life satisfaction <- Hardship	-2.20	0.14	0.00	-0.37
GRIMS scale <- Hardship	-3.01	0.23	0.00	-0.30
Relationship satisfaction <- Hardship	-1.07	0.09	0.00	-0.22
Trips out <- Kessler	0.00	0.00	0.59	0.01
Life satisfaction	-0.01	0.01	0.12	-0.02
GRIMS scale	0.00	0.00	0.73	0.00
Relationship satisfaction	0.00	0.01	0.98	0.00
Hardship	-0.60	0.06	0.00	-0.19
Indirect				
Trips out <- Mother's age	0.00	0.00	0.17	0.00
Mother's education	0.00	0.00	0.19	0.00
Number of siblings	0.00	0.00	0.06	0.00
Ethnicity: white	0.00	0.00	0.74	0.00
Mother working (number of hours)	0.00	0.00	0.35	0.00
Hardship	0.04	0.02	0.03	0.01
Total effects				
Trips out <- Mother's age	0.01	0.00	0.00	0.08
Mother's education	0.17	0.01	0.00	0.25
Number of siblings	-0.09	0.01	0.00	-0.09
Ethnicity: white	0.37	0.04	0.00	0.11
Mother working (number of hours)	0.00	0.00	0.00	0.04
Hardship	-0.56	0.05	0.00	-0.18

Table 100 SEM results including relationship mechanisms for play activities in MCS wave 3 (N= 10,628)

Play activities	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.91	0.26	0.00	0.35
Life satisfaction <- Hardship	-2.21	0.14	0.00	-0.37
GRIMS scale <- Hardship	-3.02	0.23	0.00	-0.30
Relationship satisfaction <- Hardship	-1.08	0.09	0.00	-0.23
Play activities <- Kessler	-0.01	0.00	0.01	-0.04
Play activities <- Life satisfaction	0.01	0.01	0.29	0.02
Play activities <- GRIMS scale	0.02	0.00	0.00	0.08
Play activities <- Relationship satisfaction	-0.01	0.01	0.32	-0.01
Play activities <- Hardship	-0.11	0.05	0.04	-0.04
Indirect				
Play activities <- Mother's age	0.00	0.00	0.00	-0.01
Play activities <- Mother's education	0.00	0.00	0.75	0.00
Play activities <- Number of siblings	0.00	0.00	0.07	0.00
Play activities <- Ethnicity: white	0.01	0.00	0.09	0.00
Play activities <- Mother working (number of hours)	0.00	0.00	0.62	0.00
Play activities <- Hardship	-0.12	0.02	0.00	-0.04
Total effects				
Play activities <- Mother's age	-0.02	0.00	0.00	-0.11
Play activities <- Mother's education	0.08	0.01	0.00	0.12
Play activities <- Number of siblings	-0.12	0.01	0.00	-0.12
Play activities <- Ethnicity: white	0.32	0.04	0.00	0.09
Play activities <- Mother working (number of hours)	-0.01	0.00	0.00	-0.08
Play activities <- Hardship	-0.23	0.05	0.00	-0.07
Indirect effects (standardised)				
via GRIMS scale	-0.02			
via relationship satisfaction	0.00			
via Kessler	-0.01			
via life Satisfaction	-0.01			

Table 101 SEM results including relationship mechanisms for educational activities in MCS wave 3 (N= 10,497)

Educational activities	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.91	0.26	0.00	0.35
Life satisfaction <- Hardship	-2.22	0.14	0.00	-0.37
GRIMS scale <- Hardship	-3.04	0.24	0.00	-0.30
Relationship satisfaction <- Hardship	-1.09	0.09	0.00	-0.23
Educational activities <- Kessler	0.00	0.00	0.23	-0.02
Educational activities <- Life satisfaction	0.01	0.01	0.45	0.01
Educational activities <- GRIMS scale	0.01	0.00	0.00	0.05
Educational activities <- Relationship satisfaction	0.01	0.01	0.33	0.01
Educational activities <- Hardship	-0.11	0.05	0.05	-0.04
Indirect				
Educational activities <- Mother's age	0.00	0.00	0.00	-0.01
Educational activities <- Mother's education	0.00	0.00	0.31	0.00
Educational activities <- Number of siblings	0.00	0.00	0.05	0.00
Educational activities <- Ethnicity: white	0.00	0.00	0.48	0.00
Educational activities <- Mother working (number of hours)	0.00	0.00	0.14	0.00
Educational activities <- Hardship	-0.08	0.02	0.00	-0.03
Total effects				
Educational activities <- Mother's age	0.00	0.00	0.17	-0.02
Educational activities <- Mother's education	0.07	0.01	0.00	0.11
Educational activities <- Number of siblings	-0.08	0.01	0.00	-0.09
Educational activities <- Ethnicity: white	-0.09	0.04	0.02	-0.03
Educational activities <- Mother working (number of hours)	0.00	0.00	0.06	-0.02
Educational activities <- Hardship	-0.19	0.05	0.00	-0.06

Table 102 SEM results including relationship mechanisms for TV/PC hours in MCS wave 3 (N= 10,629)

TV/PC hours	Coefficient	Standard error	P-value	Standardised coefficient
Direct effects				
Kessler <- Hardship	3.91	0.26	0.00	0.35
Life satisfaction <- Hardship	-2.20	0.14	0.00	-0.37
GRIMS scale <- Hardship	-3.01	0.23	0.00	-0.30
Relationship satisfaction <- Hardship	-1.07	0.09	0.00	-0.23
TV/PC hours <- Kessler	0.00	0.00	0.99	0.00
TV/PC hours <- Life satisfaction	0.00	0.01	0.63	0.01
TV/PC hours <- GRIMS scale	0.01	0.00	0.02	0.03
TV/PC hours <- Relationship satisfaction	0.00	0.01	0.97	0.00
TV/PC hours <- Hardship	-0.15	0.05	0.00	-0.05
Indirect				
TV/PC hours <- Mother's age	0.00	0.00	0.01	0.00
TV/PC hours <- Mother's education	0.00	0.00	0.66	0.00
TV/PC hours <- Number of siblings	0.00	0.00	0.21	0.00
TV/PC hours <- Ethnicity: white	0.00	0.00	0.87	0.00
TV/PC hours <- Mother working (number of hours)	0.00	0.00	0.30	0.00
TV/PC hours <- Hardship	-0.04	0.02	0.04	-0.01
Total effects				
TV/PC hours <- Mother's age	0.01	0.00	0.03	0.03
TV/PC hours <- Mother's education	0.07	0.01	0.00	0.11
TV/PC hours <- Number of siblings	-0.01	0.01	0.35	-0.01
TV/PC hours <- Ethnicity: white	0.09	0.04	0.04	0.02
TV/PC hours <- Mother working (number of hours)	0.00	0.00	0.01	-0.03
TV/PC hours <- Hardship	-0.19	0.05	0.00	-0.06

Appendix 23 Testing for collinearity between time-varying covariates in waves 3 and 4

The results indicate there is high collinearity between the covariates in the two waves: the variance inflation factor (VIF) is above the standard cut off of 10, the tolerance values are below the cut off of 0.1, indicating extreme multivariate collinearity and the squared multiple correlation values are just above the standard of 0.9.

Table 1 showing degree of collinearity between covariates in MCS wave 3 and 4

Variable	VIF	SQRT VIF	Tolerance	R- Squared
meduc	15.06	3.88	0.0664	0.9336
dmeduc	15.03	3.88	0.0665	0.9335
siblings	5.31	2.30	0.1884	0.8116
dsiblings	5.46	2.34	0.1833	0.8167
dhtys00	2.23	1.49	0.4486	0.5514
ddhtys00	2.20	1.48	0.4542	0.5458
mwork	2.07	1.44	0.4840	0.5160
dmwork	2.08	1.44	0.4797	0.5203
Mean VIF	6.18			

As can be seen from the table below, with the transformed variables there is no longer a problem of collinearity. The VIF is well below the cut off of 10, the tolerance is well above the conventional cut off of 0.1 and the squared multiple correlation values are below the cut off of 0.9.

Table 2 showing degree of collinearity amongst transformed variables accounting for change between MCS wave 3 and 4

Variable	VIF	SQRT VIF	Tolerance	R- Squared
meduc	1.22	1.10	0.8216	0.1784
cheduc	1.02	1.01	0.9819	0.0181
siblings	1.12	1.06	0.8944	0.1056
chsib	1.05	1.02	0.9545	0.0455
dhtys00	1.16	1.08	0.8635	0.1365
chhold	1.09	1.05	0.9136	0.0864
mwork	1.36	1.17	0.7334	0.2666
rchmwork	1.14	1.07	0.8752	0.1248
Mean VIF	1.15			

Appendix 24 Regression results for changes in hardship and changes in mothers' mental wellbeing, restricted to respondents in the lowest three income quintiles at wave 3

Table 103 Regression results for changes in mother's Kessler score and changes in income between wave 3 and 4 in the MCS

	bivariate	adjusted
change in income quintile	0.02 [0.07]	0.013 [0.08]
constant	-0.147 [0.09]	-0.714 * [0.34]
R-squared	0	0.017
N	4341	4341

* p<0.05, ** p<0.01, *** p<0.001

Note higher Kessler scores indicate greater mental distress.

Table 104 Regression results for changes in mother's Kessler score and changes in debt between wave 3 and 4 in the MCS

	bivariate	adjusted
change in debt	0.194 * [0.09]	0.181 [0.09]
constant	-0.15 [0.08]	-0.717 * [0.34]
R-squared	0.003	0.02
N	4329	4329

* p<0.05, ** p<0.01, *** p<0.001

Note higher Kessler scores indicate greater mental distress.

Table 105 Regression results for changes in mother's Kessler score and changes in deprivation between wave 3 and 4 in the MCS

	bivariate	adjusted
change in deprivation	0.195 * [0.08]	0.169 * [0.08]
constant	-0.151 [0.08]	-0.71 * [0.34]
R-squared	0.002	0.019
N	4338	4338

* p<0.05, ** p<0.01, *** p<0.001

Note higher Kessler scores indicate greater mental distress.

Table 106 Regression results for changes in mother's Kessler score and changes in feeling poor between wave 3 and 4 in the MCS

	bivariate	adjusted
change in feeling poor	0.39 *** [0.08]	0.392 *** [0.08]
constant	-0.153 * [0.08]	-0.688 * [0.34]
R-squared	0.01	0.025
N	4340	4340

* p<0.05, ** p<0.01, *** p<0.001

Note higher Kessler scores indicate greater mental distress.

Table 107 Regression results for changes in mother's life satisfaction and changes in income between wave 3 and 4 in the MCS

	bivariate	adjusted
change in income quintile	-0.074 [0.04]	-0.006 [0.05]
constant	0.007 [0.04]	-0.108 [0.20]
R-squared	0.001	0.025
N	4197	4197

* p<0.05, ** p<0.01, *** p<0.001

Table 108 Regression results for changes in mother's life satisfaction and changes in debt between wave 3 and 4 in the MCS

	bivariate	adjusted
change in debt	-0.154 ** [0.05]	-0.141 ** [0.05]
constant	0.033 [0.04]	-0.116 [0.20]
R-squared	0.007	0.031
N	4187	4187

* p<0.05, ** p<0.01, *** p<0.001

Table 109 Regression results for changes in mother's life satisfaction and changes in deprivation between wave 3 and 4 in the MCS

	bivariate	adjusted
change in deprivation	-0.152 *** [0.04]	-0.134 ** [0.04]
constant	0.038 [0.04]	-0.108 [0.20]
R-squared	0.005	0.029
N	4194	4194

* p<0.05, ** p<0.01, *** p<0.001

Table 110 Regression results for changes in mother's life satisfaction and changes in feeling poor between wave 3 and 4 in the MCS

	bivariate	adjusted
change in feeling poor	-0.344 *** [0.05]	-0.329 *** [0.05]
constant	0.052 [0.04]	-0.097 [0.19]
R-squared	0.03	0.052
N	4196	4196

* p<0.05, ** p<0.01, *** p<0.001

Appendix 25 Frequency tables for all variables used in all analyses of MCS wave 3 and 4

Table 111 Frequencies for all hardship measures from MCS wave 3

Variable	frequency	weighted percent
income quintile		
lowest	3,157	19.8%
2nd	3,040	19.7%
3rd	2,807	20.2%
4th	2,762	20.1%
highest	2,541	20.2%
Total	14,307	100
persistent poverty waves 1-3		
No	10,109	83.9%
Yes	2,292	16.1%
Total	12,401	100
Debt - number of bills behind with		
0	12,170	84.9%
1	1,160	8.0%
2	582	4.2%
3	218	1.6%
4	99	0.7%
5	32	0.3%
6	26	0.2%
7	7	0.0%
8	1	0.0%
10	2	0.0%
11	1	0.0%
Total	14,298	100
Deprivation - number of items deprived of		
0	8,709	61.6%
1	3,319	22.9%
2	1,862	12.7%
3	351	2.4%
4	67	0.4%
5	10	0.0%
Total	14,318	100
Subjective - how well managing financially		
living comfortably,	3,323	24.0%
doing alright,	5,461	37.6%
just about getting by,	4,026	27.9%

Variable	frequency	weighted percent
finding it quite difficult,	1,114	7.7%
finding it very difficult?	394	2.8%
Total	14,318	100
Damp housing		
No damp	12442.0	86.9%
not much of a problem	801.0	5.6%
Some problems	770.0	5.4%
Great problem	305.0	2.2%
Total	14,318	100
Whether good area for raising children		
Excellent	4,317	31.7%
Good	5,770	40.7%
Average	3,147	20.9%
Poor	765	4.8%
Very poor	310	2.0%
Total	14,309	100
how safe mother feels in area		
Very safe	4,891	33.5%
Fairly safe	7,390	52.9%
neither safe nor unsafe	1,194	8.2%
Fairly unsafe	634	4.1%
Very unsafe	205	1.3%
Total	14,314	100
interviewer felt uncomfortable in area		
No	10,166	90.7%
Yes	1,236	9.3%
Total	11,402	100
Lowest decile Index of Multiple Deprivation		
No	7,510	88.3%
Yes	1,502	11.7%
Total	9,012	100

Table 112 Frequencies for all parenting variables from MCS wave 3 in their original ordinal form

Variable	frequency	weighted percent
PHYSICAL NEEDS		
Days a week the child has breakfast		
none	146	0.9%
one	41	0.2%
two	174	1.0%
three	209	1.3%
four	220	1.4%
five	278	1.9%
six	133	1.0%
seven	13,122	92.3%
Total	14,323	100
portions of fruit per day		
none	630	4.2%
one	2,512	15.8%
two	4,032	27.3%
three +	7,145	52.7%
Total	14,319	100
how often take to park		
not at all	472	3.2%
less often	1,166	8.2%
once or twice a month	3,751	27.5%
once or twice a week	6,241	43.3%
several times a week	2,201	14.9%
every day	495	3.0%
Total	14,326	100
how often goes to sports club		
less often/ not at all	6,933	46.2%
once a week	3,855	28.0%
2 days a week	2,182	16.1%
3 days a week	981	7.0%
4 days a week	256	1.9%
5+ days a week	128	0.8%
Total	14,335	100
how often parents do physical activities with child		
less often or never	1,676	11.1%
at least once a year	200	1.4%
every few months	686	4.8%
at least once a month	1,984	14.5%

Variable	frequency	weighted percent
once or twice a week	5,616	39.5%
several times a week	2,475	17.3%
every day/almost every day	1,697	11.5%
Total	14,334	100
how often mother plays physically active games with child		
not at all	1,323	8.5%
less often	1,974	13.9%
once or twice a month	2,473	18.2%
once or twice a week	5,079	35.9%
several times a week	2,525	17.4%
every day	956	6.1%
Total	14,330	100
EMOTIONAL NEEDS		
How close to child		
not very close	26	0.2%
fairly close	443	3.2%
very close	3,583	26.4%
extremely close	9,533	70.2%
Total	13,585	100
DISCIPLINE AND ROUTINE		
how often... reasons with child		
never	322	2.2%
rarely	1,106	7.6%
sometimes	3,395	25.0%
often	5,991	45.3%
daily	2,687	19.9%
Total	13,501	100
sends child to bedroom		
never	1,599	10.9%
rarely	3,283	24.5%
sometimes	5,261	38.9%
often	3,088	23.3%
daily	335	2.4%
Total	13,566	100
takes away treats		
never	1,292	9.2%
rarely	3,508	25.7%
sometimes	5,912	44.4%
often	2,616	19.4%
daily	183	1.4%

Variable	frequency	weighted percent
Total	13,511	100
Tells child off		
never	104	0.6%
rarely	1,508	10.8%
sometimes	4,154	30.8%
often	6,135	45.9%
daily	1,648	11.9%
Total	13,549	100
makes sure obeys instructions		
never/almost never	235	1.7%
less than half the time	690	5.1%
about half the time	1,321	9.7%
more than half the time	4,062	30.3%
all the time	7,161	53.3%
Total	13,469	100
smacks child		
never	6,037	45.0%
rarely	5,874	43.7%
sometimes	1,408	9.9%
often	198	1.3%
daily	16	0.1%
Total	13,533	100
shouts at child		
never	408	2.6%
rarely	3,411	25.1%
sometimes	4,881	36.0%
often	4,116	31.0%
daily	738	5.2%
Total	13,554	100
bribes child		
never	5,093	37.0%
rarely	4,023	30.4%
sometimes	3,057	22.5%
often	1,160	8.7%
daily	209	1.5%
Total	13,542	100
ignores child		

Variable	frequency	weighted percent
never	2,784	19.9%
rarely	3,876	28.7%
sometimes	4,249	32.3%
often	2,140	16.2%
daily	392	2.9%
Total	13,441	100
regular meal times		
never/almost never	399	2.6%
sometimes	718	4.4%
usually	4,642	33.1%
always	8,574	60.0%
Total	14,333	100
regular bed times		
never/almost never	725	4.8%
sometimes	805	5.1%
usually	3,946	27.0%
always	8,859	63.2%
Total	14,335	100
COGNITIVE STIMULATION		
Trips out in the last year		
Cinema		
No	4,175	28.1%
Yes	10,162	71.9%
Total	14,337	100
theme park/funfair		
No	4,573	0.3187
Yes	9,764	0.6813
Total	14,337	100
gallery/museum		
No	7,729	52.5%
Yes	6,608	47.5%
Total	14,337	100
play/panto/circus		
No	4,420	29.5%
Yes	9,917	70.5%
Total	14,337	100

Variable	frequency	weighted percent
zoo/farm		
No	2,789	17.6%
Yes	11,548	82.4%
Total	14,337	100
sport event		
No	12,069	84.5%
Yes	2,268	15.5%
Total	14,337	100
How often...		
mother reads to child		
not at all	224	1.2%
less often	220	1.5%
once or twice a month	365	2.5%
once or twice a week	2,098	14.3%
several times a week	4,068	29.0%
every day	7,358	51.6%
Total	14,333	100
mother tells stories to child		
not at all	1,719	12.5%
less often	2,251	16.6%
once or twice a month	2,252	16.9%
once or twice a week	3,604	25.0%
several times a week	2,606	17.2%
every day	1,897	11.9%
Total	14,329	100
mother does musical activities with child		
not at all	418	2.4%
less often	558	3.7%
once or twice a month	961	7.1%
once or twice a week	2,976	21.3%
several times a week	4,044	28.1%
every day	5,374	37.3%
Total	14,331	100
mother draws or paints with child		
not at all	589	3.7%
less often	1,226	8.8%
once or twice a month	2,986	22.0%
once or twice a week	5,285	37.4%
several times a week	2,979	20.0%

Variable	frequency	weighted percent
every day	1,268	8.1%
Total	14,333	100
plays indoor games with child		
not at all	370	2.4%
less often	640	4.3%
once or twice a month	1,230	8.8%
once or twice a week	4,494	31.8%
several times a week	4,433	30.9%
every day	3,163	21.8%
Total	14,330	100
family does activity together		
less often or never	171	1.3%
at least once a year	16	0.1%
every few months	98	0.7%
at least once a month	356	2.5%
once or twice a week	3,076	21.3%
several times a week	4,103	29.4%
every day/ almost every day	6,514	44.8%
Total	14,334	100
child spends time with friends		
not at all	1,730	11.0%
less often	1,383	9.2%
once or twice a month	2,388	18.5%
once or twice a week	4,410	33.3%
several times a week	2,294	15.9%
day or almost every day	2,125	12.1%
Total	14,330	100
someone at home helps with reading		
not at all	338	1.7%
less often	20	0.1%
once or twice a month	60	0.4%
once or twice a week	1,446	9.5%
several times a week	3,990	29.8%
every day	8,304	58.5%
Total	14,158	100
someone at home helps with writing		
not at all	1,279	8.8%
less often	158	1.4%
once or twice a month	286	2.4%

Variable	frequency	weighted percent
once or twice a week	3,239	24.8%
several times a week	4,878	36.0%
every day	4,317	26.8%
Total	14,157	100
someone at home helps with maths		
not at all	1,021	6.7%
less often	143	1.2%
once or twice a month	300	2.2%
once or twice a week	2,935	22.5%
several times a week	4,964	36.3%
every day	4,797	31.1%
Total	14,160	100
child has visited library in the last year		
less often or never	5,293	35.5%
at least once a year	1,232	9.0%
every few months	2,898	21.1%
at least once a month	3,562	25.5%
once or twice a week	1,232	8.2%
several times a week	101	0.7%
every day/almost every day	18	0.1%
Total	14,336	100
whether someone at home has been to parents evening		
no	884	5.5%
not applicable	996	5.8%
yes	12,286	88.7%
Total	14,166	100
hours a day child watches TV		
7+ hours	429	3.2%
5 - 7 hours	311	2.1%
3 - 5 hours	1,442	9.6%
1 - 3 hours	9,140	64.0%
< 1 hour	2,738	19.3%
none	271	1.9%
Total	14,331	100
hours a day child plays on computer		
7+ hours	98	0.7%
5 - 7 hours	78	0.5%
3 - 5 hours	258	1.7%
1 - 3 hours	2,981	19.8%
< 1 hour	6,284	44.7%

Variable	frequency	weighted percent
none	4,631	32.6%
Total	14,330	100
Confidence in parenting		
not very good at being a parent	61	0.4%
has some trouble being a parent	424	3.3%
an average parent	4,889	36.7%
a better than average parent	3,714	28.2%
a very good parent	4,435	31.3%
Total	13,523	100

Table 113 Frequencies for all control variables from MCS wave 3

Variable	Frequency	Weighted percent
Mother's age at interview		
18 to 24	1,051	7.3%
25 to 34	6,479	44.2%
35 to 44	6,473	46.0%
45 plus	368	2.6%
Total	14,371	100
Mother's education level		
none/overseas qual only	2,240	13.7%
NVQ level 1	1,095	7.7%
NVQ level 2	3,933	28.6%
NVQ level 3	2,135	14.5%
NVQ level 4	4,202	30.3%
NVQ level 5	766	5.3%
Total	14,371	100
Number of siblings		
none	2,368	16.4%
one	6,722	48.3%
two	3,418	23.6%
three or more	1,863	11.7%
Total	14,371	100
Two parents/carers		
Two parents/carers	11,501	80.2%
One parent/carers	2,870	19.8%
Total	14,371	100
Mother's ethnicity		
White	12,320	88.9%
Mixed	135	1.0%
Indian	364	1.9%
Pakistani	597	2.9%
Bangladeshi	238	0.9%
Black Caribbean	185	1.2%
Black African	288	1.7%
Other including Chinese	244	1.5%
Total	14,371	100
Mother's work hours		
not working	6,227	41.9%
working part-time	6,237	45.3%
working full time	1,907	12.8%
Total	14,371	100

Table 114 Frequencies for all mediating variables from MCS wave 3

Variable	Frequency	Weighted percent
Mother's Kessler score		
0	3,835	27.7%
1	2,027	15.3%
2	1,923	14.4%
3	1,382	10.4%
4	1,051	7.9%
5	768	5.8%
6	590	4.4%
7	392	2.7%
8	298	2.1%
9	265	1.9%
10	231	1.7%
11	167	1.2%
12	184	1.3%
13	115	0.8%
14	79	0.6%
15	54	0.4%
16	55	0.4%
17	41	0.3%
18	57	0.4%
19	14	0.1%
20	20	0.1%
21	12	0.1%
22	12	0.1%
23	7	0.0%
24	22	0.1%
Total	13,601	100
Mother's life satisfaction		
1	115	0.7%
2	164	1.1%
3	317	2.3%
4	544	4.2%
5	1,175	8.5%
6	1,117	8.3%
7	2,181	16.9%
8	3,316	25.0%
9	2,432	18.2%
10	2,091	14.9%
Total	13,452	100

Variable	Frequency	Weighted percent
RELATIONSHIP SUBSAMPLE		
GRIMS score		
0	25	0.2%
1	23	0.2%
2	48	0.4%
3	59	0.6%
4	95	0.9%
5	144	1.4%
6	236	2.3%
7	261	2.6%
8	436	4.3%
9	569	5.6%
10	740	6.8%
11	1,014	9.7%
12	1,464	13.5%
13	1,791	17.2%
14	1,231	11.6%
15	1,104	10.2%
16	1,412	12.6%
Total	10,652	100
Relationship satisfaction		
1	251	2.3%
2	302	2.9%
3	399	3.8%
4	740	7.0%
5	1,721	15.9%
6	3,323	31.1%
7	4,074	37.0%
Total	10,810	100

Table 115 Frequencies for hardship variables from MCS wave 4

variable	frequency	weighted percent
income quintile		
lowest	2,366	19.2%
2nd	2,430	19.6%
3rd	2,453	20.0%
4th	2,424	20.6%
highest	2,373	20.7%
Total	12,046	100
Poverty		
Above 60% median	8,595	71.9%
Below 60% median	3,451	28.1%
Total	12,046	100
Debt - number of bills behind with		
0	10,311	84.4%
1	883	8.1%
2	473	4.4%
3	190	1.8%
4	74	0.7%
5	42	0.5%
6	14	0.1%
7	4	0.0%
8	2	0.0%
9	1	0.0%
11	2	0.0%
Total	11,996	100
Number of items deprived of		
0	7,553	61.5%
1	2,550	21.8%
2	1,581	13.8%
3	278	2.4%
4	46	0.5%
5	7	0.1%
Total	12,015	100
How well managing financially		
living comfortably,	2,627	21.8%
doing alright,	4,412	35.9%
just about getting by,	3,505	29.6%
finding it quite difficult,	1,076	9.1%
finding it very difficult?	392	3.6%
Total	12,012	100

Table 116 Frequencies for all control variables from MCS wave 4

Variable	Frequency	Weighted percent
Two parents/carers	9,588	78.2%
One parent/carer	2,463	21.8%
Total	12,051	100
number of siblings		
none	1,447	12.1%
one	5,507	46.5%
two	3,320	27.4%
or more	1,777	14.0%
Total	12,051	100
Mother's education		
none/overseas qual only	1,557	13.1%
NVQ level 1	841	7.6%
NVQ level 2	3,198	28.0%
NVQ level 3	1,850	15.2%
NVQ level 4	3,769	30.0%
NVQ level 5	836	6.2%
Total	12,051	100
Mother's work status		
not working	4,361	37.0%
working part-time	5,742	48.3%
working full time	1,948	14.7%
Total	12,051	100

Table 117 Frequencies for all mediating variables from MCS wave 4

Variable	Frequency	Weighted percent
Mother's Kessler score		
0	3,547	30.3%
1	1,598	14.0%
2	1,568	13.1%
3	1,239	10.7%
4	833	7.3%
5	614	5.4%
6	534	4.7%
7	331	2.9%
8	253	2.2%
9	216	2.0%
10	173	1.5%
11	127	1.0%
12	150	1.4%
13	87	0.8%
14	67	0.6%
15	62	0.6%
16	46	0.4%
17	30	0.3%
18	49	0.5%
19	15	0.2%
20	14	0.1%
21	11	0.1%
22	8	0.0%
23	4	0.0%
24	14	0.1%
Total	11,590	100
Mother's life satisfaction		
1	82	0.7%
2	110	1.0%
3	240	2.3%
4	393	3.6%
5	847	7.9%
6	1,051	9.4%
7	2,099	18.6%
8	3,035	26.0%
9	2,123	17.8%
10	1,504	12.7%
Total	11,484	100

Table 118 Frequencies for all parenting variables in MCS wave 4

Variable	Frequency	Weighted percent
PHYSICAL NEEDS		
Days a week the child has breakfast		
none	76	0.5%
one	27	0.2%
two	113	0.8%
three	137	1.0%
four	150	1.2%
five	195	1.5%
six	100	0.9%
seven	11,224	93.8%
Total	12,022	100
Portions of fruit a day		
None	612	4.9%
One	2,076	16.7%
Two	3,250	26.1%
Three or more	6,084	52.3%
Total	12,022	100
Takes child to park		
not at all	727	5.9%
less often	1,413	12.1%
once or twice a month	3,714	31.1%
once or twice a week	4,457	36.6%
several times a week	1,306	11.1%
every day	409	3.3%
Total	12,026	100
How often child goes to sports club		
at all	3,764	31.5%
a week	3,197	26.2%
a week	2,591	21.6%
a week	1,551	13.0%
a week	616	5.2%
a week	314	2.6%
Total	12,033	100
how often parents do physical activities with child		
less often/not at all	1,366	11.6%
once or twice a month	1,334	10.9%
once or twice a week	4,282	34.7%
several times a week	2,881	24.4%
every day/almost every day	2,167	18.4%
Total	12,030	100

Variable	Frequency	Weighted percent
how often mother plays active games with child		
not at all	1,733	13.9%
less often	1,795	14.7%
once or twice a month	2,554	21.8%
once or twice a week	3,821	32.0%
several times a week	1,529	12.8%
every day/almost every day	595	4.9%
Total	12,027	100
<hr/>		
EMOTIONAL NEEDS		
How close mother feels to child		
Not very close	16	0.1%
Fairly close	507	4.7%
Very close	3,347	29.2%
Extremely close	7,729	65.9%
Don't want to answer	18	0.2%
Total	11,617	100
<hr/>		
DISCIPLINE AND ROUTINE		
Reasons with child		
Never	361	3.0%
Rarely	1,140	9.9%
Sometimes	3,473	29.8%
Often	4,926	43.4%
Daily	1,607	13.9%
Total	11,507	100
Sends child to bedroom		
Never	1,398	11.5%
Rarely	3,347	28.7%
Sometimes	4,688	40.6%
Often	1,979	17.8%
Daily	167	1.5%
Total	11,579	100
Takes away treats		
Never	1,006	8.2%
Rarely	3,240	27.9%
Sometimes	5,320	46.4%
Often	1,856	16.4%
Daily	129	1.1%
Total	11,551	100
Tells child off		

Variable	Frequency	Weighted percent
Never	90	0.7%
Rarely	1,448	12.4%
Sometimes	4,109	35.3%
Often	4,890	42.9%
Daily	1,024	8.7%
Total	11,561	100
Smacks child		
Never	6,049	52.6%
Rarely	4,579	39.9%
Sometimes	808	6.6%
Often	103	0.8%
Daily	5	0.1%
Total	11,544	100
Shouts at child		
Never	319	2.6%
Rarely	2,778	24.4%
Sometimes	4,454	38.0%
Often	3,506	30.6%
Daily	525	4.5%
Total	11,582	100
Bribes child		
Never	5,157	44.1%
Rarely	3,381	29.8%
Sometimes	2,244	19.5%
Often	679	5.8%
Daily	98	0.8%
Total	11,559	100
Ignores child		
Never	2,964	25.0%
Rarely	3,422	30.1%
Sometimes	3,553	31.5%
Often	1,284	11.8%
Daily	188	1.6%
Total	11,411	100
Child has regular bed time		
Never/almost never	466	3.8%
Sometimes	670	5.2%
Usually	3,694	31.0%
Always	7,201	60.0%

Variable	Frequency	Weighted percent
Total	12,031	100
COGNITIVE STIMULATION		
Mother reads to child		
not at all	342	2.5%
less often	316	2.5%
once or twice a month	574	4.7%
once or twice a week	2,542	21.2%
several times a week	3,230	27.3%
every day	5,025	41.9%
Total	12,029	100
Mother tells stories to child		
not at all	2,366	20.2%
less often	1,826	15.8%
once or twice a month	2,259	19.3%
once or twice a week	2,758	22.4%
several times a week	1,713	13.5%
every day	1,105	8.8%
Total	12,027	100
Mother does musical activities with child		
not at all	813	6.2%
less often	655	5.5%
once or twice a month	1,270	10.6%
once or twice a week	2,655	21.9%
several times a week	2,900	24.3%
every day	3,734	31.5%
Total	12,027	100
Mother draws/ paints with child		
not at all	1,172	9.3%
less often	1,732	14.5%
once or twice a month	3,847	32.8%
once or twice a week	3,434	28.3%
several times a week	1,389	11.4%
every day	456	3.7%
Total	12,030	100
Mother plays indoor games with child		
not at all	662	5.2%
less often	889	7.4%
once or twice a month	2,195	18.8%
once or twice a week	4,607	38.6%
several times a week	2,645	21.6%
every day	1,031	8.5%

Variable	Frequency	Weighted percent
Total	12,029	100
Does family activities together		
never	64	0.6%
less often	111	0.9%
once or twice a month	271	2.2%
once or twice a week	2,033	16.8%
several times a week	3,444	28.5%
every day/ almost	6,106	51.1%
Total	12,029	100
Child spends time with friends		
not at all	789	6.3%
less often	596	4.9%
once or twice a month	1,517	13.6%
once or twice a week	3,814	33.1%
several times a week	2,542	21.1%
day or almost every day	2,768	21.2%
Total	12,026	100
Someone at home helps with reading		
not at all	3,935	32.9%
less often	82	0.7%
once or twice a month	184	1.6%
once or twice a week	2,015	17.1%
several times a week	2,959	24.9%
every day	2,833	22.8%
Total	12,008	100
Someone at home helps with writing		
not at all	4,432	35.8%
less often	114	0.9%
once or twice a month	384	3.6%
once or twice a week	2,981	25.8%
several times a week	2,682	22.8%
every day	1,414	11.1%
Total	12,007	100
Someone at home helps with maths		
not at all	5,476	44.8%
less often	184	1.7%
once or twice a month	636	5.6%
once or twice a week	2,931	25.2%
several times a week	1,946	16.2%
every day	837	6.5%

Variable	Frequency	Weighted percent
Total	12,010	100
Child has visited library in past year		
less often or never	3,951	33.2%
at least once a year	1,137	9.8%
every few months	2,958	25.1%
at least once a month	2,890	23.7%
once or twice a week	977	7.4%
several times a week	100	0.8%
every day/almost every day	20	0.2%
Total	12,033	100
Someone has been to parents evening		
no	437	3.5%
applicable	556	3.4%
yes	11,018	93.1%
Total	12,011	100
Trips out in the last year		
Cinema		
No	2,174	18.5%
Yes	9,859	81.5%
Total	12,033	100
Theme park/funfair		
No	3,648	30.8%
Yes	8,385	69.2%
Total	12,033	100
Gallery/museum		
No	4,193	33.6%
Yes	7,840	66.4%
Total	12,033	100
Play/panto		
No	2,905	25.0%
Yes	9,128	75.0%
Total	12,033	100
Zoo/farm		
No	2,464	19.3%
Yes	9,569	80.7%

Variable	Frequency	Weighted percent
Total	12,033	100
Professional sport event		
No	8,861	74.1%
Yes	3,172	25.9%
Total	12,033	100
Hours of TV child watches each day		
7+ hours	344	2.6%
5 - 7 hours	269	2.1%
3 - 5 hours	1,284	11.0%
1 - 3 hours	7,727	64.7%
< one hour	2,185	17.8%
none	219	1.8%
Total	12,028	100
Hours a day child spends playing on computer		
or more	74	0.5%
7 hours	74	0.6%
5 hours	350	3.0%
3 hours	3,756	31.3%
an hour	6,341	52.8%
none	1,430	11.8%
Total	12,025	100