Gender, work and domestic practices in 21st century UK families

— Implications for family well-being and child

development

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Declaration

I, Lauren Bird, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract

The diversification of modern family labour patterns exemplifies a socio-cultural shift away from strongly gendered work and family role attitudes. This research explores the gender division of labour and gender attitudes amongst parents in a recent UK cohort study, and the associations between parental gender attitudes and behaviours with family well-being and child cognitive development.

Paid labour, gender attitudes and household socio-economic characteristics were explored as predictors of the division of domestic labour to understand trends in how labour was divided by two parent families in the Millennium Cohort Study. Associations between the division of paid and domestic labour and gender attitudes were then examined as predictors of parental psychological distress and relationship satisfaction using logistic and linear regression respectively. Next, using the gender attitudes and behaviour variables of interest, children's Strengths and Difficulties Questionnaire across childhood and cognitive development at age 7 were investigated using multilevel mixed effects and linear regressions.

Associations were found between parents' paid labour, gender attitudes and domestic labour. More egalitarian divisions of labour and gender attitudes were associated with better mental health and relationship satisfaction for parents. Negative attitudes towards maternal employment were associated with increased behavioural difficulties. Although, gender attitudes and the division of labour were associated with children's cognitive outcomes, they were largely explained by differences in parental education and income. However, some significant interactions remained, including finding that gender differences in word reading at age 7 were concentrated in households with non-egalitarian maternal gender role attitudes.

This research explores the impact of gender on family relations in contemporary UK households. It provides considerable evidence for associations between gender attitudes and behaviours and family well-being and child cognitive development. In particular, the gendered home environment and gendered beliefs can be useful predictors for understanding inequalities in well-being and social-emotional and cognitive development.

Dedication

Dedicated to the memory of my father, Steven Bird (1953-2016). For my mother Norma, Rowan, Isaac, my siblings and my entire family.

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I would like to acknowledge my supervisors Dr Anne McMunn and Professor Amanda Sacker for their kind support. Thank you to my colleagues, peers, friends, and my family.

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Chapter 1

Introduction and literature review

1.1 Preface

The overarching aim of this thesis is to explore whether gender attitudes and behaviours regarding the division of labour in families are associated with family health and well-being. By exploring the paid and domestic labour of parents, and parental gender beliefs in the context of the family unit, this thesis will investigate how the family home environment is gendered by labour and attitudes. This thesis will focus on the impact of this gender home environment on the well-being of the family and development of children.

Domestic labour has long been a subject of interest in many sociological fields but it is under-represented in epidemiology and detailed quantitative data are rare. The effects of paid employment have already been rigorously measured and studied and this thesis will extend this knowledge to unpaid domestic labour and attitudes regarding gender and labour. This thesis aims to enhance our knowledge of how unpaid domestic labour, the gender division of labour and gender attitudes impacts the health and well-being of family members. Detailed survey data on family labour of both parents in two parent households are scarce, and the information collected is often highly gendered itself. This renders the household participation and caring of many fathers, and the paid labour of mothers under-represented and difficult to characterise. However, the United Kingdom's Millennium Cohort Study (MCS) offers an opportunity to explore these topics using a rich data source including both parents. Firstly, this thesis explores how parents spend their lives in both paid and unpaid labour, and share out both of these responsibilities within family units. This is followed by an examination of associations with parental mental health and relationship satisfaction, and finally the enquiry is extended to child social emotional

1. Introduction and literature review

and cognitive development outcomes. Social and environmental factors such as parental social class, income and education have been shown to be associated with children's outcomes in the past and ultimately the aim of this project is to add to the body of research in this area by reflecting on some of the ways that parents' attitudes and behaviours affect their children's lives.

A brief note on terms: the term 'division of labour' will relate to gendered divisions of paid labour and unpaid domestic labour as a whole. When referring to specifics, 'paid labour' will refer to paid employment while 'domestic labour' will refer to unpaid labour within the family home, for example housework or childcare, and therefore does not include unpaid labour outside the home, e.g. volunteering, or paid domestic labour. Gender ideology refers to the entirety of gender beliefs within an individual, group or society and is made up of gender expectations across a broad variety of domains in the general literature, and is therefore a very broad term. 'Gender attitudes' will be used when referring to any specific gender attitude or belief. In the context of this thesis, gender attitudes are measured specifically as attitudes towards maternal employment. This thesis generally uses gender attitudes rather than gender ideology as there are only specific measures available and not a spectrum of questions which could represent an individual's entire gender ideology.

1.1.1 Contribution to future research

Gender is a social construct which incorporates the norms and expectations of men and women within a given cultural context. As a social construct it is neither temporally nor spatially fixed (World Health Organization, 2015). However, in the short range view of personal experience gender may be mistaken as an unchanging part of everyday life. As gender constructs shape the roles of women and men, it can be expected that women and men will experience certain situations differently. Furthermore, gender is often confused with the binary, biological definition of sex. Gender is a part of the environment as well as the individual, and people interact, accept, or challenge the gendered structures that surround them to varying degrees. This means that within a sex, i.e. all women, there may be a variety of gender attitudes and behaviours depending on how individuals react to, engage with, and accept or reject, their local gender norms.

The re-conceptualisation of gender as a dynamic structure has been worked into research design at the international level. The United Nation's Entity for Gender Equality and the Rights of Women, has promoted definitions of gender which emphasize the social construction of gender and the contextual, temporal and changeable nature of gender. The promotion of "gender mainstreaming" generated a variety of tools, assessment criteria and intervention evaluations, to raise gender as an issue in research and development (UN Women).

The European Union has also promoted greater understanding of gender in research via it's Gendered Innovations project and has linked gender to research calls such as the Horizon 2020 programme. The goal of Gendered Innovations was to provide practical methods for sex and gender analysis in research to enable scientists across fields, especially ones where traditionally gender may have been overlooked, to understand whether sex, gender or both need to be incorporated into research projects (Schiebinger et al., 2016).

This research takes an approach to engaging with gender which is still rare in the health and epidemiological literature. Although it is often understood that gender is a social construct and as such, independent from a biological definition of sex, the nature of data has often limited researchers to treating gender as synonymous with sex. Gender differences that are observed in data are often understood as socially constructed - e.g. in that traditional social attitudes will expect men to provide financially for their families, so men may suffer worse ill health from job loss than a woman - but research has often lagged behind in understanding variation within gender - e.g. that *some* men and *some* women may suffer more from ill health due to job loss than *other* men and *other* women depending on their own gender ideology.

1.1.2 Outline of thesis

The thesis will proceed as follows: firstly a summary of current theories on the divisions of labour and evidence of relationships between gender behaviours and attitudes and family well-being and child development will be provided (this chapter). This chapter concludes by highlighting the gaps in current evidence to be filled by this thesis and the thesis objectives and hypotheses. After this, and an introduction to the data and methods (Chapter 2), the thesis continues with an investigation of the complex associations between forms of labour, gender attitudes and socioeconomic and demographic characteristics in a sample of contemporary dual-parent households in the United Kingdom (UK) (Chapter 3).

After the exploration of the gendered division of labour and gender attitudes in these households, both labour and ideology are then explored as predictors of a series of important outcomes for families. The labour variables and gender attitudes can be understood conceptually as a family gender environment represented by the paid labour of fathers and mothers, the division of domestic labour amongst parents of infants, and gendered attitudes towards maternal employment.

A gendered lens is used to explore ways in which inequalities in the division of labour are associated with well-being in couples, by looking at the relationship satisfaction and mental health of both mothers and fathers (Chapter 4). Additionally, gender attitudes and maternal employment are interacted to explore whether discordance between one person's attitudes and their behaviours, or discordance between attitudes within the couple dyad, are associated with particularly poor relationship satisfaction and psychological distress. The theory of cognitive dissonance is used to discuss potential ramifications of discordance between an individual's attitudes and their behaviours or between attitudes within couples.

The next chapter expands this research beyond the couple dyad by exploring

the implications of the gender home environment for children (Chapter 5). Chapter 5 links the gender division of labour and gender attitudes to social emotional outcomes in children, using the rich repeated measures of the Strengths and Difficulties Questionnaires (SDQ) available in the dataset.

The final analysis chapter extends the research to another domain that is sometimes considered gendered - cognitive development - by exploring whether the family gender environment is related to children's outcomes on cognitive tests at age 7, and furthermore, whether the gender home environment is related to gender differences in cognitive outcomes (Chapter 6). Chapter 7 offers a final discussion, strengths and limitations of the research, potential policy implications and a thesis summation.

1.2 Introduction

Observing the labour market structure over the latter half of the 20th century in the UK, one may note the transformation of a relatively stable labour structure, the 'male-breadwinner' model, disrupted by the movement of women from out of the home into paid labour. However, taking a longer view of history, the 'male-breadwinner' era was a brief epoch and the division of labour in families has more often been characterised by variability than the 'traditional' or 'male-breadwinner' model would suggest (Chapman, 2004). Furthermore, the gender division of labour and the dominance of the male-breadwinner model have been influenced by so-cial position. Lower income and working class families have often depended on the labour of women - and indeed children - to supplement the family income (Chapman, 2004). From a historical perspective, the movement of both men and women into an industrial labour setting was of utmost importance, transforming labour and twentieth century gender divisions in labour (Crompton, 1997). Regardless of the reasons why and how women's presence in the paid labour market has been chang-

ing, studying the effect of such changes in the UK, differences in effect across subpopulations, and ultimately adding evidence on the impact of all forms of labour on parents' and children's well-being will be the benefit of this research.

Although studies have looked into some of the effects of the division of labour on couples, less attention has been paid to the effects on children. Using a large longitudinal cohort to examine the effects of the division of labour, both on parents and their children, provides a unique opportunity to add to this field of study. Furthermore, this study will focus on the effects of parents gender attitudes towards labour as well as actual divisions of labour, to explore how gender attitudes, in conjunction with other socio-demographic indicators, shape the division of labour within families and parent's well-being and their children's developmental outcomes. Exploring the complex ways that labour is performed in families, is shaped by parental attitudes and how the divisions of labour and gender attitudes are ultimately reflected in children, will provide valuable information to the lively debate regarding gender, divisions of labour and family outcomes.

1.3 Divisions of paid and unpaid domestic labour in the UK

Labour in the UK and many other countries today is variously shaped by economic liberalism and capitalism, the rise of individualism and the marketisation of individuals' labour (Shelton and John, 1996; Crompton, 1997; Chapman, 2004; Bjornberg and Kollind, 2005). There is significant evidence of changing gender divisions of labour, as women's increasing involvement in paid employment and men's increasing involvement in the home converged (Coltrane, 2000; Craig and Mullan, 2011; Shelton and John, 1996; Crompton, 1997; Crompton and Lyonette, 2005; Chapman, 2004). However, the idea of convergence itself and whether it is continuing or has stalled remains in debate (Latshaw, 2011). In a review on the division of domestic

labour over the last few decades of the 20th century, Sullivan found that men were contributing significantly more time to domestic chores in the 1990s than they were in the 1970s in the UK. However, women still performed the bulk of domestic tasks (Sullivan, 2000a). Furthermore, the data also reflected the increases in women's time spent in paid work, which had been steadily increasing over the the decades since the post-war period (Sullivan, 2000a).

Education, income and social class are important correlates in this story of changing labour. Women's participation in education has increased steadily alongside increasing participation in paid work in the UK over the last three quarters of a century (McMunn et al., 2015a). Shifts in who stays home with children and who goes out to work have happened along class lines - staying home was once the preserve of the middle classes - while working class women had to work to supplement the family income (Chapman, 2004). Education has shifted that balance so that many women with degrees are maintaining professions while raising children, while the cost of childcare has forced many lower income women to remain at home. Returning to work after having a child remains a challenge for many women, due to costs of childcare and other similar challenges (Schober, 2013). Education has also had an important influence on men's performance of domestic labour, although the educational attainment gap in performance of domestic labour narrowed over the latter half of the twentieth century (Sullivan, 2010). There is a vast literature on the importance of these and other factors in the changing division of labour in the United Kingdom. To cope with the complexity of describing and understanding the historical and contemporary divisions of labour a number of theories have evolved across disciplines as diverse as sociology, psychology, economics, demography, family studies and more and will be explored below.

In order to describe the changing organisation of labour in the UK and abroad, systems have been developed such as the Total Social Organisation of Labour (TSOL) elaborated by Glucksmann (Glucksmann, 1995; Crompton, 1997; Glucksmann,

1. Introduction and literature review

2005). The TSOL is a way of describing "all the labour in a particular society ... divided up between and allocated to different structures, institutions and activities". It acknowledges the relations that govern the division of labour, the embeddeness of work, and the connections between different spheres of work (Glucksmann, 1995). The TSOL also highlights the fluidity of the spheres of labour; the boundaries and differentiation between spheres of labour are not stable structures. Furthermore, the performance of labour by men and women, the locations of labour and the means of production have also always evolved and changed (Glucksmann, 1995). The conceptualisation of labour was further elaborated by Ransome (2007), who added recreational labour in an attempt to extend the conceptualisation of work-life balance. Some aspects of this critique are useful, since it is an attempt to broaden the conceptualisation of work-life balance to be more suitable for families that do not have dependent children (Ransome, 2007). However, by expanding the definition of labour to include purely recreational elements into a total responsibility burden, can make the definition of labour seem vague. For the purposes of this thesis the understanding of labour as conceptualised in the TSOL is appropriate, as throughout this project, paid labour, housework, and childcare will all be explored as forms of labour.

1.3.1 Theoretical models for the division of labour

A variety of theoretical models for the drivers of divisions of labour exist under several broad themes. Under these themes, 'gender neutral' factors include time availability, economic and resource dependency and power. Gender inclusive theories include gender ideology and 'doing gender' (Shelton and John, 1996; Calasanti and Bailey, 1991; Greenstein, 2000; Lachance-Grzela and Bouchard, 2010). Economic dependency, relative resource, exchange, and power models posit the division of labour as a relationship or exchange between a higher wage earner and a lower or non-wage earner who exchanges unpaid labour for financial resources (Becker, 1985; Brines, 1994). There has been some evidence suggesting that both mothers and fathers do less housework the more paid work they do (Brines, 1994; Shelton and John, 1996). However, economic and time availability theories do not always hold when considering certain groups of women who participate in paid labour and still take on the bulk of domestic chores (Kan, Man Yee et al., 2011; Sullivan, 2000b, 2004) even considering their earnings relative to their partners (Usdansky et al., 2011; Bittman, Michael et al., 2003). Thus, although these models are framed in a gender neutral manner, the reality is often different depending on who is economically dependent and therefore the inclusion of gender theory is required.

Gender construction theories focus on gender ideology and 'doing gender' where an individual's gender ideology- their beliefs about the appropriate roles of men and women in a society - dictate their behaviour. In theory an egalitarian couple will perform equal paid and domestic labour whereas a non-egalitarian couple will adhere to a traditional view of separate men's and women's roles, with the man participating in paid work, whilst the woman's contribution is confined to home and family life. However, regardless of one's ideology, circumstances may dictate that individuals contradict their role beliefs, this is where 'doing gender' comes in. If a couple have traditional gender attitudes but for whatever reason find themselves in contrary roles - for example a husband unemployed and his wife forced to work they will use domestic labour as a display of traditional gender values, thus compensating for any role inconsistency in paid work by using domestic labour to meet gender expectations (Brines, 1994). While gender, culture and socialisation theories attempt to explain the performance of domestic labour as shaped by socio-cultural beliefs about sex roles, some authors have attempted to link sex role performances to biological preferences (Hakim, 2003), a theory which does has yet to get much credible support (Crompton and Lyonette, 2005).

On their own, each theory has strengths and limitations and no one theory, economic, time availability or sex/gender ideology, has been able to explain all of the

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differences in the division of domestic labour. Feminist perspectives have been invoked to incorporate the role of inequalities in power relations by considering the structural power imbalance in gender relations, questioning why men receive greater economic rewards than women for their employment, and how sex roles are recreated through social processes and norms (Calasanti and Bailey, 1991; Liu and Dyer, 2014). Research from a variety of countries where policies and interventions have led to slightly different models of work, has resulted in multiple examples showing how the division of labour presents in multiple contexts. This work shows the importance of individual level factors such as household finances, time, gender and power, as well as the importance of structural factors at the national level such as benefit and tax credit systems, parental leave policies and political conservatism (Treas and Tai, 2012; Craig and Mullan, 2011; Crompton and Lyonette, 2005; Galvez-Munoz et al., 2011; O'Brien, 2009; Geist, 2005). Alberts and colleagues (2011), have suggested a theory combining 'threshold level' (e.g. a lower tolerance threshold for dirt determines who is more likely to clean), 'self-organizing systems' (actions repeated at the individual level produce group level effects), socialisation, and 'economies of gratitude' (e.g. how a woman's paid work is perceived affects whether the husband helps at home or not). Their theory is a useful step in the attempt to define a more realistic conceptual model for the division of labour, but testing the actual effects and interactions still requires some substantial work (Alberts et al., 2011). Other drivers of change include feminism, women's increasing educational attainment and job opportunities, and the rise of service sector jobs which, although low paid, are generally flexible. Each of these are useful considerations for understanding and developing theories to describe the on-going gender divisions in labour (Crompton, 1997; McKie et al., 1999; Chapman, 2004; Charles, 2002).

Coltrane argued that in order to understand on-going inequalities in household labour one must attend to the "symbolic significance of household labour in the social construction of gender" (Coltrane, 2000). Labour and gender can be understood as similar constructs situated in layers from the individual context, to the community and then national level. These spheres of influence shape how labour is enacted and how gender is negotiated and displayed. Attending to the ways in which social forces shape divisions of labour and attitudes towards gender will enhance research in this area. Returning to the idea of change and fluidity in the conceptualisation of labour; all labour, whether paid or otherwise, is situated in time and space. Highlighting how cultural values shape and justify divisions in domestic practices, Chapman (2004) emphasized that the behaviour of men and women is specific to the social and historical circumstance at the time. Gendered practices become embedded into culture and people will, in certain circumstances hold onto such practices even when it is not practical for them to do so (Chapman, 2004).

Practical measures to investigate the predictors of domestic labour have been used throughout the literature and will be applied in this thesis. Paid labour participation of men and women is an important measure because an imbalance between men's and women's labour, or gender specialisation, is commonly cited as a predictor of domestic labour (Ferree, 1991; Sani, 2014). Along with the balance of paid work between men and women, researchers often also consider paid work earnings (Lyonette and Crompton, 2015), but complete earnings data are often difficult to acquire. However, total family income is also relevant to investigate as higher paid families may be able to outsource certain household tasks, or can more easily afford childcare to enable a woman to return to full-time employment. Education has also been used as a measurable predictor of domestic labour, with education gaps associated with gaps in the performance of domestic labour by men, although those gaps have narrowed over time (Sullivan, 2010). Lastly, gender attitudes and ideology are important predictors of domestic labour, with measures such as attitudes towards maternal employment, who should stay home with young children, family gender role attitudes are common measures used throughout the literature in related research (Greenstein, 1996; Levesque, 2012). Combining different measures in a recent nationally representative cohort study will provide an update to the understanding of the gender divisions of domestic labour in the UK.

1.3.2 Changes in paid and domestic labour in couples

Changes in participation in paid labour by women and domestic labour by men over the last half century have been well documented (Arber, 1991; Shelton and John, 1996; Crompton, 1997; Sullivan, 2000b; Coltrane, 2000; Bianchi et al., 2000), although there is debate as to whether these changes are continuing or have stalled (Kan, Man Yee et al., 2011; Latshaw, 2011). Historically, women's employment outside of the home has been studied differently than male employment. In 1991, Arber pointed out that employment was studied for women as an additional role, whereas employment has been assumed to be the primary role for men (Arber, 1991). Therefore, resulting research tended to focus on paid work for men, and domestic work, or role strain between paid and domestic work, for women (Gjerdingen et al., 2001; Maclean, 2004). The 'additional' role of paid work for women is sometimes seen as positive: termed role enhancement theory (Gjerdingen et al., 2001). As with male employment, it is seen as positive because it may build confidence, provide social contact and support outside the family, and bring financial security. In contrast to this, role strain theory, states that women who take on the additional role of paid work, combined with domestic duties, experience strain or stress because they are pulled between work and family commitments (Gjerdingen et al., 2001). Both of these approaches assume that a woman's role within the home is the default position and work outside of the home is additional. This presumption has biased much research, however, recently, this view has been challenged by research showing positive effects of employment on women and men (Glass and Fujimoto, 1994; Klumb et al., 2006; McMunn et al., 2006).

While women are contributing more to family finances, men are not necessarily

adding similar value to domestic labour. Although studies on the division of labour have found increases in the amount of time men spend on domestic chores, and an increase in egalitarian ideals and more equal participation in paid labour, generally women still spend more time than men on domestic labour even when they are in full time employment (Sullivan, 2000a, 2004; Coltrane, 2000; Craig and Mullan, 2011; Estes, 2011; Latshaw, 2011; Shelton and John, 1996; Singleton and Maher, 2004). Some of the convergence seen between men and women is a consequence of mothers spending less time in domestic labour due to changes in the way domestic labour is done – for example, through technology, appliances and the outsourcing of certain domestic labour tasks rather than a rise in the fathers' contribution (Charles, 2002; Bar and Leukhina, 2011; Schober, 2013).

In order to understand how the division of all labour translates into health outcomes, it is useful to understand how labour is perceived as fair or unfair. Distributive justice theory (Deutsch, 1985) has been used to explain how an unequal division of labour can be perceived to be equitable or how an inequality is translated into an inequity. Distributive justice leads to three key factors, which shape feelings of fairness: outcome values, comparison referent and justifications (Deutsch, 1985; Major, 1987; Hawkins et al., 1995; Thompson, 1991). Outcome values are simply the value one feels towards a particular outcome. If someone values a clean and presentable home, or their children's satisfaction at a meal, then the domestic labour they do is more rewarding for that individual than to someone who does not share those values. The comparison referent is important as it sets the standard for comparison. If a woman compares her partner's domestic labour contribution to her own it may seem unfair when she does more, however, if her referent is within her peer group she may see her partner as similar to her friends' partners and perhaps neither fair nor unfair. If the comparison was her own father, than she may see her partner as contributing significantly more and, therefore, highly fair. Justifications relate to the situations or procedures that led to the outcome. For example, if a division of labour is discussed and agreed upon, it can be deemed fair regardless of whether it objectively is or is not because the process itself was seen as the justification. Therefore, under the theory of distributive justice, a division of labour will be perceived as unfair if an individual lacks a valued outcome, sets a high standard of comparison, and does not feel there is a justification for the situation (Deutsch, 1985; Major, 1987; Hawkins et al., 1995; Thompson, 1991).

1.4 Gender ideology and attitudes

Gender ideology can be understood as the overarching gendered beliefs of an individual with regards to the roles, responsibilities and potential differences of men and women in society (Davis and Greenstein, 2009). Gender attitudes can be understood as specific beliefs about how people should act in any particular aspect of social life with regard to gender and these specific gender attitudes combined make up an individual's gender ideology. There can be wide differences between individuals due to the multitude of subjects which can fall under gender ideology. Common aspects of gender ideology discussed and investigated in research include attitudes to paid and domestic labour, child-rearing and family roles, cognitive and social development and abilities, and the appropriateness of certain behaviours, activities and dress adopted by one gender or the other (Davis, 2007; Davis and Greenstein, 2009). Gender ideology is developed on different structural levels that shape the everyday lives of individuals from the micro level to the societal level as demonstrated in figure 1.1. This figure shows the different levels of gender social structures, visualised in an ecological framework (Bronfenbrenner, 1981). The gender structures range from the individual/micro level, which includes an individual's beliefs, identity and preferences, to the society/macro level, where national and regional governments shape gender structures through policy.



Figure 1.1: Gender Ecological Model

To understand gender structures at the micro level, UK studies over the past several decades have queried participants on a range of gender attitudinal questions, such as appropriateness of maternal employment and preferred arrangement of family roles in households with children. While it is clear that overall gender attitudes have become more egalitarian over time, there is still a mixed picture with certain attitudes being more resistant to change, particularly regarding idealised forms for family divisions of labour (Scott and Clery, 2013).

A gender ecological framework (figure 1.1) is useful for understanding the many ways that an individual is socialised to a particular gender ideology. The gender ecological model is also useful for framing the ways the that parental gender attitudes towards labour and actual divisions of labour may affect children's gender development. The family environment, as the second layer from the individual, surrounds the child and this is a main medium through which parental gender attitudes and behaviours will be observed and potentially communicated to the child. Researchers have investigated the intergenerational transmission of gender attitudes and found that the mother's gender attitudes and division of labour have been associated with their children's gender role attitudes (Moen et al., 1997; Cunningham, 2001; Davis and Wills, 2010). A gender ecological framework suggests that gender attitudes and behaviours of parents can be understood as part of the family gender environment in which a child lives.

The ecological framework is not just relevant for children. The gender ideology of adults may continue to evolve over time. For example, although the division of labour literature focuses on the associations of gender ideology as a predictor of labour, the relationship may also have influence the other way, suggesting that divisions of labour can shape changes in gender attitudes (Kroska and Elman, 2009). Furthermore, family members may not share the same gender ideology so it is possible that a couple's gender attitudes may also influence each other.

1.5 Divisions of labour and gender ideology: associations with parental mental health and well-being

The association between paid labour and mental health has been an area of interest for researchers for a number of years. Numerous studies have linked paid and domestic labour with relationship satisfaction, happiness or mental health. Employment and unemployment has strong links to mental health and well-being and has been recently reviewed elsewhere (Paul and Moser, 2009). There is a long established and extensive body of research which shows the importance of employment for health. Just a few brief examples highlight the negative effects of unemployment on mental and physical health, which has been found for both women and men (Daly and Delaney, 2013; Rosenthal et al., 2012; McMunn et al., 2006; Riva and Curtis, 2012; Linn et al., 1985). Most research on paid labour and mental health has been focused on men, but increasingly researchers are considering the effects on women (McMunn et al., 2006). Dialogues around labour and health research have been heavily influenced by gender normative attitudes, with questions on women's labour market participation invariably linked to their family responsibilities whereas men's labour is often assumed to be independent from family life. This of course, is unfair to both women and men, as it assumes women are primarily responsible for family life, and that men's primary role is in paid work. While paid labour has been found to be associated with less depression, housework has been associated with increased risk of depression among both men and women (Glass and Fujimoto, 1994; Shelton and John, 1996; Frisco and Williams, 2003a).

In addition to women's actual employment, women's attitudes towards their employment have also been found to have implications for women and their daughters. Full time working mothers who perceived their paid work as important (i.e. thought of themselves as at least partial breadwinners) were more likely to benefit from aspects of their employment in relation to depression and marital satisfaction (Helms-Erikson et al., 2000). Additionally, their attitudes also shaped their daughter's gender role attitudes. Perception was key as women's provider-role attitudes moderated the positive effects of employment; women who perceived themselves as co-providers benefited more from work qualities like earnings and prestige than did the other women in the study (Helms-Erikson et al., 2000). Furthermore, the perception of equity in the division of labour (and not necessarily actual equality in the division of labour) has been shown to be associated with lower levels of depression (Glass and Fujimoto, 1994). When the division of domestic labour is perceived as unfair it is associated with lower marital satisfaction for both men and women, and has been found to be predictive of later divorce for women, even after controlling for marital satisfaction, suggesting that perceptions of the division of labour has effects independent of marital satisfaction (Frisco and Williams, 2003a). In addition, perceptions of gender inequality in a couple's relationship have been shown to mod-

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ify the association between unequal domestic labour and psychological distress, demonstrating the need for further investigation into gender inequality in couples (Harryson et al., 2012). The division of domestic labour has also been linked to relationship dissatisfaction; perceived equity in the division of labour was negatively associated with marital happiness for men and women as well as being linked to increased likelihood of divorce for women (Frisco and Williams, 2003b). However, father's involvement in housework and childcare has been linked to greater family satisfaction (Forste and Fox, 2012). Therefore, while there have been a considerable number of studies on the topic of paid and domestic labour on mental health and well-being there are some gaps and inconsistencies. Clarity on divisions of paid and domestic labour for both men and women's mental health and relationship satisfaction in a large and contemporary UK study would be beneficial.

1.6 Family gender environment and children well-being and development

When discussing parental gender attitudes and gendered behaviours it is useful to conceptualise these together as the family gender environment. Parental gendered behaviours and gender role attitudes set the gender dynamic in the family and thus create the home gender environment that children experience. Theoretical frame-works to explain gender socialisation have been developed, but a common theme is the complexity and variety of spheres of influence which shape gender development in early years and throughout the life course. Social cognitive theory (Bussey and Bandura, 1999; Bandura and Bussey, 2004), for example, combines psychological and social-structural factors to frame the development of gender. Gender is conceptualised as the product of a vast network of influences, and children are influenced but also participate in this gender structuring. Social cognitive theory suggests three modes of influence that can shape a child's gender socialisation. The first mode is

models - parents, peers, teachers and even the media can all model gender-linked behaviours that a child can observe from birth (Bussey and Bandura, 1999). The second mode of influence is enactive experience, wherein a child adapts behaviours which are socially rewarded. For example, if a socially sanctioned gender behaviour (e.g. a girl drawing flowers) is praised, that child will continue to do the activity (Bussey and Bandura, 1999). The third mode of influence is direct teaching, where a gender linked behaviour or attribute is directly explained (Bussey and Bandura, 1999). These three modes of influence operate together and the relative importance of each varies by child and developmental stage; for example, direct teaching is more relevant once a child has developed sufficient linguistic abilities (Bussey and Bandura, 1999). One key linkage between social cognitive theory which relates to the gender ecological model presented earlier is the importance of the family environment. The gender ecological model framed the importance of the family within the wider social context as layers of influence of an individual while Bandura's social cognitive theory highlights the potential pathways that the family gender environment could impact a child, via modelling, being rewarded for socially sanctioned behaviour, and direct tuition of expected gender beliefs and behaviours.

Given this theoretical background, the family emerges as a significant site for gender socialisation, but the mechanisms and extent of the associations between parental gender attitudes and behaviours and child development are not fully understood. It has been argued that the full complexity of the family influence on child gender development has been underestimated (McHale et al., 2003). However, studies are increasingly looking to address this gap. For example, parental gender attitudes have been linked to child gender attitudes and preferences (Dawson et al., 2016). The family gender environment can also have implications for children's gender trajectories in life, where parental gender attitudes in childhood have been linked to their children's employment later in life (Johnston et al., 2014). Gender divisions of domestic labour have also been linked to children's gender socialisation and outcomes (Dawson et al., 2015). Therefore, conceptualising both gender attitudes and behaviours as a gender home environment can be a useful concept for understanding gender socialisation generally as well as gender differences in specific domains of development.

1.6.1 Gender environment: paid work and child development

A large body of research has developed around the effects of maternal employment on children, particularly on child weight and body mass index (BMI). For example, maternal employment has been linked with a higher BMI in children (Hawkins et al., 2007), particularly for higher educated mothers (Ziol-Guest et al., 2013). However, previous studies have had different and often complex results linking child weight at ages 4-5 with maternal employment but not at two years followup (Brown et al., 2010). The same study also found that being a part-time working mother had a protective effect at ages 4-5 and at two years follow-up, compared to non-working mothers and full-time working mothers, which they related to unhealthy behaviours such as television watching and lack of physical activities (Brown et al., 2010). In the UK a positive relationship between maternal employment and higher BMI was found but the effect was driven by lower socio-economic groups in subgroup analyses (Scholder, 2008). A cross-national study comparing several European countries found little evidence overall of a maternal employment effect on child obesity with only some exceptions for children in the low socioeconomic group and at the upper end of the weight distribution, with variations depending on measurements (e.g. not true for BMI but true for waist circumference) and where these few exceptions existed it was only in relation to full-time work (Gwozdz et al., 2013). Many of the studies throughout the literature on employment and child health are focused on maternal employment, far fewer studies consider paternal work or both parents work together. However, where father's work has been studied, paternal work hours and maternal and paternal non-standard work

hours have been found to have effects on children's BMI (Champion et al., 2012), suggesting that paternal employment should also be considered alongside maternal employment.

Maternal employment has also been studied in the contexts of cognitive and socio-emotional outcomes. In studies from the United States (US) early maternal full-time employment (in the first year of life) has been shown to be associated with lower school readiness at 36 months, which remained significant after controlling for covariates such as the quality of day care (Brooks-Gunn et al., 2002). Negative effects on cognitive outcomes have also been found in certain groups of children and depending on when the mother was employed (e.g. when the child was preschool or school aged) (Ruhm, 2008). Studies from the UK however, have differed in their results. Using birth cohort data and looking at associations between maternal employment and children's cognitive outcomes have found limited effects only, such as slightly poor reading for children of less educated mothers working in the first year of life (Verropoulou and Joshi, 2009). While another UK study found only small or non-significant negative results on children's cognitive outcomes when mothers worked in the first 18 months and furthermore that it was dependent on the type of care the child recieved, negative outcomes were only found for children placed in informal care (Gregg et al., 2005). Data from the UK seems to suggest only small or non-significant effects of maternal employment on children's cognitive outcomes. Using multiple cohorts has also revealed that where there may have been some negative effects of early maternal employment in earlier cohorts such associations have not remained in later cohorts and may even show positive effects (Joshi and Verropoulou, 2000). However, there has been less research on paternal employment, as parental job quality, stress or characteristics such as parental warmth can have negative impacts on children, the effects of paid work by both parents should be of interest (Joshi and Verropoulou, 2000). Overall when including US studies the broad results of such research suggest only limited mixed effects of
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maternal employment. However, when considering the UK evidence alone, most recent research suggests that maternal employment is not negative for children. Studies on social-emotional well-being have also highlighted that maternal employment is not harmful, particularly in dual earner families in the UK, (McMunn et al., 2011; Hope et al., 2012) as well as in other UK and US cohorts (Cooksey et al., 2009). Other benefits of maternal employment have been suggested, for example, children who grow up with working mothers are more likely to divide housework more equally when they grow up, which could benefit their personal well-being due to the previously mentioned links between domestic labour and depression (Treas and Tai, 2012). However, impacts of early maternal employment can vary greatly by context, highlighting the importance family friendly policies and the need for diverse and cross-national studies (Huerta et al., 2011). Taking this research further by looking not only at paid work, but all family work, and the equal or unequal division of such labour would further enhance this research area.

1.6.2 Gender environment: domestic labour and child development

Despite findings that single fathers can 'mother', that is do housework, care for children and develop strong emotional bonds with their children, there remains a social and cultural bias towards women being better caregivers and domestic labourers (Risman, 1986). Many studies have investigated fathers' significant role in their children's lives as nurturing involved parents as well as breadwinners or playmates (Lamb, 2004; Deutsch et al., 2001). There is a very broad research base on fathers' involvement in household management and family life, including themes of diversity, embodiment, gender and conflicts (Augustine et al., 2009; Brandth and Kvande, 2009; Burghes et al., 1997; Daly et al., 2009; Doucet, 2009; Edwards et al., 2009; Featherstone, 2009; Flouri, 2005; Gillies, 2009; Lamb, 2004; McBride et al.,

2002; O'Brien, 2009; Risman, 1986; Rossi, 1984). Parental involvement varies at a national level due to effects of social context as well as at the household level (Craig and Mullan, 2011). Positive parenting and engagement from fathers in early childhood improves children's cognitive outcomes in core reading and math (Coley et al., 2011). Conversely negative parenting with restrictive discipline predicts lower reading and math scores regardless of mother's parenting and other factors like education and economic resources in low income families (Coley et al., 2011). Although class may not be strongly associated with the division of labour between partners (Wright, 1997), it may have impacts on types of involvement with children. Qualitative studies have observed that middle class fathers have the financial and cultural/educational means to engage in the most 'visible' forms of approved fatherhood – i.e. coaching sports or discussing a child's progress with teachers and school officials. This can act to legitimise their involvement with their children, and was contrasted to observations of working class father involvement, which is often less visible and therefore less valued – i.e. playing with children, watching TV with children, helping with domestic chores like meal preparation, bath time and cleaning (Coakley, 2006; Such, 2006; Gillies, 2009; Lareau, 2003; Shaw, 2008).

Many studies focus on differences between mothers and fathers, which can give the impression that mothers and fathers have unique and separate natural roles or parenting styles (Brown et al., 2011, 2010; Coakley, 2006; Craig and Mullan, 2011; Deutsch et al., 2001; Doucet, 2009; McBride et al., 2002; Waller, 2009), potentially perpetuating entrenched beliefs about separate gender roles. Therefore, although there is evidence for the positive effects of fathers on their children's lives and the lack of a detrimental effect of maternal employment, there still remains a gendered divide in the expectations held for women and men. Although these studies have some shortcomings in their approach, given the lack of acknowledgement of fathers by some in the field, they presented an important leap forward to focus on the way men father. Indeed studies focusing on fathers have helped drive research towards

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engaging fathers more fairly as family contributors. Gaps in the literature remain, such as on the division of domestic labour between both parents with family wellbeing and child development. A pertinent hypothetical question is: what if fathers were studied in a similar way to mothers - would we find similar effects? Would studies then query whether paternal employment is negative for children? Perhaps not, but by placing questions about maternal employment in the context of the family unit where maternal employment is modelled side-by-side to paternal employment and paternal involvement in the home is modelled side-by-side with women's involvement, research could move towards a more egalitarian framework for family environments, and is in part, one of the goals of this thesis.

1.6.3 Gender environment: gender attitudes and child development

There less literature on parental gender ideology and children's well-being compared to that on parents' well-being. Some studies have looked at related areas such as connecting parental gender attitudes and child gender attitudes, or parental gender attitudes and divisions of labour with children's sibling relationships (Dawson et al., 2016, 2015). As some of the literature previously mentioned has already linked aspects of the division of labour to mental health (Glass and Fujimoto, 1994; Paul and Moser, 2009; Claffey and Mickelson, 2009), and parental mental health is known to impact on child socio-emotional development (Sweeney and MacBeth, 2016; Cho et al., 2015), it may be possible that parental gender attitudes can operate through parental mental health to impact on children. There may also be direct effects of the gender attitudes of parents on their children's well-being. Investigating child SDQ and parental gender attitudes with divisions of labour in the UK's MCS will be a useful addition to the literature.

Gender gaps are often discussed in the context of education. In the UK, par-

ticipation in certain degrees is highly gendered. Women are considerably underrepresented in fields such as engineering, technology and ICT whereas men are under-represented in many health and veterinary fields (WISE, 2015). These gaps seem to develop between GCSE (lower secondary) and A level study (higher secondary) in the UK. At GCSE level girls are almost on par with boys in STEMM (science, technology, engineering, maths and medicine) related subjects, partly due to recent education policies favouring certain subjects, but considerably fewer girls than boys continue with most STEMM linked subjects at A level (WISE, 2015). An important distinction to note is that when girls do study STEMM subjects at GCSE and A level, they actually outperform boys overall (WISE, 2015). Taken together results through secondary education suggest that girls can equally perform as well as boys in STEMM subjects, suggesting they drop out for socio-cultural reasons and not due to lack of talent or skill in subjects. In arts and humanities subjects, which require expertise in language skills, and usually require extensive reading, women outnumber men in UK university enrolments at undergraduate levels. For example in 2013/2014 women were more likely than men to be enrolled in education (5.2 to 1), languages (2.4 to 1), degrees allied to medicine (3.9 to 1), and law (1.68 to 1) women also represented 54.5% of overall enrolments where sex was declared in UK universities across all disciplines at this time (HESA, 2015). Considering the gender gaps in adolescence and early adulthood, it is important to understand the social processes which may be underlying the development of such differences. These striking gender gaps in adolescents are preceded by emerging gaps in children, particularly in reading, and previously seen in mathematics as well (Chatterji, 2006; Hyde and Linn, 1988). But at younger ages such gender gaps are not always consistently found, so understanding the gender socialization process which may lead to their development is of key interest to social sciences.

The gender home environment provides a framework for understanding a key location for gender socialization. Children are gender stereotyped from infancy, via

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sex-typed toys, clothes and environments (Pomerleau et al., 1990; Rheingold and Cook, 1975). The gender of a parent and child may also influence parents' home learning behaviours with their child (Eccles, 1993; Jodl et al., 2001). Research has found that parents activities with children are shaped by the child gender so that boys are given opportunities for more active and spatial play while girls are given more opportunities for quiet play such as arts and crafts (Baker and Milligan, 2013; McMunn et al., 2015b). It has been suggested that the gendering of early childhood play opportunities can have longer term consequences for children (Serbin et al., 1990). Parental gender attitudes may therefore significantly influence their child's early gender experiences in play and learning and shape their abilities as they enter formal education. The family gender environment of parental attitudes and behaviours are a part of a child's early environment where gender socialisation occurs. The attitudes and behaviours of parents in this environment may directly or indirectly influence children's ideologies about their own gender role and expected behaviours, and abilities.

1.7 Family context covariates and potential

mediators

The literature on social inequality and children's development outcomes is extensive. Persistent poverty, material disadvantage, parenting behaviours and psychosocial risk factors have all been associated with poor outcomes in cognitive and socioemotional development and general health (Schoon et al., 2012, 2003; Spencer, 2005; McCulloch and Heather, 2002; Bornstein and Bradley, 2003; Ashiabi, 2007). Father's education and income have been linked to child cognitive development and positive parent-child interactions (Tamis-LeMonda et al., 2004). Income, education and social class are also an integral part of the division of labour literature (Shannon and Greenstein, 2004; Aassve et al., 2014; Sullivan, 2010), because they are integral parts of economic dependency and relative resource theories. These covariates will therefore be considered an essential part of this study. Education, income and social class not only influence the division of labour as discussed earlier in this chapter, but can also directly influence children via social and economic resources, concerted cultivation, and social inequalities present in contemporary UK society (Cheadle, 2008; Marks et al., 2006; Entwisle et al., 2007).

Parental mental health may be an important mediator in the relationship between the division of paid and unpaid work, gender attitudes and children's behaviour and cognitive outcomes. Domestic and paid labour have been associated with adult's psychological distress in several studies (Tao, 2010; Bianchi and Milkie, 2010; Harryson et al., 2012). Parental gender ideology, gender roles, and perceived inequalities in the division of labour in the household have also been linked to parental mental health and family satisfaction (Gjerdingen et al., 2001; Frisco and Williams, 2003a; Simon, 1992, 1995). Therefore, parental mental health has been linked to division of labour and gender ideology exposures, parental mental health has in turn been linked to negative effects on children's development (Mensah and Kiernan, 2010; Roustit et al., 2010; Sweeney and MacBeth, 2016).

1.8 Literature summary and research gaps

Research has not always succeeded at keeping up with social change. Krieger defines gender as "a social construct regarding culture-bound conventions, roles, and behaviours for, as well as relations between and among, women and men and boys and girls." (Krieger, 2003, p.653). The most common usage of gender in epidemiology is as a categorical variable, with little consideration of what it is measuring (Krieger, 2003). Gender attitudes and behaviours are undoubtedly linked to the division of labour and indeed to most practices within the home and family environment. Bringing gender thoroughly into our analysis of the family division of labour and children's developmental outcomes, by paying fair and equal attention to the work and parenting of both mothers and fathers is a primary goal of this study.

Despite substantial leaps forward in understanding the complexity of the division of labour and its effects on personal, dyadic and family health and well-being (Milkie et al., 2002; Stevens et al., 2001; Forste and Fox, 2012), there remain many questions which demand research attention. We know that paid and unpaid labour affects parental mental health and well-being, but gaps remain regarding combinations of divisions of labour and gender attitudes as well as dyadic influences within couples and concordance in attitudes and behaviours. Likewise, we have gained much knowledge on the effects of paid labour on children, but we do not know as much about the effects on children of how domestic labour is performed or how children are affected by the home gender environment, combined of all labour behaviours and attitudes and concordance between parents. There remain stubborn disparities between boys and girls performance in cognitive subjects and children's social-emotional behaviours (Reilly, 2012; Doey et al., 2014). However, the evidence of such gender disparities does not suggest natural or biological differences but are more likely the result of socio-cultural factors. Parental gender attitudes may affect how they parent their children, and a better understanding of whether parents' gender attitudes and behaviours are associated with child and adult outcomes would offer insight into potential ways to positively intervene in family wellbeing and child development.

The UK Millennium Cohort Study provides an opportunity to investigate the role of gendered attitudes and divisions of paid and unpaid labour with parents' marital satisfaction and mental health and well-being. Furthermore, the MCS allows us to investigate how these issues affect a variety of child development outcomes where questions remain on parent's family roles and gender socialisation. For children this study will address how parental divisions of labour and gender attitudes (the family gender environment) shape development. This study will also

explore how these two factors may be implicated in some of the gender differentials that are seen in children's cognitive development. The UK Millennium Cohort Study is a substantial data source for exploring these questions among others to better understand how the division of labour and the family context in which it arises affects children's developmental outcomes.

1.9 Research aim, framework and themes

The aim of this thesis is to investigate how the gendered division of paid labour and unpaid domestic labour affects family health and well-being. Additionally, I explore gender attitudes and parental concordance as key factors in parental wellbeing and child socio-emotional development and cognitive abilities to understand the implications of gender dynamics in parental relationships and the gender home environment as a site of child gender socialisation.

The framework in figure 1.2 presents a visual representation of what this thesis aims to investigate, with the division of labour predicted by some aspects of the gender home environment (e.g. gender attitudes), but also a part of the family gender environment due to the interrelatedness of family labour and gender ideology. The family gender environment, including divisions of labour, then can be used to predict parental and child well-being and child development outcomes.

Another motif throughout the thesis is the attempt to treat mothers and fathers as equal parents whenever possible. In the past studies on child development focused largely on relationships between maternal characteristics and child outcomes and fathers have often been left out of the literature, whether deliberately or because the data were lacking. Although notable exceptions have brought fathers into the forefront of family research, and have helped inspire this research (Burghes et al., 1997; O'Brien, 2009; Lamb, 2004). With increasingly better data including similar measures for both mothers and fathers, including studies like the MCS, it is possi-

1. Introduction and literature review

ble to begin to treat mothers and fathers equally. Although, there are still some areas that would benefit from an even greater effort to de-gender parenthood to enable some of the excellent research on fathers to expand further. Therefore, wherever possible, if a variable existed for mothers and fathers both were included to give equal consideration to the potential impact of fathers.

Gender socialisation in childhood is another key focus of this thesis. Gender socialisation occurs in a variety of ways, not only within the household, but in all aspects of life, and can at times be detrimental to children's outcomes (Parsons et al., 1982; Eccles, 1993; Eccles et al., 1990). Within the home gender can be socialised through clothing, toys and encouragement towards certain activities or away from others, but parental gendered labour behaviours and attitudes may also contribute to the family gender environment. Therefore, to expand the sense of how gender is socialised in the home this thesis will investigate parental gendered attitudes to labour, specifically maternal labour, and the parental division of paid and domestic labour with child outcomes. These attitudes and behaviours are not specifically about the child's dress or play but rather form a part of the child's early life gender environment and can may influence children's socio-emotional outcomes and cognitive development.

The final aim of this thesis, what is called here 'unpacking' gender, will try to move beyond a gender analysis where women and men are usually contrasted as separate homogeneous groups, and instead discuss gender as something which shapes men and women to varying degrees according to their gender behaviours and attitudes. This is important because a more nuanced picture of gender is needed, since gender is a social construct, some people will adhere to social norms and customs more rigidly than others.

Figure 1.2: Conceptual model for the family gender environment and pathways to family well-being and child development



Conceptual model for the family gender environment and pathways to family well-being and child development

1.10 Objectives and hypotheses

Research aim To investigate how the gender behaviour and attitudes that feed into the division of paid and unpaid labour affects family health and well-being.

Objective 1

To (i) explore the relationships between gender attitudes and paid labour with the division of domestic labour in families with infants from the UK Millennium Cohort Study (MCS); (ii) assess how class, education, and household income are associated with the gendered division of domestic labour in families.

This objective is explored in Chapter 3, where a division of domestic labour variable is constructed and a model is built to understand the relationship between the exposures of interest and domestic labour. This chapter also discusses the current patterns of 'who does what' domestic labour in the MCS families, which can be taken as representative of UK two-parent families at the start of the new millennium.

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Hypotheses: Although all mothers remain likely to take on more of the burden of domestic labour than their partners:

- 1. Less egalitarian gender attitudes will be associated with less egalitarian sharing in the division of domestic labour.
- 2. Dual earner families and families balancing part-time employment or with loose ties to paid work will have more egalitarian divisions of domestic labour due to parents dividing paid work and childcare as needed, whereas male 'breadwinner' families will be more likely to have mothers who do most housework and childcare.
- 3. More parental education will generally be associated with a more equal division of labour.
- Women in small employer, semi-routine or routine occupational groups will be more likely to take on more domestic labour burden than women in professional/managerial occupation classes.
- 5. High income families and low income families may be more likely to have a more egalitarian division of labour compared to middle incomes.

Objective 2

To (i) investigate associations between the division of labour and gender attitudes and parents' psychological distress and relationship satisfaction and (ii) to focus on the significance of concordance between each parent's attitude towards maternal employment and the actual maternal employment in the family (individual attitude/behaviour concordance) as well as between parent attitudes (attitude/attitude concordance in the parental dyad) and the associations of such concordance/discordance with parental mental health and relationship satisfaction.

This objective is explored in Chapter 4, with Golombok Rust Inventory of Marital State (GRIMS) and the Malaise Inventory as outcome measures of relationship satisfaction and psychological distress respectively.

Hypotheses are:

- Egalitarian behaviours in the division of paid and domestic labour and egalitarian attitudes towards maternal employment will be associated with better mental health and relationship satisfaction than less egalitarian attitudes and behaviours.
- 2. Individuals whose gender attitudes to maternal employment are not concordant with their actual maternal employment in the household may be less satisfied in their relationship and have greater psychological distress, than those whose attitudes and behaviours match.
- 3. Couples who have discordant gender attitudes may be less satisfied in their relationship or have other poor mental health outcomes compared with couples with concordant attitudes - i.e. concordant on attitudes regardless of division of labour because if they are discordant then at least one partner will be matching on attitude and behaviour).

Objective 3

To assess the relationship between the family division of labour, parental gender attitudes and children's social-emotional outcomes.

This objective is investigated in chapter 5, using longitudinal data and the Strengths and Difficulties Questionnaire as a measure of child socio-emotional difficulties.

Hypotheses:

- More egalitarian divisions of labour (e.g. higher levels of maternal employment and greater partner engagement in domestic labour) will be associated with fewer difficulties measured by the SDQ across childhood.
- 2. More egalitarian gender attitudes to maternal employment will be associated with fewer difficulties measured by the SDQ across childhood.

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- 3. Children whose parents are discordant in their attitudes towards maternal employment will be more likely to have socio-emotional difficulties and greater gender differences in children's outcomes. In other words, children's developmental outcomes will be more differentiated by child's gender as a result of the gender home environment.
- 4. The gender home environment variables (attitudes to maternal employment and divisions of labour) will influence children's gender socialisation so that associations with SDQ will strengthen over time as children's exposure to a gendered environment increases.

Objective 4

To investigate aspects of the family gender environment as predictors of children's cognitive development and to assess the relationship between the family division of labour, parental gender attitudes and children's cognitive development, by the gender of the child.

- More egalitarian divisions of labour (e.g higher levels of maternal employment and greater partner engagement in domestic labour) will be associated with higher cognitive scores in children.
- 2. Less egalitarian gender attitudes to maternal employment, and/or conflicting attitudes between parents, will be associated with lower cognitive test scores in children.
- 3. Less egalitarian divisions of labour will be associated with greater gender differences in children's cognitive outcomes.
- 4. Less egalitarian gender attitudes to maternal employment will be associated with greater gender differences in children's cognitive outcomes.

Chapter 2

About the data

2.1 Study

The Millennium Cohort Study (MCS) is a longitudinal cohort study following children born between 2000 and 2002 across England, Wales, Scotland and Northern Ireland. Five sweeps of data have been delivered so far: at ages nine months, three, five, seven and eleven years old. The study began with over 18000 children at sweep 1 and includes survey data on household structure, employment and economic data, socio-emotional, developmental and cognitive tests and measurements, self-completion reports for carers, children, siblings, and teacher reports, when available. This thesis utilizes data from all five sweeps. In particular, the first sweep contains details for the main exposures of interest: the division of paid and domestic labour, and gender attitudes to maternal employment. Because the division of labour between partners is integral for this study, the sample only includes couples where there is an eligible partner who completed the partner survey.

The MCS offers the opportunity to study a recent cohort of children representing families from across the UK. The study differs from previous UK cohort studies where all children born during a specific time point were selected. Rather the MCS sampled children born between 2000-2001 for England and Wales and 2000-2002 for Northern Ireland and Scotland who were living in the UK at aged 9 months. The MCS was also the first cohort to have samples from across all the countries of the UK. By sampling children across a greater time span the MCS allows for comparison of time of birth effects (for example in educational research). The study also oversampled to ensure sufficient coverage of socially disadvantaged groups and ethnic minorities. The study is therefore stratified by country (with an advantaged and disadvantaged strata in each country) and an additional strata in England where the proportion of ethnic minorities was at least 30%. Throughout the thesis descriptive statistics will be unweighted to show the raw study sample data, while the analyses and models will be adjusted using STATA's survey (SVY) commands to adjust for the stratification, weighting and clustering in the data (StataCorp, 2011). There were a number of families lost to follow up over the course of the study as well as a boost sample added at MCS sweep 2. 18552 families were involved at sweep 1, with a boost sample added at sweep 2 the total number of eligible families were 19244. by sweep 5 the number of productive study responses were 13287. Sample attrition is incorporated into the analysis weights.

2.1.1 Baseline sample

At MCS sweep 1 the main respondent is generally the mother and the partner is the father. This is not necessarily the case for the whole MCS or the MCS used at later sweeps. At sweep 1 the researchers targeted mothers to be the main respondents as there were questions on the pregnancy and birth. Nevertheless there were some fathers (and other caregivers) across the whole MCS. Once the sample was selected as shown in the flowchart, it resulted in mainly mothers for main respondents and fathers as the partners (there were four cases where the father was the main respondent so all of their variables were reversed). For chapters using data from later sweeps of the MCS, the main respondent and partner were not longer necessarily the same mother and father. All variables were modified to account for these changes - "main respondent" answers are always labelled "mother" but if the gender of main respondents switched at later sweeps they were changed to ensure the correct labelling throughout the thesis.

The first sweep of the MCS contained all the main exposures of interest. Paid employment, a key area of this research, was collected at the first sweep with followup at every following survey. However, other variables of interest were not followedup or were only partially followed-up. Of the domestic labour variables on house-



Figure 2.1: MCS1 baseline sample selection flowchart

2. About the data

work and childcare, most were not asked at later sweeps; for example cooking was followed up at sweep 2 but did not appear again in the survey, while cleaning and laundry were dropped after the first sweep. Most of the childcare variables were baby specific and so did not continue as the focus shifted towards activities with children. A similar case exists for the parental gender attitudes. They were not repeated (or only partially repeated at sweep 2) and in later sweeps other interesting but not equivalent gender attitudes questions appeared. Therefore this study only uses two-parent families with complete data at the first sweep (n=12014). The selection process is detailed in figure 2.1, all couples who were living together and in a relationship where both partners responded to the request for interview were included in the potential sample (n=12902). Many of the main variables of interest (e.g. gender attitudes, domestic labour, and outcomes on mental health and relationship satisfaction) were included in a self-completion section of the survey, therefore cases missing the self-completion were dropped (n=614) along with a few extra cases missing data within the self completion (n=46). With the sample at n=12242, remaining cases with missing socio-economic and demographic variables (n=228) were dropped giving a final sample of 12014.

An analysis of missing data (see appendix A) was conducted to see how the final baseline sample (n=12014) varies from all the potential couples in the MCS (n=12902) on a variety of socio-economic and demographic variables of interest to assess any potential bias introduced by the sample selection. This table is available in appendix A. The two samples were compared and a calculation of percentage difference between each level of each variable was made. When the baseline sample used throughout the thesis is compared to the potential sample of all available couples in the MCS, the percentage difference for every variable was well under 5% across all covariates investigated. No covariates used in the thesis had percentage differences greater than 2%. Ethnicity was the only variable that had a difference greater than 2% between the samples, which is not included in this research but was

included in the appendix table out of potential interest to some readers.

Additionally, only one cohort child per family is studied, twins and multiples were not included in the analyses of the children. However, in the analyses in chapters 6 and 7, where longitudinal data are used, households did not have to remain complete, e.g. a family may have transitioned from a two-parent to a one-parent family. So long as they had data at the first sweep they remained in the study. Details of the sample selection process at the first wave of study can be found in Figure 2.1. All chapters start from this baseline sample. In chapters 3 and 4, all 12014 families of the baseline sample are present. In chapters 5 and 6 the sample starts with the baseline so that all members of the baseline sample who have the outcome of interest in each particular chapter are included. Further details on sampling procedures, dealing with attrition and missingness for chapters 5 and 6 will be discussed within the respective chapter.

2.2 Measures used throughout thesis

Division of domestic labour

At the first sweep the MCS asks a series of questions about domestic chores and childcare asking who:

- mostly cooks the main meal
- mostly cleans the home
- mostly does laundry and ironing
- has most responsibility for household repairs/DIY (do it yourself)
- most responsibility for managing money
- most responsibility for feeding (the baby)
- most responsibility for changing nappies

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- most responsibility for getting up at night (for baby)
- mostly looks after children when ill
- mostly looks after children generally

While not fully representative of all possible domestic and childcare tasks, these questions were used to establish a perceived division of labour in the home. This information was collected from the main respondent's questionnaire. In this selected sample, that is almost exclusively the mother. Four of the main respondents were fathers, so all of their answers were reversed with the partner respondent so that all mothers are together and all fathers are together throughout the analysis. There were some questions asked of the partner respondents (fathers) relating to frequency of participation in childcare. Unfortunately, the range of questions asked of the father main respondents was not the same full range of questions asked of the mothers (e.g. missing housework). Also, the wording of the questions was slightly different for the fathers. For example, the questions ask about the frequency of activity rather than who does what tasks. Therefore, these questions were not comparable to those asked of the mother and consequently not used in the analysis. These questions are used throughout the thesis because the types of data collected changed at later sweeps. The housework variables were not repeated at later sweeps, and the childcare questions changed over time as children aged, and different, but not comparable, aspects of parental involvement were measured. For the purpose of this thesis, domestic labour, gender attitudes and paid labour were to be studied in conjunction with each other. As only aspects of paid labour were consistently measured over time, the baseline gender attitudes and division of labour were used throughout as predictors of the outcomes of interest.

The domestic labour questions selected relate to perceptions of the division of labour and the response categories are: 'I do most', 'my partner does most', 'we more or less share equally', 'someone else', and 'does not apply'. Of the ten domestic labour variables listed above, eight were selected for use. The DIY and money questions were removed as they had very different response patterns to the other variables. This was further established when they did not fit with the other variables in a test factor analysis, suggesting they did not represent the same underlying concept of domestic labour. The five response categories were reduced to three based on whether or not the mother was mainly responsible for the chore as one category, her partner was responsible as another category, or the task was shared equally, incorporating 'someone else' and 'doesn't apply' into the last category, as the partners equally did not do the task. They were scored, 1=father does most, 2=more or less equal, 3=mother does most so that higher scores indicate the mother claims most responsibility for domestic labour. The scores on the eight variables were then summed, with mean=20.95, range=8-24, median=21, and inter quartile range (IQR)=19,23. The distribution was highly skewed towards mothers doing most of the labour and therefore was divided into quintiles.

Division of paid labour

Paid work was measured using the parents' self-reported total hours per week in paid employment. As well as a binary variable representing in or out of work status, hours per week were used as continuous variables for both mothers and fathers. Both variables were used as the distribution of men's and women's work hours were irregular with spikes at zero, particularly for the mothers. There is no distinction made for whether the parents are out of work by choice, or if they are unemployed seeking work because the focus of the thesis is about concurrent labour in families.

The baseline binary employment variable used throughout the thesis was derived from the work hours variable used in the analysis. Creating a binary work variable in this way ensured that the two employment variables would be in agreement with each other. Compared to the MCS derived employment variables, the thesis variable used was largely in agreement with the separate MCS employment

status measure. Only 26 out of 12014 women (0.002%) had a different employment status on the MCS reported variable compared to the work hours derived variable used in analysis with details as follows.

Nine women stated that they were in work but gave no work hours, of these women, a separate variable gave details on intentions to return to work: 7 did not indicate when they intended to return to work and 2 indicated that they planned to return to work when the cohort child was age 3. Therefore, because of the lack of clear intentions to return to work, and lack of work hours given it was felt these few women should be coded as not in work. A further 17 women were reported as in work in the MCS but were coded as not in work in the thesis as they had no indication of work hours. It is possible that they intended to return to work but had not yet had any work hours assigned, but because of the lack of further data they were coded as not in work. Overall, the work variables used in the thesis are quite robust to error, the binary variable matches the work hours performed by the women, and with the exception of these few cases is in agreement with the women's self-report of work status.

Regarding possible maternity leave, very few women were on leave at the time of the survey. Maternity leave in the UK during 2000-2002 when the survey took place did not extend to nine months, so it would have only been women with extra employer based leave or some other type of leave benefit who could still be on a form of maternity leave during the survey period. 292 women out of the 12014 in the baseline sample reported being on leave when they completed the survey, this represents only 2% of sample mothers. The majority of the women who reported being on leave, 283/292 (97%), are counted as in work for the binary variable used throughout the thesis. The 97% of women on leave were counted as in work because they gave their average work hours per week, the remaining 9 women were amongst the women discussed in the previous paragraph who indicated being on leave but lacked further details on work hours or timing intentions to return to work.

As mentioned, there is no distinction made in the analysis as to the reasons why women are in work or not. However, a table is included in appendix A (table 2), which gives the main reasons women stated for either working or not when their child was 9 months old. The main reasons women returned to work were needing money and running out of maternity leave. The majority of women not in work preferred to look after their child, although a significant proportion of the non-working women were looking for work or were planning to return to work.

Gender attitudes

In this study gender attitudes are specifically measured in terms of attitudes towards maternal employment outside of the home. It is important to note that the phrasing of these variables are gendered in a way that implies that a woman is responsible for - or at least affects - her family's well-being. The absence of similar questions regarding the impact on the family of men working outside the home reflects a normative view that men's primary role is to have paid employment outside of the home. Three questions on the effect of maternal employment on child and family well-being were included in the self-completion questionnaire of MCS1:

- "A child is likely to suffer if his or her mother works before he/she starts school."
- "All in all, family life suffers when the woman has a full-time job."
- "A mother and her family would all be happier if she goes out to work."

Response categories were: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree. Question 3 was reversed coded as it is positively worded compared to questions 1 and 2. Responses were summed into scales ranging from 0-12 with 0 being the most pro-employment, believing that maternal employment is not harmful to family life and can even make women and families happier, and 12 being the most anti-employment, believing that family life suffers when mothers work. The mean for all mothers was 6.05 with SD=2.22, fathers had a mean of 6.35 58 with SD=2.29, both were normally distributed. Distribution graphs for the gender attitudes variables can be found in appendix A.

Although these questions are all focused on one aspect of gender attitudes - attitudes towards maternal employment - they nonetheless, have been used in a variety of successful studies. They are common measures of gender attitudes found in related studies such as the British Cohort Study (BCS 1970), the UK panel study Understanding Society (and formerly the British Household Panel Survey), and the British Social Attitudes Survey (BSA 30) among others. Other aspects of gender attitudes to family roles have been explored in research, for example the BSA also asks individuals to rank different divisions of paid labour according to the most to least desirable, e.g. man works, woman stays home, or both partners work full-time (Scott and Clery, 2013). However, size limitations in the MCS and the need to ask questions on a broad variety of topics meant that only a small number of questions on gender attitudes could be asked in the study. Nevertheless, these questions (and similar) have been used successfully, and in terms of attitude/behaviour concordance in this research are suitable as they are being investigated in conjunction with actual maternal labour. These variables can offer a unique insight into the potential role of gender attitudes, as well as gender attitude conflicts with partners and conflict with actual maternal labour behaviour. Another benefit of these gender attitude questions is that they were asked of both mothers and fathers, and therefore, the thesis benefits from both parents' individual reports of personal gender attitudes.

Other measures

Education/qualifications

Details of parents' highest academic and vocational qualifications were collected at MCS1; a derived variable was created by the MCS team for men and women that combines academic and vocational qualifications and converts them to a general NVQ (National vocational qualification) scale ranging from 1-5, plus an overseas qualifications category and a no qualifications category. The derived variable for mothers and fathers was used in this analysis. Academic qualifications correspond to the NVQs as follows: GCSEs or equivalent graded D-G=NVQ1, five GCSEs A*-C=NVQ2, two or more A-Levels or equivalent=NVQ3, first de-gree=NVQ4, higher degree=NVQ5.

Social class

Parents were each categorised according to the five point version of the National Statistics Socio Economic Classification (NS-SEC) of their own occupation (Rose and Pevalin, 2003). Parents not currently in work were categorised according to their last job. The five categories are:

- 1. Higher managerial, administrative and professional occupations
- Intermediate occupations (combines elements of a service relationship and labour contract)
- 3. Small employers and own account workers
- 4. Lower supervisory and technical occupations
- 5. Semi-routine and routine occupations

A sixth category was added which included people who had never worked or were students. This information was taken from the full version of the NS-SEC data.

OECD equivalized household income

Parents reported their income at sweep 1 in bands at the household level, this information was used to derive Organisation for Economic Co-operation and De-velopment (OECD) equivalized income quintiles produced by the MCS team. By using equivalized income quintiles the variable is a measure of relative income, adjusted for family size and comparable over time without concern for inflation of household incomes.

Age

The age of each parent is included as two continuous measures. 60

Number of children in house

The number of children in the house including the cohort child is included, with the variable truncated at 4 or more, due to the small numbers of families with more than 4 children.

Chapter 3

Division of domestic labour

3.1 Summary

Introduction: On-going changes to the division of labour in families have occurred within the wider context of societal changes in gender role attitudes and gender normative beliefs.

Objective: This chapter will introduce and explore the division of domestic labour measure derived from the Millennium Cohort Study data. It will go on to investigate potential household predictors: paid labour, attitudes to maternal employment, and socio-economic patterning.

Methods: This chapter uses multinomial logistic regression to identify the predictors of the domestic division of labour.

Results: Strong associations were found between parents' paid labour, gender attitudes and domestic labour. For both men and women, fewer hours spent in paid work were associated with increased participation in domestic labour. Less favourable attitudes to maternal employment were associated with greater responsibility for mothers to perform domestic tasks. Social class was marginally associated with divisions of domestic labour; in particular, small employers and self-employed were associated with less equality and and those in semi-routine and routine employment were associated with more equality. Contrary to some previous research, neither education nor income were strongly associated with mothers' perception of how domestic labour is divided.

Conclusions: This research points to strong correlations between gendered attitudes and resultant behaviour. There was also less socio-economic patterning in the gender divisions of domestic labour than was hypothesised or found in previous research.

3.2 Introduction and hypotheses

The previous chapters outlined the overall aim of this thesis, which is to understand how gender attitudes and behaviours regarding family labour are associated with family well-being and child development. This chapter will investigate the division of domestic labour, which includes housework and infant care, in the MCS, to understand how the parents of young children in this cohort share labour. The outcome variable is the division of domestic labour. Understanding 'who does what' in the home is an important question of equality within families, relevant for understanding relationship conflicts and satisfaction, and important for future family well-being and children's developmental outcomes.

The division of paid and domestic labour in families is constantly in flux. Historical shifts during the latter half of the 20th century saw increasing numbers of women in the workforce before, throughout and after their child rearing years. With more women in employment, the types of jobs women were employed in diversified, moving beyond typical roles such as domestic service and farming where lower income women have always worked (Crompton, 1997). Shifts at the individual level show movements in and out of work over the life course. However, despite women's increasing participation in the labour market, men have not increased their participation in domestic labour tasks to the same degree (Sullivan, 2000a). A number of theories have sought to explain how domestic labour is divided, and recent research has highlighted the importance of gender ideology (Alberts et al., 2011; Coltrane, 2010). Research on gender ideology has found that egalitarian gender attitudes are predictive of more egalitarian sharing of domestic labour, while less egalitarian attitudes would suggest a more strongly gendered division of labour. However, economic dependency, relative resources and time availability theories remain as important predictors of domestic labour in addition to gender ideology (Aassve et al., 2014). Time availability theories would suggest that

if women work more in the paid sphere than they would have less time to work in the domestic sphere and their partners would have to share housework and childcare more equally. Relative resources and economic dependency both relate to income, however, we do not have many details on separate incomes for each parent in the MCS. Occupational social class can be useful in compensating for the lack of data on individual incomes as a proxy for a relative resource or economic buoyancy. Relative resources can also be understood as educational resources. Therefore, social class, household income, education and of course parental paid labour will be associated with domestic labour, but to what degree each matters in this recent cohort study may be of interest to researchers.

One significant factor when discussing the paid labour of parents is the maternity and paternity leave benefit policies available at the time. The data used in this thesis stems from a UK cohort study, in which the initial data collection phase ran from 2000-2002. Regarding the benefits available at that time, the Employment Relations Act of 1999 saw changes in part to bring into force parts of the EU Parental Leave Directive. This meant for children born after April 30th, 2000, women were entitled to 18 weeks ordinary maternity leave (which included 2 weeks of compulsory leave after the birth of the child) and corresponds with the statutory maternity leave payments. Eligible women who had worked for the same employer for a year, were entitled to additional maternity leave, up to 29 weeks after the week of childbirth. 29 weeks is roughly equivalent to 7 months, therefore, by the first sweep when the child was aged 9 months, most women would have had to return to work, unless their employer had agreed additional maternity leave. A small number of women remained on leave at sweep 1, so it is possible they had some had additional employer leave benefits. Paternity leave benefits for this cohort would be minimal, and indeed still are, within the UK, therefore, paternity leave was not considered when checking the men's employment patterns.

The question remains if one is interested in increasing paternal participation in

the domestic sphere, what are the characteristics of paid labour, gender attitudes and socio-economic variables that are associated with different levels of participation in domestic labour? These variables may provide insight into the benefits or barriers that some families face when trying to divide all labour more equally.

Objective: This chapter (i) explores the relationships between gendered attitudes and paid labour with the division of domestic labour in families with infants from the UK Millennium Cohort Study (MCS); (ii) assesses how class, education, and household income are associated with the gendered division of domestic labour in families.

The hypotheses are:

- 1. Less egalitarian gender attitudes will be associated with a less egalitarian division of domestic labour.
- 2. Dual earner families and families with no full-time employment (any parent combinations of part-time employment or not in employment) will have more egalitarian divisions of domestic labour. Male 'breadwinner' families will be more likely to have mothers who do most of the housework and childcare.
- 3. Although all mothers are more likely than their partners to take on a higher share of the burden of domestic labour, more parental education will generally be associated with a more equal division of labour.
- Women in small employer, semi-routine or routine occupational groups will be more likely to perform more domestic labour than women in professional/managerial occupation classes.
- 5. High income and low income families may be more likely to have a more egalitarian division of labour compared to middle income families.

3.3 Study design

3.3.1 Sample

This chapter used the baseline MCS1 analytic sample established in the previous chapter, which is the baseline sample for all of the chapters. Therefore the sample size is 12014 couples with at least one child. This sample was used to create a cross-sectional study of the division of domestic labour by gender attitudes and paid labour, and parent socio-economic and household demographic characteristics.

3.3.2 Measures

The outcome is the division of domestic labour which is a categorical variable in quintiles. The exposures of interest are the parent paid work binary and work hours variables, with mothers and fathers' work variable interactions and square terms additionally tested, and the parent gender attitudes variables. The covariates are each parents' social class and education, household income and number of children in the house.

3.3.3 Analytic strategy

The MCS follows a complex survey design with stratification, clustering and oversampling to reflect the UK population while also containing sufficient numbers for subgroup analyses. STATA13 was used for all descriptive results and statistical models. In this chapter, the domestic labour quintiles are first visually represented and then descriptive cross tabulations of all exposures by quintiles are also given. These descriptive statistics are given unadjusted to show the raw sample characteristics, and were tested for associations with the domestic labour quintiles using chi squared test statistics or multiple logistic regression as appropriate. Additionally, as many of these variables are linked, graphs are presented to demonstrate how 66

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the socio-economic indicator variables are related to paid work and in particular with women's work. After presenting these unadjusted descriptive results, main results were adjusted for the survey design to be representative of the UK population of two-parent households. Adjustment was made using STATA's survey set prefix "svy", and the MCS provided primary and secondary sampling unit identifiers, strata identifiers, sampling weights and a finite population correction factor. As the division of domestic labour is in quintiles, a multinomial logistic regression model was estimated with the parental gender attitudes, paid labour, socio-economic and household indicators as independent variables.

For the multinomial logistic regression, the base outcome was the 5th quintile, which represents the least egalitarian households, where mothers report performing the majority of domestic labour tasks. The model equations are as follows:

$$\ln\left(\frac{P(Quint = Q1)}{P(Quint = Q5)}\right) = b_{10} + b_{11}(var1 = 1) + b_{12}(var2 = 1) + b_{13}var3 + b_{14}var4 etc.$$
$$\ln\left(\frac{P(Quint = Q2)}{P(Quint = Q5)}\right) = b_{20} + b_{21}(var1 = 1) + b_{22}(var2 = 1) + b_{23}var3 + b_{24}var4 etc.$$
$$\ln\left(\frac{P(Quint = Q3)}{P(Quint = Q5)}\right) = b_{30} + b_{31}(var1 = 1) + b_{32}(var2 = 1) + b_{33}var3 + b_{34}var4 etc.$$
$$\ln\left(\frac{P(Quint = Q4)}{P(Quint = Q5)}\right) = b_{40} + b_{41}(var1 = 1) + b_{42}(var2 = 1) + b_{43}var3 + b_{44}var4 etc.$$

Where the probability of being in one quintile relative to the reference (Q5), is equal to the intercepts $(b_{10}, b_{20}, b_{30}, b_{40})$ plus the coefficients for all the variables listed in the model.

3.4 Divisions of labour

Throughout the analysis paid labour was measured using a continuous work hours variable and a binary in or out of work variable. This was to ensure model parsimony, as a large categorical variable in an already complex analysis would be too burdensome to the model. However, as the division of paid labour is of interest, table 3.1 highlights the family work patterns of the sample households at sweep 1, when the child was aged 9 months. The most common divisions of labour were those where men were working full-time hours. Couples where the father worked full-time and the mother worked part-time hours were the largest group and combined with the couples where both parents worked full-time equalled approximately half of the sample. The next largest group was composed of families where mothers were not in work and their partner worked full-time. Most of these women chose to stay home to be with their child or children as discussed in chapter 2 and shown in appendix A. Smaller numbers of households have neither parent in work (8.3%), both employed part-time (1.43%), men only employed part-time (2.9%) or in one of three employed women breadwinner households (woman FT/man PT, woman FT/man 0, woman PT/man 0) at a combined 4.09%. An expanded table across all sweeps is included in appendix (table A.5), which shows that while the three father full-time groups remain the most significant, the numbers shift over time as more women enter part-time and full-time employment so that the father full-time/mother not in work group drops from 33% at sweep one to only 16% by sweep five.

In Figure 3.1 we can see how the performance of domestic labour is distributed by the domestic labour quintiles. In the most egalitarian quintile, Q1, there is considerable participation in the household by the fathers, however in the least egalitarian quintile, Q5, fathers seem to do almost no domestic labour either on their own or shared with their partner.

This graph shows how domestic labour in UK families with young children is

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Household labour	Sweep 1	
(by parent work hours)	Child age 9 months	
	N=	%
Woman 0/Man 0	999	8.32
Woman 0/Man FT	3,912	32.56
Woman 0/Man PT	348	2.90
Woman FT/Man 0	156	1.30
Woman FT/Man FT	1,647	13.71
Woman FT/Man PT	104	0.87
Woman PT/Man 0	231	1.92
Woman PT/Man FT	4,445	37.00
Woman PT/Man PT	172	1.43
Total	12014	100.00

Table 3.1: Family paid labour	divisions at sweep 1
-------------------------------	----------------------

0= no work hours per week, PT=1-34 hours per week,

FT=35+ hours per week

still predominantly performed by mothers. Of specific chores, men are most likely to perform cooking and getting up at night with the child, less likely to clean or do laundry and least likely to care for the infant in ways other than getting up at night. In the least egalitarian households women reported that they performed the work for every single household chore. Even in the most egalitarian group, while most of the household chores were done 'more or less equally,' there were a few cases where chores were not more or less equal. In these cases, it was more likely done by the mother than the father.



Division of Domestic labour tasks by domestic labour quintile

Figure 3.1: Distribution of domestic labour by quintiles (Q1-Q5)

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Glucksmann's theory of Total Social Organization of Labour (TSOL) offers a way to interpret the results in table 3.1 and figure 3.1, which give an indication of the division of the paid and domestic labour in the selected MCS families (Glucksmann, 1995). Parenthood continues to significantly shape labour in families in the UK, and this division of both paid and domestic labour remains strongly gendered. Although there is some evidence of diversity in the typologies of the division of paid labour, wherein a small number of families women work more than their partners, in the majority of families men work full-time hours. Women's work hours are far more diversified, and women take on different hours of work to suit their family's needs. While some work full-time along with their partners, many others opt, via preference or need, to work part-time or to not work at all. Even though women work varying hours, still, domestic labour largely remains the preserve of mothers. Although one of the domestic labour quintiles was characterised by domestic labour tasks being shared more equally, in the remaining four quintiles women performed more than their partners on all of the domestic labour chores.

These descriptive results suggest the importance of following the TSOL approach in research. As women continue to perform the bulk of domestic work, it suggests that much of the labour of women is not captured by standard labour measures defined by paid employment. Adopting the TSOL's broad approach to labour, by considering activities performed across paid and domestic labour domains, is a way to create an equitable approach to the study of labour for both men and women. The remaining analyses in this chapter seek to understand the predictors of domestic labour and further explain how gender attitudes and paid labour each shape domestic labour in relation to socio-economic and demographic characteristics.

3.5 Predictors of the division of domestic labour

Table 3.2 shows the division of domestic labour by parental paid work, gender attitudes and socio-economic indicators. All of the socio-economic variables were associated with domestic labour, as were gender attitudes and parental paid labour. The parental gender attitudes variable was linked to the domestic labour quintiles with less egalitarian gender attitudes associated with less egalitarian domestic labour divisions. In this analysis, lower scores on gender attitudes indicate more egalitarian attitudes. In the most egalitarian domestic labour quintile the mean score for mothers' gender attitudes was 5.25 on the gender attitudes scale and for fathers was 5.56. In the least egalitarian domestic quintile mothers scored on average 6.65 and fathers 7.03. For parental paid work, fathers were more likely to be in work than mothers and more likely to work longer hours; distributional graphs are available in appendix A. Fathers who were not in paid work were overrepresented in the most egalitarian domestic labour quintile, suggesting that many fathers who were not in paid work, helped out with the domestic routines. However, a considerable number of fathers who were not working, were still represented in the remaining domestic labour quintiles, including approximately 12% who were in the least egalitarian domestic labour quintile. Working mothers were more likely to be in the more egalitarian domestic labour quintiles. However, 14% of mothers were in paid work and also in the less egalitarian domestic labour quintiles, highlighting what many authors have termed the double burden of work and domestic responsibilities (Hochschild and Machung, 1989). The analysis focused on the variables as previously described, but for descriptive purposes two additional variables have been added. Where women are not in work, a binary variable shows whether they preferred not to work or they could not work (e.g. could not afford child care, could not find a suitable job), women who preferred not to work were more likely to be in the fifth least egalitarian quintile of domestic labour. For women in work, the two
categories were those who wanted to return to work and those who had to return to work (e.g. needed the money, used up all of their leave). Women who preferred to return to work were slightly less likely to be in the least and most egalitarian quintiles. Overall, there was a greater difference between the non-working women than the working women. Further details on all the specific reasons women were either in or not in work are included in appendix A.

Parental income was associated with the domestic labour quintiles, although it was not a clear linear trend. Couples in the middle income quintiles (2nd-4th) were more likely to be in the least egalitarian domestic labour quintile than those in either the lowest or highest income quintile. On the other hand, couples in the highest and lowest income quintiles were more likely to be in the egalitarian domestic labour groups than those in the middle of the income distribution. Women, in a managerial or professional social class were the most likely to be in an egalitarian domestic labour group. However, managerial and professional men were less likely to be in the most egalitarian quintile compared to men from every other social class group except for those in the category of small employer and self employed. A similar pattern was found for education, where having a higher degree for women was associated with being in the most egalitarian domestic labour groups; the same pattern did not exist for men's education.

Gender attitudes (to	N	Q1	Q2	Q3	Q4	Q5
maternal employment)*		Most				Least
		egal.				egal.
Mothers' attitudes - high	12014	5.3	5.9	6.4	6.6	6.7
scores=more negative towards						
maternal employment (mean)						
Fathers' attitudes (mean)	12014	5.6	6.2	6.7	6.9	7.0
Total	12014	3351	2778	1807	1748	2330

Table 3.2: Division of domestic labour by paid labour, gender attitudes and parental covariates (N=12014)

Household paid employment*	Ν	Q1	Q2	Q3	Q4	Q5
Mother in work (no) (%)	5259	18.4	21.2	17.0	17.3	26.1
Mother preferred not to work	3715	16.6	21.0	17.2	18.1	27.2
(%)						
Mother could not work (%)	1544	23.0	21.6	16.6	15.5	23.3
Mother in work (yes) (%)	6755	35.3	24.7	13.5	12.4	14.2
Mother wanted to work (%)	852	32.3	24.9	16.9	13.5	12.4
Mother had to work (%)	5903	35.7	24.6	13.0	12.3	14.5
Father in work (no) (%)	1386	47.0	21.3	11.5	8.4	11.8
Father in work (yes) (%)	10628	25.4	23.4	15.5	15.4	20.4
Total	12014	3351	2778	1807	1748	2330
Household paid work hours	N	Q1	Q2	Q3	Q4	Q5
*						
Mother's work hours (in	6755	29.1	24.6	21.9	21.5	21.0
work, mean)						
Total (% of sample)	6755	2381	1665	912	838	959
	(56%)	(71%)	(60%)	(50%)	(48%)	(41%)
Father's work hours (in work,	10628	43.5	45.5	46.9	48.3	49.2
mean)						
Total (% of group in work)	10628	2699	2483	1648	1632	2166
	(88%)	(81%)	(89%)	(91%)	(93%)	(93%)
Equivalized parental	Ν	Q1	Q2	Q3	Q4	Q5
income quintiles*						
Lowest quintile (%)	1337	34.6	21.1	13.8	12.6	18.0
Second quintile (%)	2606	24.8	21.6	16.5	14.3	22.8
Third quintile (%)	2742	24.4	22.0	15.5	16.2	21.9
Fourth quintile (%)	2743	27.5	23.7	14.8	15.1	18.9
Highest quintile (%)	2586	31.6	26.3	14.0	13.5	14.7
Mother's NS-SEC5*	N	Q1	Q2	Q3	Q4	Q5
Never worked (%)	712	22.8	20.1	18.1	17.3	21.8
Semi-routine and routine (%)	3862	26.9	21.7	15.0	14.3	22.1
Lo sup & tech (%)	652	27.2	25.6	14.4	11.5	21.3
Small employer and	484	20.5	21.5	16.5	18.0	23.6
self-employed (%)						
Intermediate (%)	2293	26.3	22.5	16.2	15.9	19.0
Managerial and professional	4011	31.7	25.2	13.7	13.6	15.8
(%)						

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Father's NS-SEC5*	N	Q1	Q2	Q3	Q4	Q5
Never worked (%)	84	38.1	29.8	9.5	13.1	9.5
Semi-routine and routine (%)	3128	33.3	21.5	14.4	12.7	18.2
Lo sup & tech (%)	1910	28.4	22.3	16.0	13.9	19.4
Small employer and	1540	19.0	21.4	15.7	17.1	26.9
self-employed (%)						
Intermediate (%)	632	34.3	24.7	11.9	11.4	17.7
Managerial and professional	4720	25.9	24.8	15.4	15.7	18.2
(%)						
Mother's highest NVQ	N	Q1	Q2	Q3	Q4	Q5
level*						
NVQ level 1 (%)	822	26.5	24.3	15.8	14.1	19.2
NVQ level 2 (%)	3467	26.4	22.5	14.9	14.2	22.0
NVQ level 3 (%)	1797	28.2	21.6	15.9	13.6	20.8
NVQ level 4 (%)	3842	28.9	24.0	14.8	14.7	17.7
NVQ level 5 (%)	511	33.1	30.5	12.1	13.5	10.8
Overseas qualifications only	304	25.3	25.0	14.5	16.8	18.4
(%)						
None of these (%)	1271	28.1	20.2	15.6	16.7	19.4
Father's highest NVQ level*	N	Q1	Q2	Q3	Q4	Q5
NVQ level 1 (%)	797	28.2	20.7	16.3	13.3	21.5
NVQ level 2 (%)	3322	28.0	22.0	14.8	14.5	20.7
NVQ level 3 (%)	1890	28.0	25.0	15.5	12.5	19.0
NVQ level 4 (%)	3516	26.6	24.3	15.1	16.0	17.9
NVQ level 5 (%)	691	27.8	26.5	16.5	14.0	15.2
Overseas qualifications only	367	26.2	21.8	14.4	15.0	22.6
(%)						
None of these (%)	1431	31.0	20.4	13.5	14.6	20.5

N.B. all % are row %

* variables associated with outcome at $p \le 0.001$

As the division of domestic labour is linked to paid employment it is important to also demonstrate the interrelationship between socio-economic variables and women's work. The relationship between parental education and maternal employment reveals an interesting pattern in Figure 3.2. Maternal employment follows a generally linear trend with maternal education, where less than 30% of women with no qualifications or overseas qualifications were employed, compared to almost 75% of women with a higher degree. In comparison, fathers' education does not have such a clear relationship with maternal employment. Men with degrees and higher degrees are actually partnered with women who are less likely to participate in paid employment than men in other qualification categories.

Household equivalized income presented a linear relationship with maternal employment, whereby women in the most advantaged economic quintile were in work, about 78% of them, shown in Figure 3.3. While women who work increase the family's economic resources, it also suggests that there may be financial barriers to women in the lowest income quintile returning to work if they wanted.

Figure 3.2: Percentage of mothers in paid work by parents' highest qualification



3.5.1 Modelling the division of domestic labour

Table 3.3 shows the results of the multinomial logistic regression with the covariates of interest. Focusing on the first column of results gives the relative risk ratios and confidence intervals of being in Q1, the most egalitarian group, compared to the fifth domestic labour quintile, which is the least egalitarian group and the reference category for this analysis. As this multinomial logistic regression has five categorical outcomes, four presented compared to a fifth reference group, only the complete 76



Figure 3.3: Percentage of mothers in work by family income quintile

model is shown. Parental work hours significantly predicted domestic labour patterns: being in the most egalitarian group relative to the least egalitarian is a more likely scenario as mothers' work hours increase. As fathers' work hours increased families were less likely to be in the quintile with the most equal division of domestic labour. Interestingly, in this mutually adjusted model, the binary 'in work' variable was associated in the opposite direction to the work hour variables. In other words, increasing fathers' work hours were associated with reductions in the relative rate ratio of being in the most egalitarian group, whereas fathers' in work binary variable was associated with more likely being in a more egalitarian quintile. For the mothers an opposite association was observed, so while increasing work hours were associated with being more likely to be in the egalitarian group, made it less likely to be in the egalitarian group relative to not being in work. More simply, fathers being in work but not working long hours meant they were more likely to being in an egalitarian quintile. For women, contrastingly, being in work did not make them more likely to be in a more egalitarian quintile unless the women worked long hours. This is not necessarily surprising as many women may work part-time hours so that they can do more domestic labour and childcare.

Parental gender attitudes were also strongly associated with domestic labour group membership. Those with negative attitudes towards maternal employment were less likely to be in the more egalitarian quintile. The gender attitudes were a continuous measure where higher scores indicated greater support for gender segregated family roles. This is clearly reflected in the relative risk ratio of being in the most egalitarian domestic labour of 0.76 for mothers and 0.74 for fathers in Q1 compared to the least egalitarian reference Q5. There was also a parental gender attitudes interaction term included in the model. This interaction term was a significant term which improved the model fit, it also increased the size of the relative risk ratios for the gender attitudes. In the main effects only model the relative risk ratio of being in the most egalitarian domestic labour quintile was 0.87 for the mothers and 0.85 for the fathers, compared to the 0.76 and 0.74 observed in the final model with the interaction.

(Reference = Q5, least egali-	Q1	= mos	st egalita	rian			Q2				Q3			Q4	
tarian)															
Variable	RRR		95%	6 CI	RRR		959	% CI	RRR		95%	% CI	RRR	95%	6 CI
Mother's work hours	2.97	**	2.01	4.36	1.40		0.99	1.99	1.50	*	1.04	2.18	1.02	0.70	1.47
Father's work hours	0.48	**	0.37	0.59	0.70	*	0.55	0.90	0.83		0.63	1.09	1.12	0.84	1.48
Mother in work (binary)															
No	1.00				1.00				1.00				1.00		
Yes	0.50	*	0.31	0.79	0.94		0.65	1.36	0.95		0.62	1.45	1.29	0.89	1.87
Father in work (binary)															
No	1.00				1.00				1.00				1.00		
Yes	2.48	*	1.28	4.81	1.72		0.82	, 3.60	1.15		0.52	2.55	0.86	0.36	2.03
Mother's gender attitudes (in- crease= more negative toward maternal employment)	0.76	**	0.69	0.84	0.84	**	0.76	0.93	0.82	**	0.74	0.91	1.03	0.93	1.15
Father's gender attitudes (as above)	0.74	**	0.68	0.82	0.83	**	0.76	0.90	0.81	**	0.74	0.89	0.99	0.90	1.10
Parent's gender attitudes (interaction)	1.02	*	1.01	1.04	1.02	*	1.00	1.03	1.03	**	1.01	1.04	1.00	0.98	1.01
Mother's NS-SEC (social class)															

Table 3.3: Relative risk ratios of domestic labour by parental paid work, gender attitudes and family socio-economic context

(Reference = Q5, least egali-	Q1	= mos	st egalita	rian			Q2			(Q3				Q4	
tarian)																
Variable	RRR		95%	% CI	RRR		959	% CI	RRR		95%	% CI	RRR		95%	6 CI
Never worked	0.86		0.59	1.24	0.68	*	0.49	, 0.96	1.00		0.69	1.44	1.26		0.89	1.78
Semi-routine and routine	1.00				1.00				1.00				1.00			
Low supervision and techni-	1.02		0.73	, 1.43	1.19		0.88	1.59	1.00		0.72	1.40	0.82		0.56	1.19
cal																
Small employer and self	0.69		0.48	1.00	1.03		0.76	1.40	1.02		0.70	1.48	1.15		0.83	1.59
employed																
Intermediate	0.96		0.77	1.19	1.13		0.91	1.41	1.17		0.94	1.46	1.33	*	1.05	1.68
Managerial and professional	1.03		0.82	1.29	1.26	*	1.02	1.54	1.09		0.88	1.35	1.21		0.97	1.51
Father's NS-SEC (social																
class)																
Never worked	1.34		0.53	3.35	1.70		0.72	4.01	1.11		0.45	2.70	1.56		0.57	4.27
Semi-routine and routine	1.00				1.00				1.00				1.00			
Low supervision and techni-	0.90		0.72	1.11	0.97		0.78	1.20	0.99		0.80	1.24	0.97		0.78	1.20
cal																
Small employer and self	0.44	**	0.36	0.55	0.80	*	0.64	0.99	0.78	*	0.62	0.98	0.89		0.70	1.13
employed																
Intermediate	0.82		0.59	1.15	0.97		0.69	1.36	0.76		0.51	1.14	0.99		0.63	1.55
Managerial and professional	0.69	**	0.55	0.87	1.01		0.80	1.27	0.94		0.74	1.19	1.08		0.85	1.37
Mother's highest educational																
qualification																
NVQ level 1	1.00				1.00				1.00				1.00			
NVQ level 2	0.80		0.60	1.08	0.68	*	0.51	0.91	0.76		0.56	1.04	0.73	*	0.55	0.96

-

(Reference = Q5, least egali-	Q1	= mo	st egalita	rian			Q2				Q3				Q4	
tarian)																
Variable	RRR		95%	6 CI	RRR		959	% CI	RRR		95%	% CI	RRR		95%	6 CI
NVQ level 3	0.82		0.60	1.13	0.61	**	0.45	0.81	0.75		0.55	1.04	0.68	*	0.50	0.94
NVQ level 4	0.77		0.56	1.06	0.67	*	0.49	0.91	0.80		0.58	1.11	0.77		0.57	1.06
NVQ level 5	0.88		0.53	1.48	1.04		0.62	1.75	0.80		0.46	1.41	1.11		0.68	1.82
Overseas qual. only	1.21		0.74	1.99	1.21		0.75	1.97	0.94		0.52	1.71	1.01		0.56	1.82
None of these	1.22		0.88	1.67	0.99		0.71	1.39	1.02		0.71	1.46	1.11		0.80	1.54
Father's highest educational qualification																
NVQ level 1	1.00				1.00				1.00				1.00			
NVQ level 2	1.33	*	1.01	1.74	1.19		0.90	1.58	1.07		0.82	1.40	1.19		0.88	1.60
NVQ level 3	1.49	*	1.12	1.98	1.52	*	1.12	2.06	1.24		0.89	1.72	1.06		0.75	1.49
NVQ level 4	1.47	*	1.08	2.00	1.37	*	1.01	1.86	1.20		0.89	1.63	1.34		0.96	1.86
NVQ level 5	1.65	*	1.11	2.46	1.58	*	1.04	2.41	1.68	*	1.11	2.53	1.30		0.80	2.11
Overseas qual only	1.34		0.85	2.12	1.26		0.80	1.96	0.88		0.53	1.48	0.98		0.57	1.67
None of these	1.14		0.80	1.61	1.09		0.77	1.56	0.88		0.61	1.26	1.01		0.71	1.43
OECD equivalized income																
1st quintile (lowest income)	1.00				1.00				1.00				1.00			
2nd quintile	1.03		0.77	1.38	1.18		0.90	1.55	1.39	*	1.04	1.86	0.96		0.68	1.35
3rd quintile	0.87		0.64	1.18	1.12		0.85	1.47	1.26		0.91	1.75	1.07		0.75	1.52
4th quintile	0.83		0.59	1.16	1.08		0.80	1.45	1.18		0.83	1.66	0.94		0.62	1.43
5th quintile (highest income)	1.05		0.72	1.51	1.32		0.96	1.82	1.37		0.94	1.98	0.99		0.65	1.50

(Reference = Q5, least egali-	Q1	Q1 = most egalitarian		Q2			Q3				Q4					
tarian)																
Variable	RRR		95%	6 CI	RRR		95	% CI	RRR		959	% CI	RRR		95%	% CI
Number of children in house-																
hold																
1 child	1.00				1.00				1.00				1.00			
2 children	0.66	**	0.57	0.77	0.79	*	0.68	, 0.91	0.82	*	0.70	0.96	0.90		0.76	1.06
3 children or more	0.64	**	0.51	0.80	0.64	**	0.53	, 0.77	0.71	*	0.57	0.89	0.78	*	0.64	0.95
Constant	73.69	**	27.49	197.6	16.82	**	6.86	41.2	5.19	**	1.93	14.00	0.55		0.22	1.35

N.B. Reference category is domestic labour quintile 5, the least egalitarian quintile. All work hours variables are scaled so 1 unit=10 hours. Parental work hours interactions, work hours squared and parental ages at time of survey were also controlled for. Full tables in appendix A. ** $p \le 0.001 * p \le 0.05$

3. Division of domestic labour

The interaction terms in the model between parental gender attitudes and parental paid work, which also included paid work hours squared terms in appendix A, were significant additions to the model. However, interpreting the interaction terms between parents gender attitudes and squared parental work hours terms can be difficult from tables alone. Therefore, these results have been visualised in two composite figures.

Figure 3.4 represents the probability of being in each domestic labour quintile by the parental gender attitudes. This figure shows the effect of gender attitudes with all other covariates averaged. As the gender attitude variables are continuous to facilitate presentation, these figures have been estimated at the mean score for each parent as well as 1.5 standard deviations below and above the mean. What figure 3.4 shows can be most clearly understood by considering the results in the first of the five graphs. This picture shows the probability of being in the most egalitarian quintile relative to the least. A family was more likely to be in this quintile if the mother had favourable attitudes to maternal employment. This association is strengthened by the interaction term with her partner's attitudes. If both parents had positive attitudes to maternal employment they were most likely to be in the egalitarian group compared to the least egalitarian group. Where an employment positive mother was paired with an employment negative partner, they had a much lower probability of being in the egalitarian group.

Figure 3.5 represents the probability of being in each domestic labour quintile by paid work hours, adjusted over all other covariates. The interaction between parents' work hours can be observed. In the first graph, the probability of being in the most egalitarian quintile is again presented, with paternal work hours along the xaxis and maternal work hours represented by the different lines. Fathers working low or no hours per week had the highest probability of being in the most egalitarian group and this progressively dropped as fathers' work hours increased. The probability for being in the most egalitarian group was also highest where the mother

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worked long hours (greater or equal to 45 hours/week) compared to women who did no paid work hours per week.

The regression models also included a number of independent variables, and it may perhaps be surprising that, with the exception of a few categories, many of the variables were not significantly associated with the division of domestic labour. This is especially surprising as many domestic labour theories often link social position and resources like education with domestic labour and all the covariates were all associated with domestic labour in bivariate tests. However, in this model, mothers' social class was not strongly associated with any of the domestic labour quintiles. However, fathers' social class remained associated with being in the most egalitarian quintile relative to the least. Managerial and professional workers and those in the small employer and self employed category were less likely to be in the egalitarian quintile relative to the fifth quintile and relative to the social class reference category: the semi-routine and routine group. Mothers' education was also not strongly associated with domestic labour except for in some of the middle quintiles. Fathers' education was somewhat associated with domestic labour, men with NVQs 2-5 were more likely to be in the most egalitarian quintile compared to the least egalitarian quintile relative to the reference category of NVQ1. Household income and parental age were also not significantly associated with the division of domestic labour. Aside from the main exposures of interest - paid work and gender attitudes - of the remaining independent variables it was the number of children in the house that was most strongly associated with the division of domestic labour. The reference category for this variable was 1 child (the cohort member) in the house. Relative to households with only one child, those with two or more children were all significantly less likely to be in the most egalitarian quintile. The families with two or three plus children were also less likely to be in the middle quintiles (Q2-Q4) relative to being in the least egalitarian quintile (Q5). This suggests that the number of children can be an important influence on the division of domestic labour.



Figure 3.4: Predicted probabilities of belonging in a domestic labour quintile by parental gender attitudes



3.6 Discussion

As hypothesized, there were strong relationships between parents' attitudes towards maternal employment and the division of domestic labour. Mothers and fathers with pro maternal employment attitudes were more likely to share domestic labour. Paid labour was also strongly associated with the division of domestic labour. With regards to the associations between paid work and domestic labour, an opposite association was found between hours in paid work, where increasing hours for mothers made them more likely to be in the egalitarian quintile but being in work generally did not. In this case, it is important to note that the total work hours need to be considered in conjunction with the binary in and out of work variable as many women in our sample were working part-time hours and it may be that the women who were in work but only working limited hours per week did so because they were expected, or needed, to maintain the household. In terms of the father's relationship with domestic labour it may give some evidence to the theory of "doing gender" (Arber, 1991) as work hours were associated with a relative reduction in the rate of being in the most egalitarian group. But men who were not working at all were also less likely to be in the most egalitarian group which is also predicted by some gender theories.

Perhaps even more interesting are the results that do not confirm the initial hypotheses. Mothers' education was not significantly associated with the division of domestic labour, even in unadjusted analysis, which suggests that gender inequality in domestic labour affects women equally across different qualification groups. Moreover, this may suggest that tackling inequality in the home is very different than tackling inequalities in education or work places. This may be because the power dynamics in relationships and attitudes to gender roles have not changed to the same degree as they have in other areas (Scott and Clery, 2013). Further to this, mothers' social class was also not associated with the division of labour except for

those in the small employer and self-employed occupational class. This group includes small businesses with either no employees or only family employees. For those working in family type businesses it may be a reflection of the power relationship within the home. Lastly, although the low income group was most likely to have a more equal division of labour followed by the higher income groups in the unadjusted analysis, the associations did not remain significant after adjusting for the other covariates. It therefore seems likely that the income associations were reflecting the different paid work patterns. In the comparative descriptive graphs women in the lowest equivalized income households appeared less likely to be in paid work. Therefore, for these women, there could have been financial barriers such as childcare costs that may force these women to stay home. Given the potentially positive effects of being in work, the difficulties low income women face in returning to work pose a major concern.

Unfortunately, the domestic labour questions were not repeated at later sweeps of the MCS, so this cross-sectional research could not be extended longitudinally to see if there was a long term association between gender attitudes, paid work and domestic divisions of labour. However, as a robustness check of the durability of the gender attitudes questions, they were compared to paid work at later sweeps. A graph in appendix A shows that the association between gender attitudes and paid labour remains in the MCS over time, suggesting that the gender attitudes may be stable at least over the short term of a few years continue to be associated with paid labour.

3.7 Conclusion

This chapter aimed to explore the complex relationships in the MCS between parental gender attitudes and behaviours in the home when the cohort child was only nine months old. Domestic labour quintiles were modelled as the outcome variable in a

3. Division of domestic labour

multinomial logistic regression, with exposures of paid work and gender attitudes of both parents. Though a number of socio-economic and demographic controls were included, paid labour and gender attitudes maintained robust associations with domestic labour, while many bivariate associations with the socio-economic variables were attenuated in the model with paid work and gender attitudes. This work highlights the strong associations between paid labour, domestic labour and gender attitudes; three variables that can be understood as representing the gender home environment. The concept of the gender home environment will be explored in the following chapters as predictors of family well-being and child development. Another key feature of the model presented in this chapter was the interactions between parental gender attitudes and parental paid work. This opens up the possibility of interesting research into concordance and discordance between partners in terms of their gender attitudes to maternal employment. Additionally, as the gender attitudes questions are focused on maternal employment, there may also be concordance and discordance between individuals attitudes to maternal employment and the actual maternal employment in the family. This will be explored in the next chapter.

Chapter 4

Parental well-being

4.1 Summary

Introduction: This study uses cross-sectional data to describe associations between between parental attitudes to maternal employment and behaviours within individuals and couples in 21st century UK family households. Data are used from over 10,000 two-parent families in the Millennium Cohort Study, a nationally representative cohort of children born between 2000-2002.

Objective: To assess the relationships between gender attitudes and divisions of labour with parent psychological distress and relationship satisfaction, as well as concordance between attitudes and behaviours within individuals and attitudes within couples.

Methods: Using data from two parent families (N=12014) when the children were nine months old, concordance is tested via interaction terms in logistic regression models for psychological distress and linear regression models for relationship satisfaction. Models were constructed separately for mothers and fathers with individual concordance models tested first, individuals' attitudes to maternal employment and actual maternal employment. A second set of models explored the attitudeattitude concordance within couples. Models are additionally adjusted for a variety of relevant covariates including for fathers' work, divisions of domestic labour, family income, parents' class, education and age.

Results: Results suggest that attitudes in favour of maternal employment are associated with better mental health and relationship satisfaction for both mothers and fathers. In addition, both mothers and fathers who think that mothers of young children should not be in paid work, but live in households where mothers work, have significantly worse mental health and poorer relationships with their partners compared to households where mothers are in paid work and attitudes are in favour of maternal employment. Fathers with positive attitudes to maternal employment, whose partners also have positive attitudes to maternal employment, have significantly better relationship quality scores than other fathers. Of particular note among the model covariates, more egalitarian divisions of domestic labour were significantly associated with parents' relationship satisfaction and better mental health in fathers.

Conclusions: As family patterns of employment continue to diversify, it is beneficial to understand the role of individual gender attitudes and concordance within couples as predictors of relationship satisfaction and mental well-being. Given policy interests in family well-being and parental engagement, both within the home and work place, this study demonstrates potential for further multidisciplinary research.

4.2 Introduction and hypotheses

The previous chapter investigated the division of domestic labour and associated it with important exposures of paid labour and gender attitudes to maternal employment. In that investigation it was found that the majority of domestic tasks, both housework and infant care, were performed by the mother. The chapter also found that gender attitudes were important predictors of domestic labour. Overall, paid labour, domestic labour and gender attitudes are strongly linked with more egalitarian attitudes and sharing of paid labour linked to more egalitarian domestic labour. It is also possible that in some families, these gender attitudes and divisions of paid and domestic labour may not all be in agreement within the parental dyad. This chapter assesses how attitudes towards maternal employment compared to actual maternal employment associates with parental psychological distress and relationship satisfaction, with a particular focus on concordance between attitudes and work behaviours and conflicting attitudes within the parental dyad.

Many researchers have studied the associations between paid labour and psychological distress (Paul and Moser, 2009). Father's involvement in housework and childcare has been linked to greater family satisfaction (Forste and Fox, 2012). While unfair divisions of domestic labour have been linked to dissatisfaction (Frisco and Williams, 2003a). Furthermore, gender attitudes regarding the perception of one's role, say as a caregiver or a provider, have been linked to well-being (Helms Erikson, 2000; Helms et al., 2010). Therefore, there is a body of research linking work to mental health and well-being, and perceptions of gender roles and gender attitudes to well-being. However, only a few studies have combined these concepts together. For example, working mothers' perceptions of their family role as a coprovider were associated with more positive outcomes than compared to working mothers who perceive themselves in a primarily care-giving role (Helms et al., 2010). This research strongly suggests that there are relationships between gen-

4. Parental well-being

der attitude and behaviour concordance, but it only considered working women. Indeed many studies looked at dual earner families only. Concordance between mens' and womens' gender attitudes have been linked to relationship satisfaction with work-to-family conflict in an interesting but small American study (Minnotte et al., 2010). Minnotte et al. (2010) supports an exploration of how couples' gender attitudes in relationship satisfaction in a much larger and more diverse sample. A considerable research base on this topic is available, but this chapter aims to plug some of the gaps by: including fathers more thoroughly considering their gender attitudes to maternal employment and their partner's actual employment; considering both working and non-working parents; looking at relationship satisfaction and mental health in the same study and dataset; and by using a large, diverse, UK representative sample of two parent families.

The question of concordance and discordance can be understood in terms of cognitive dissonance theory (Festinger, 1957; Harmon-Jones and Mills, 1999). In dissonance theory, when thoughts, behaviours, or known facts are contradictory, an individual will experience discomfort from the dissonance. Dissonance may arise in two different ways in this chapter. Firstly, within an individual, if their attitudes to maternal employment are discordant with the actual maternal employment behaviour in the household. For mothers this means her attitudes are juxtaposed with her own behaviours (attitude/behaviour concordance), and for the fathers, this means their own attitudes with their partner's labour (attitude/attitude concordance). The second way that dissonance could occur is within the couple, if one partner is in favour of maternal employment and the other knows their partner is against it.

Objective: To (i) investigate associations between the division of labour and gender attitudes and parents psychological distress and relationship satisfcation and (ii) to focus on the significance of concordance between each parent's attitude towards maternal employment and the actual maternal employment in the family (individual attitude/behaviour concordance) as well as between parent attitudes (at-

titude/attitude concordance in the parental dyad) and the associations of such concordance/discordance with parental mental health and relationship satisfaction.

Hypotheses are:

- Egalitarian behaviours in the division of paid and domestic labour and egalitarian attitudes towards maternal employment will be associated with better mental health and relationship satisfaction than less egalitarian attitudes and behaviours.
- Individuals who have gender attitudes to maternal employment which are not concordant with their actual maternal employment in the household may be less satisfied in their relationship and have greater psychological distress, than those whose attitudes and behaviours match.
- 3. Couples who have discordant gender attitudes may be less satisfied in their relationship or have other poor mental health outcomes compared with couples with concordant attitudes, i.e. concordant on attitudes regardless of division of labour because if they are discordant then at least one partner has their attitude match the maternal behaviour.

4.3 Study design

4.4 Sample

This chapter uses the same analytic sample as the previous chapter: two parent families from the MCS where both partners are present in the household and participated at the first sweep of data collection. As there are 12014 complete families, the analysis will include data from 12014 mothers and 12014 fathers with complete data for analysis.

4.4.1 Measures

This chapter uses all the main thesis measures discussed in Chapter 2: parental division of domestic labour, parental paid work hours and binary in/out of paid work, parental gender attitudes and parental education, social class, household OECD equivalized income, household number of children. Two new outcome measures are introduced in this chapter: to measure parent psychological distress, the Malaise Inventory is introduced, and to measure relationship quality, the Golombok Rust Inventory of Marital State is introduced.

Parent psychological distress: The Malaise Inventory

Parental mental health in MCS1 is assessed by a shortened 9-item version of the Malaise Inventory (Rutter, 1970). Each question has a yes/no response, with 0 indicating 'no' and 1 indicating 'yes' therefore the range of scores is from 0-9. A full list of items is in appendix B. The malaise scores are split by a predefined standard where scores of 4 or higher out of 9 are considered high and may indicate psychological distress or increased risk of depression compared to the general population (Schoon and Hope, 2004). Overall, in the selected sample 13.2% of women and 9.1% of men had high malaise scores.

Relationship satisfaction: Golombok Rust Inventory of Marital State

Parental relationship quality was assessed using a 7-question modified version of the Golombok Rust Inventory of Marital State (GRIMS) (Rust et al., 2010; Rust and Golombok, 2010). GRIMS questions range from strongly disagree to strongly agree, and were scored 1-5 on a 5 point Likert scale. A full list of items is in appendix B. Therefore, the highest score possible is 35 with higher scores indicating worse quality. The mean score for women was 14.0 and the median was 13.0; for men the mean was 14.4 and the median 14.0. The distribution is close to normal except for a short left tale, but this was not a problem overall for modelling. This was checked in Stata using histograms, normal quantile plots ("qnorm") and standardized normal probability plots ("pnorm") and did not effect the residuals in the linear regression. Therefore the GRIMS score is left as a continuous variable to measure parents relationship state. It was not dichotomized as was done for malaise as there was no clear cutpoint, nor is there a generally recommended cutpoint.

4.4.2 Analytic strategy

This chapter builds models to investigate the association of parent gender attitudes to maternal employment and employment behaviours and psychological distress and relationship satisfaction and tests interactions to uncover potential concordance/discordance. Models also adjust for inequalities in domestic labour and potential socio-economic confounders. Unweighted descriptives were first conducted to describe the sample. For psychological distress using the Malaise Inventory, logistic regression will be used in two models, one for mothers and one for fathers. Analysis of relationship satisfaction using GRIMS will use linear regression. All analyses are cross-sectional only. As mentioned in previous chapters, the MCS has a complex survey design, so Stata's survey commands, "svy", will be used for all models.

The equation for linear regression is $Y = b_0 + \sum (b_i X_i) + \epsilon$, where Y is the continuous outcome (GRIMS), and the intercept b_0 is added to coefficients for all the exposure variables the model contains. Interaction terms, such as the one between maternal and paternal gender attitudes would appear in a model as $Y = b_0 + (b_1 * var1 + b_2 * var2 + b_3 * var1 * var2) + \epsilon$ plus the additional covars. For the linear regression output will be unstandardised coefficients (B).

Logistic regression is another generalised linear model, where the principal is similar to linear regression, but instead of modelling a continuous outcome a binary outcome is used whereby the probability of getting the outcome Y=1 is modelled $P(Y = 1) = \frac{1}{1+e^{-(b_0 + \sum (b_i X_i))}}$. As both models are investigating the same questions with different outcomes, the development of the model covariates will follow 96 the same pattern so that $\sum (b_i X_i)$ will be the same in both the linear and logistic regression models. Logistic model output will be given as odd ratios.

All analyses on mothers and fathers are done separately. The main exposures of interest are the gender attitudes to maternal employment and labour behaviours, measured with the division of domestic labour, paid work hours for both parents, binary work variables for both parents and gender attitudes variables for both parents. To investigate the concordance within an individual between their attitudes and behaviours, the models include interaction terms between the individual's gender attitudes and the mother's paid work status. The comparison is always to the mothers' paid work since the gender attitudes are towards maternal employment. To investigate within couple concordance an interaction term is included between mother's and father's gender attitudes. The models were developed separately to preserve model parsimony by avoiding too many interactions with overlapping variables within a single model. Models also include interaction terms between parental work. Lastly, final models are adjusted for the socio-economic confounders used throughout this thesis: each parent's social class and education, and household equivalized income; as well as two demographic characteristics: parental age and number of children in the household. The chapter contains tables with the regression output of the main exposure variables, full models including the covariates can be found in appendix B. Graphs are generated after the final models using Stata's "margins" and "marginsplot" commands to visualise the interactions terms and predicted outcomes.

4.5 **Descriptive results**

Tables 4.1 and 4.2 contain the unadjusted and unweighted associations between household employment, gender attitudes and household characteristics with psychological distress. 1586 mothers had scores in the high malaise category representing roughly 13.2% of mothers, and 1091 fathers had high malaise scores representing 9% of the fathers in this sample. Table 4.1 suggests there is considerable social patterning of malaise. In the NS-SEC categories, managerial and professional mothers and fathers were least likely to be in the high malaise category while the never worked category was the most likely to have high malaiase followed by the routine and semi-routine categories. Similarly, those with the highest NVQ attainment, those with NVQs at level 4 and 5, were also less likely to have higher malaise compared to the other educational groups. Those in the highest quintile of wealth were also least likely to have high malaise and the parents in the 1st quintile with the lowest wealth were most likely to have high malaise. There was less patterning by the division of domestic labour quintiles established in the previous chapter; however, mothers and fathers in the least egalitarian quintile were least likely to have high malaise and fathers in the most egalitarian quintile were least likely to have high malaise.

4. Parental well-being

		MOT	HERS	FATH	IERS
	N	Low	High	Low	High
	1	malaise	malaise	malaise	malaise
		(%)	(%)	(%)	(%)
OFCD Income weighted quintiles		(70)	(70)	(10)	(10)
Lowest quintile	1337	76.6	23.4	813	18 7
Second quintile	2606	83.4	16.6	88.4	11.6
Third quintile	2000	87.5	12.6	92.2	7.8
Fourth quintile	2742	90.0	10.0	93.6	64
Highest quintile	2586	91.4	86	94.2	5.4 5.8
Mother's NS-SEC5 social class	2500 N	$I_{OW}(\%)$	High	$\frac{1}{10}$	High
Would's WS-SLC5 Social class	14		(%)	LOW (70)	(%)
Never worked	712	81.6	18.4	84 7	15.3
Semi-routine & routine	3862	82 7	17.4	88.6	11.4
Lo sup & tech	652	84 5	15.5	90.0	10.0
Small employer & self-employed	484	86.8	13.2	94.2	5.8
Intermediate	2293	89.4	10.6	91.5	8.5
Managerial & professional	4011	90.6	94	63	63
Eather's NS-SEC5 social class	N	$I_{OW}(\%)$	High	$\frac{0.5}{Low(\%)}$	High
ratier s NS-SLES social class	14		(%)	LOW (70)	(\mathcal{O}_{0})
Never worked	84	73.8	(10)	69.1	31.0
Semi-routine & routine	3128	82.4	177	87.2	12.8
$L \circ sup \& tech$	1910	85.8	14.2	90.7	9.3
Small employer & self-employed	1540	87.0	13.0	90.3	9.5
Intermediate	632	87.3	12.0	93.2	6.8
Managerial & professional	4720	90.2	0.8	93.2	6.3
Mother's highest NVO level	-4720 N	$I_{OW}(\%)$	High	$\frac{1}{1}$	High
would s ingliest it v Q level	14		(%)	LOW (70)	(%)
NVO level 1	822	81.6	18.4	87.5	12.5
NVQ level 2	3467	86.5	13.5	91.5	8.5
NVQ level 3	1797	86.3	13.8	90.8	9.2
NVQ level 4	3842	90.5	9.53	93.0	7.0
NVQ level 5	511	90.2	9.8	93.7	6.3
Overseas qualifications only	304	79.3	20.7	89.8	10.2
None of these	1271	81.0	19.0	84.7	15.3
Father's highest NVQ level	Ν	Low (%)	High	Low (%)	High
-			(%)		(%)
NVQ level 1	797	83.3	16.7	88.8	11.3
NVQ level 2	3322	85.9	14.2	90.7	9.3
NVQ level 3	1890	87.4	12.6	91.8	8.3
NVQ level 4	3516	89.7	10.3	93.8	6.2
NVQ level 5	691	92.5	7.5	93.9	6.1
Overseas qualifications only	367	81.7	18.3	86.9	13.1
None of these	1431	81.6	18.4	83.9	16.1
Domestic labour division quintile	N	Low (%)	High	Low (%)	High
Ĩ			(%)		(%)
1st (most egalitarian)	3351	87.2	12.8	92.0	8.0
2nd	2778	88.0	12.0	90.9	9.1
3rd	1807	87.8	12.2	91.4	8.6
4th	1748	86.9	13.1	91.0	9.0
5th (least egalitarian)	2330	84.0	16.1	89.0	11.0
Total	12014	10428	1586	10923	1091

Table 4.1: Parental malaise by household characteristics

Table 4.2 focuses on the primary exposures of interest: parental employment and gender attitudes. Both mothers and fathers in work were less likely to have high malaise compared to those not in work. For those parents in employment, there were not considerable differences in the mean hours worked by malaise group, regardless whether they were in the high or low malaise groups. However, the mean score on the gender attitudes variable, was higher in the high malaise groups suggesting there may be an association between less egalitarian gender attitudes and higher malaise. This will be investigated more closely in the logistic regression models.

		MOT	HERS	FAT	IERS	
Household Paid Employment	Ν	Low/No	High	Low/No	High	
		malaise	malaise	malaise	malaise	
Mother in work (no) (%)	5259	84.2	15.8	88.8	11.2	
Mother in work (yes) (%)	6755	88.8	11.2	92.6	7.5	
Father in work (no) (%)	1386	78.9	21.1	80.5	19.5	
Father in work (yes) (%)	10628	87.8	12.2	92.3	7.7	
Household paid work hours	N=	Low	High	Low	High	
	12014					
Employed mothers' work hours	6755	24.9	25.0	25.0	24.2	
(mean h/w)						
Number employed	6755	5998	757	6252	503	
Employed fathers' work hours	10628	46.5	45.5	46.4	46.4	
(mean h/w)						
Number employed	10628	9335	1293	9807	821	
Gender attitudes (low scores=more	N=	Low	High	Low	High	
equal)	12014					
Mothers' attitudes (mean score,	12014	6.0	6.4	6.0	6.1	
range 0-12)						
Fathers' attitudes (mean score,	12014	6.3	6.5	6.3	6.8	
range 0-12)						
Total	12014	10428	1586	10923	1091	

Table 4.2:	Distributions	and sample	means of	work hours	and gende	r attitudes	with
parental m	nalaise						

4.6 Multivariate results

Associations between parent's division of labour and gender attitudes and psychological distress

The first set of models explore the concept of individual concordance in gender attitudes to maternal employment and actual maternal employment in the household in relation to psychological distress. The tables are presented separately for mothers and fathers. Therefore, the mothers' model presents her attitudes towards maternal employment and her actual maternal employment (using hours per week). The fathers' model explore his attitudes towards maternal employment and his partners' i.e. the cohort member's mother - employment hours per week.

Table 4.3: Odds ratios of maternal psychological distress by individual gender attitudes and employment concordance

	Mod	Model 1: Main effects		Model	2: Concor	dance effects	Mode	adjusted	
Variable	OR	95	% CI	OR	9	95% CI	OR	95	% CI
Mother's Gender Attitudes	1.09	1.06	1.13	1.04	0.99	1.08	1.06	1.01	1.10
(high scores=more negative									
towards maternal employment)									
Mother's work hours	1.11	1.02	1.22	0.81	0.72	0.94	1.02	0.88	1.19
Mother's gender attitudes and									
work hours interaction									
(individual concordance)				1.03	1.01	1.05	1.03	1.01	1.05
Mother in work (no)	ref.								
Mother in work(yes)	0.67	0.53	0.84	0.61	0.48	0.77	0.75	0.60	0.95
Father's work hours/week				0.96	0.92	1.02			
Father in work (no)	ref.								
Father in work (yes)				0.98	0.71	1.36			
Constant	0.08	0.06	0.10	0.12	0.09	0.17	0.26	0.14	0.51

N.B. All work hours are scaled so that 1 unit=10 hours. Models 1 2 are mutually adjusted. Additional control variables in adjusted model 3 are: partner's gender attitudes, domestic labour, maternal and paternal social class and education, household equivalized income, parent ages, and number of children in the household. Full results tables are available in appendix B.

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	Model 1: Main effects			Model 2: Concordance effects			Model 3: Fully adjusted		
Variable	OR	95% CI		OR	95% CI		OR	95% CI	
Mother's work hours	0.98	0.88	1.08	0.63	0.53	0.75	0.79	0.65	0.95
Father's gender attitudes	1.08	1.04	1.11	1.00	0.96	1.04	1.04	0.99	1.08
Father's gender attitudes and work hours interaction (individual concordance)				1.06	1.04	1.09	1.05	1.02	1.07
Mother in work (no) Mother in work binary (yes) Father's work hours Father in work (no)	ref. 0.82 ref.	0.63	1.07	0.75	0.58	0.97	1.01 1.04	0.78 0.96	1.31 1.10
Father in work binary (yes) Constant	0.06	0.05	0.08	0.12	0.08	0.16	0.42 0.29	0.29 0.15	0.60 0.58

Table 4.4: Odds ratios of paternal psychological distress by individual gender attitudes and maternal employment concordance

N.B. All work hours variables are scaled so 1 unit=10 hours. Models 1 2 are mutually adjusted. Additional control variables in adjusted model 3 are: partner's gender attitudes, domestic labour, maternal and paternal social class and education, household equivalized income, parent ages, and number of children in the household. Full results tables are available in appendix B.

The first model in these tables presented the principal effects for the variables of interest. For mothers and fathers their own gender attitudes were associated with the odds of malaise. It was found that increasing gender attitudes negative to maternal employment was associated with greater odds of high malaise. For mothers, being in employment had lower odds of malaise, but the work hours variable was associated with increasing odds of malaise, suggesting a positive effect of employment, but that too many hours in work may be negative for mothers with very young children. For mothers, their partners employment was not significantly associated with malaise in this first model. While fathers gender attitudes were significantly associated with malaise, maternal employment variables independent of their gender attitudes were not significantly associated with their odds of high malaise. Father's work hours were not significant but the binary work variable was, so that fathers in work had lower odds of malaise.

The analysis also supported the hypothesis that discordance between maternal work hours and an individual's gender attitudes towards maternal employment would be associated with higher levels of malaise in both men and women. The concordance/discordance hypothesis was tested with an interaction between mothers' work hours and the mothers' or fathers' gender attitudes. Because these results are presented as odds ratios and the predictor variables are continuous, it can be somewhat difficult to interpret the ORs. Therefore, using the Stata margins commands, predicted probabilities were graphed to visualise the associations more effectively, these are plotted in Figures 5.1 and 4.2. These figures are produced from the final adjusted models, and the relationship between gender attitudes and maternal work hours remains robust for both mothers and fathers. The likelihood of high malaise increases as maternal work hours increase, in the case of those with negative attitudes towards maternal employment for both mothers and fathers. For fathers who have favourable attitudes towards maternal employment there is also a positive association with lower malaise the more hours a mother works. Figure 4.1: Mothers' malaise by discordance between mothers' gender attitudes to maternal employment and actual maternal employment







	Model 1: Main effects			Model 2: Concordance effects			Model 3: Fully adjusted		
Variable	OR	95% CI		OR	9	95% CI		95% CI	
Mother's gender attitudes (high	1.10	1.06	1.14	1.26	1.15	1.38	1.23	1.12	1.35
scores=more negative)									
Father's gender attitudes	0.99	0.96	1.02	1.12	1.04	1.22	1.10	1.01	1.20
Gender attitudes (couples				0.98	0.97	0.99	0.98	0.97	1.00
interaction)									
Mother's work hours							1.15	1.01	1.31
Father's work hours							0.94	0.88	1.00
Work Hours (couples							1.00	1.00	1.00
interaction)									
Mother in work (no)	ref								
Mother in work binary (yes)							0.79	0.63	1.00
Father in work (no)	ref						0.75	0.05	1.00
Father in work binary (yes)							1.01	0.72	1 41
runer in work binary (jes)							1.01	0.72	1.11
Domestic division of labour									
quintiles									
1st (most egalitarian)							1.00		
2nd							1.09	0.91	1.33
3rd							0.98	0.77	1.24
4th							1.10	0.89	1.35
5th (least egalitarian)							1.33	1.09	1.62
-									
Constant	0.08	0.06	0.10	0.03	0.02	0.06	0.10	0.04	0.23

Table 4.5: Odds ratios of maternal psychological distress by couples' gender attitude concordance

N.B. All work hours variables are scaled so 1 unit=10 hours. Models 1 2 are mutually adjusted. Additional control variables in adjusted model 3 are: maternal and paternal social class and education, household equivalized income, parent ages, and number of children in the household. Full results tables are available in appendix B.

	Model 1: Main effects			Model 2: Concordance effects			Model 3: Fully adjusted			
Variable	OR	95% CI		OR	95% CI		OR	OR 95% CI		
Mother's gender attitudes (high	0.98	0.94	1.02	1.12	1.01	1.24	1.05	0.94	1.16	
scores=more negative)										
Father's gender attitudes	1.11	1.07	1.15	1.24	1.13	1.37	1.18	1.07	1.30	
Gender attitudes (couples				0.98	0.97	1.00	0.99	0.97	1.00	
interaction)										
Mother's work hours							0.96	0.82	1.11	
Father's work hours							1.00	0.92	1.08	
Work hours (couples							1.00	1.00	1.00	
interaction)										
Mother in work (no)	ref.									
Mother in work binary (yes)							1.08	0.83	1.39	
Father in work (no)	ref.									
Father in work binary (yes)							0.42	0.29	0.62	
Domestic Division of labour										
quintiles							1.00			
Ist (most egantarian)							1.00	1.01	1 57	
2nd							1.20	0.07	1.57	
JIU Ath							1.20	0.97	1.05	
401 5th (least agalitarian)							1.37	1.05	1.77	
Jui (least egalitarian)							1.//	1.42	2.21	
Constant	0.05	0.04	0.07	0.03	0.01	0.05	0.13	0.05	0.32	

Table 4.6: Odds ratios of paternal psychological distress by couples' gender attitude concordance

N.B. All work hours variables are scaled so 1 unit=10 hours. Models 1 2 are mutually adjusted. Additional control variables in adjusted model 3 are: maternal and paternal social class and education, household equivalized income, parent ages, and number of children in the household. Full results tables are available in appendix B.

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The second set of models explored couples' gender attitudinal concordance. In the first models without the interaction terms, the individuals own gender attitudes were significantly associated with malaise, so that more negative attitudes to maternal employment were associated with increased odds of high malaise. The analysis provided some support to the hypothesis that discordance between couples' gender attitudes towards maternal employment would be associated with higher levels of malaise in both men and women. The concordance/discordance hypothesis was tested with an interaction between mothers' and fathers' gender attitudes to maternal employment. These tables also demonstrate the ongoing importance of parental labour divisions on well-being. Domestic labour was associated with both parents' Malaise Inventory results, so that being in the least egalitarian quintile was associated with higher odds of high malaise relative to those in the most egalitarian quintile. As this model was focused on couples and the interaction of couples attitudes, an interaction term was also added between the partners' paid work hours to reflect the interrelatedness of labour in families. However, the paid work hours interaction was not significant. Paid work status was however, important. For mothers, being in work could be beneficial but as work hours increased there was a corresponding increase in odds of high malaise, but her partner's employment was not strongly associated with maternal well-being. Similarly for fathers, a partner's work was not a significant predictor for malaise in the adjusted models. However the fathers' own employment status was beneficial regardless of the hours he worked (which were not significant in the final model).

As with the previous analysis predicted probabilities were graphed using STATA's margins commands to visualise and represent the interactions more effectively. These are plotted in figures 4.3 and 4.4. These figures are produced from the adjusted models, and demonstrate that the relationship between couples' gender attitudes and malaise remained robust for both mothers and fathers. These graphs convert the results of the logistic regression into predicted probabilities, which can
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be easier to interpret than odds ratios for continuous variables with interactions. Discordant gender attitudes in couples were associated with higher predicted probabilities for malaise in both mothers and fathers. For mothers with pro-maternal employment attitudes and concordant partners the predicted probability of high malaise was less that 0.1, an pro-employment mother with a discordant partner had a predicted probability of just over 0.1. The importance of the interaction is stronger where an individual's attitudes are negative towards maternal employment: for example, a mother with negative attitudes towards maternal employment and a partner with positive attitudes towards maternal employment had a predicted probability for high malaise of 0.2. Amongst fathers with positive towards maternal employment attitudes, their partners beliefs largely did not affect their predicted probability of high malaise. However, where fathers had anti-maternal employment attitudes, the difference in predicted probabilities for those with concordant partners compared to discordant partners was approximately 0.7 to 0.12. This shows a 0.05 point increase in the predicted probability for having high malaise. Both these graphs show that overall one's own gender attitudes were very important for individuals. In particular, being the negative partner in a discordant couple was associated with highest probability of malaise.

As expected parental education, social class, income and the number of children in the household were significantly associated with parental malaise. These parental and household characteristics did explain some of the observed associations of gender attitudes and maternal labour, yet the associations remained after adjustment. Full tables including all the covariates can be found in appendix B. Figure 4.3: Predictions of mothers' malaise by discordance between couples' gender attitudes to maternal employment



Figure 4.4: Predictions of fathers' malaise by discordance between couples' gender attitudes to maternal employment



Associations between parents' division of labour and gender attitudes and relationship satisfaction

The relationship state measured by GRIMS presented similar results as the Malaise Inventory. Descriptive tables for the GRIMS can be found in appendix B. Models were run for GRIMS just as they were run for malaise except that they are linear regressions not logistic regressions. Tables 4.7, 4.8, 4.9, and 4.10 below give the GRIMS results (with full covariate models in appendix B).

Table 4.7: Maternal relation	nship sa	atisfaction by	individ	ual work and emp	oloyment	concordance
	Model 1	: Main effects	Model 2:	Concordance effects	Model 3:	Fully adjusted e
Variable	В	95% CI	В	95% CI	В	95% CI

0.01

0.51

-0.06

0.32

0.09

0.70

0.02

0.06

-0.05

-0.14 0.26

0.09

-0.05

0.24

-0.10

0.12

-0.15

0.01

Mother's gender attitudes and work hours interaction (individual concordance)				-0.08	-0.12	-0.04	-0.06	-0.09	-0.02
Mother in work (no) Mother in work binary (yes)	ref. -0.02	-0.39	0.34	0.19	-0.19	0.58	-0.10	-0.48	0.29
Father's work hours	ref						0.04	-0.04	0.13
Father in work binary (yes)							1.07	0.58	1.57
Constant	28.43	28.02	28.84	27.64	27.11	28.16	28.04	27.14	28.93

N.B. Additional control variables in adjusted model 3 are: domestic labour, maternal and paternal social class and education, household equivalized income, parent ages, and the number of children in the household. Full results tables are available in appendix B.

Mother's gender attitudes

Mother's work hours

	Model	1: Main	effects	Model	2: Conc	ordance effects	Model	3: Fully	adjusted
Variable	В	95%	% CI	В		95% CI	В	959	% CI
Mother's work hours	0.12	0.01	0.23	0.08	0.06	0.10	0.49	0.31	0.67
Father's gender attitudes	-0.09	-0.13	-0.05	0.08	0.03	0.13	0.06	0.01	0.12
Father's gender attitudes and work hours interaction (individual concordance)				-0.12	-0.16	-0.09	-0.11	-0.14	-0.07
Mother in work (no)	ref.								
Mother in work binary (yes)	-0.17	-0.48	0.14	0.14	-0.20	0.48	-0.01	-0.33	0.31
Father's work hours							0.03	-0.05	0.11
Father in work (no)	ref.								
Father in work binary (yes)							0.34	-0.13	0.81
Constant	28.09	27.76	28.42	26.84	26.42	27.24	26.24	25.51	26.97

Table 4.8: Paternal relationship satisfaction by individual work and employment concordance

N.B. Additional control variables in adjusted model 3 are: domestic labour, maternal and paternal social class and education, household equivalized income, parent ages, and the number of children in the household. Full results tables are available in appendix B.

	Mode	1 1: Mai	n effects	Model	2: Conc	cordance effects	Model 3: Fully adjusted			
Variable	B	95	% CI	B		95% CI	B	95	% CI	
Mothers' gender attitudes (high	-0.13	-0.18	-0.08	-0.54	-0.67	-0.42	-0.38	-0.50	-0.26	
scores=more negative)										
Fathers' gender attitudes	-0.01	-0.06	0.04	-0.40	-0.51	-0.28	-0.23	-0.35	-0.11	
Mothers*fathers' gender				0.06	0.05	0.08	0.05	0.03	0.07	
attitudes (couple concordance)										
Mother's work hours/week							-0.06	-0.25	0.12	
Father's work hours/week							0.11	0.01	0.21	
Mothers*fathers work hours							-0.00	-0.01	-0.00	
Mother in work (no)	ref.									
Mother in work (yes)							-0.16	-0.53	0.20	
Father in work (no)	ref.									
Father in work (yes)							1.02	0.51	1.52	
Division of domestic labour 1st quintile (most egalitarian)										
2nd							-0.93	-1.17	-0.69	
3rd							-1.53	-1.81	-1.25	
4th							-2.08	-2.40	-1.76	
5th (least egalitarian)							-3.34	-3.65	-3.04	
Constant	28.81	28.48	29.15	31.23	30.52	31.95	30.38	29.16	31.60	

Table 4.9: Maternal relationship satisfaction by couples' attitudes concordance

N.B. Additional control variables in adjusted model 3 are: maternal and paternal social class and education, household equivalized income, parent ages, and the number of children in the household. Full results tables are available in appendix B.

	Model	1. Mair	effects	Model	2. Conc	ordance effects	Model 3: Fully adjusted			
Variable	B	950	% CI	B	2. cone	95% CI	B	B 95% CI		
Mothers' gender attitudes (high	0.04	-0.01	0.09	-0.42	-0.53	-0.31	-0.34	-0.45	$\frac{10001}{-0.22}$	
scores=more negative)		0101	0.07	0	0100	0.01	0.0 .	0110	0	
Fathers' gender attitudes	-0.12	-0.17	-0.08	-0.55	-0.67	-0.44	-0.46	-0.57	-0.35	
Mothers*fathers' gender				0.07	0.05	0.09	0.06	0.04	0.08	
attitudes (couple concordance)										
Mother's work hours/week							-0.05	-0.22	0.12	
Father's work hours/week							0.06	-0.03	0.15	
Mothers*fathers work hours							-0.00	-0.00	0.00	
Mother in work (no)	ref.									
Mother in work (yes)							-0.17	-0.47	0.13	
Father in work (no)	ref.									
Father in work (yes)							0.33	-0.14	0.80	
Division of domestic labour										
1st quintile (most egalitarian) 2nd							-0.38	-0.62	-0.14	
3rd							-0.57	-0.86	-0.29	
4th							-0.67	-0.97	-0.37	
5th (least egalitarian)							-1.21	-1.50	-0.92	
Constant	28.14	27.86	28.41	30.81	30.13	31.48	29.55	28.61	30.49	

Table 4.10: Paternal relationship satisfaction by couples' attitudes concordance

N.B. Additional control variables in adjusted model 3 are: maternal and paternal social class and education, household equivalized income, parent ages, and the number of children in the household. Full results tables are available in appendix B.

The GRIMS results were broadly similar to the results for malaise. Negative gender attitudes to maternal employment were associated with lower relationship satisfaction for both mothers and fathers, and the interaction terms for individual discordance between own gender attitudes and maternal employment, and couples discordant gender attitudes were additionally significant in the models. Employment itself had mixed results in the models, where paid work was often positive but some of the variables were non-significant. Domestic labour being divided more equally was positive for both women and men.

In the behaviour-attitude interaction models, tables 4.7 and 4.8, maternal employment was not strongly associated with relationship satisfaction for mothers, except in the way it interacted with her own gender attitudes. In figure 4.5, the effects of the interaction can be seen. When women worked 0 hours per week, there was no effect of gender attitudes, but as mothers' work hours increased, their predicted relationship satisfaction varied by her gender attitudes. Mothers with pro-work attitudes, were hardly affected by increasing work hours, but mothers who hold negative perceptions of maternal employment had steeper declines in predicted satisfaction. Paternal employment work hours were not significant for mothers, but having an employed partner was associated with more positive relationship satisfaction. Domestic labour was also important for mothers and can be seen in the full results tables in appendix B. Compared to the most egalitarian divisions of labour, each quintile was associated with lower relationship satisfaction, in a linear direction so that those in the least egalitarian quintile were least satisfied. For fathers, paternal employment was not significant, but the relationship between maternal employment and the fathers' gender attitudes to maternal employment was even more significant than for the mothers. As with the women, when mothers were not working there was little association between gender attitudes and relationship satisfaction for fathers. However, for fathers with positive attitudes towards maternal employment, their relationship satisfaction increased with maternal work hours, while those with

negative attitudes towards maternal employment saw decreases in relationship satisfaction (figure 4.6). Domestic labour was equally a strong predictor of relationship satisfaction for fathers. The fathers in the least egalitarian households, those where the fathers were not involved in housework and childcare, were less satisfied than their more egalitarian counterparts. All these results were adjusted in the third model for family socio-economic and demographic characteristics and the figures presented are from the adjusted results.

Figure 4.5: Predictions of mothers' relationship satisfaction by discordance between maternal employment and mothers 'attitudes to maternal employment



The couples' concordance models presented in tables 4.9 and 4.10, present equally interesting results. These models were designed to investigate couple concordance between gender attitudes and behaviours. Anti-maternal employment gender attitudes were negatively associated with relationship satisfaction for both men and women. Individual attitudes were important but so too were the partners' attitudes. The second model in these tables introduced the concordance interaction,



Figure 4.6: Predictions of fathers' relationship satisfaction by discordance between maternal employment and fathers' attitudes to maternal employment

and one can see a strong interactive association. These interactions were robust to adjustment for socio-economic and demographic characteristics. The interactions have been plotted in figures 4.7 and 4.8. They show that the highest predicted relationship satisfaction scores are experienced by couples who are positive towards maternal employment, but the interactions also show that the discordance between partners is highly important. Individuals who share negative attitudes to maternal employment with their partners have better relationship satisfaction than those from discordant partnerships, with anti-work individuals with pro-work partners having the lowest satisfaction for both mothers and fathers. In fully adjusted models parental work hours were not significant, nor was maternal employment, but fathers being in work had positive associations for both mothers' and fathers' relationship satisfaction, as did more egalitarian divisions of domestic labour. Full results tables with covariates can be found in appendix B, all figures are from the final adjusted models.

Figure 4.7: Predictions of mothers' relationship satisfaction by discordance between couples' gender attitudes to maternal employment





Figure 4.8: Predictions of fathers' relationship satisfaction by discordance between couples' gender attitudes to maternal employment

4.7 Discussion

Results from the regression analyses have shown that parental attitudes towards maternal employment are closely linked to parental psychological distress and relationship satisfaction. Both mothers and fathers were more likely to have high malaise scores and lower relationship satisfaction when they had negative attitudes towards maternal employment, regardless of any discordance with the mother's actual paid work status and regardless of their concordance or not with their partner.

However, there were some specific findings which suggest the value of concordance. For example, mothers who were not working and had negative attitudes to employment were more satisfied in their relationships than those who had the same attitudes but were discordant by being in paid employment. Having a pro-work attitude regardless of your partner's attitude was generally associated with less psychological distress and higher marital satisfaction, but having a partner who was also in 120

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favour of maternal employment resulted in the best outcomes. It would seem that an individual's attitudes to employment were most significant to their well-being, but the outcomes were modified by any discordance with mothers' work behaviours or the partners' attitudes.

Reviewing the results of both the malaise and relationship satisfaction analyses together, it is interesting to note that couples attitude-attitude concordance was more strongly associated with relationship satisfaction and individual discordance (maternal work behaviour-individual attitudes) was more strongly associated with malaise. It may be that couples' concordance affected perceptions of the relationship more as relationship satisfaction may be underpinned by a couple's compatibility, whereas malaise is more focused on the individual, consequently an individual's beliefs and perceived conflicts can have a stronger effect there. These results on gender attitudes differ from some previous research, suggesting some change over time that corresponds with the general trend of gender attitudes becoming more egalitarian (Scott and Clery, 2013). Lye and Biblarz (1993) found that discordant couples were less satisfied in their relationships, as was found in this thesis, but in their research traditional couples were the most satisfied, as opposed to this research which found egalitarian couples to be the most satisfied. In addition to the differences in time periods studied, there may also be differences based on geographic location as Lye and Biblarz used an American dataset. Another more recent American study looked at gender attitudes, work-to-family conflict, and relationship satisfaction. Although this thesis did not deal with work-to-family conflict, both studies were similar in their findings of the importance and dependence of a partner's gender attitudes when considering the implications of individual attitudes on satisfaction (Minnotte et al., 2010).

In addition to the concordance and discordance analysis, the models presented in this chapter also included paid work and domestic work. Both paid work and domestic work were also strongly associated with psychological distress and marital satisfaction. For mothers and fathers, across malaise and marital satisfaction, being in the most egalitarian domestic labour quintile was associated with more positive outcomes: lower malaise and greater relationship satisfaction. Paid work was also generally positive for parents across the models for both outcomes, in particular for fathers, this fits with previous studies that have shown depression and malaise links to unemployment (Paul and Moser, 2009). These results can be useful for those studying work and family policy as well as those interested in helping relationships. While many may assume that more equal divisions of labour would be positive for women, it was also very important for men. This is especially important as half of the domestic labour variables were about involvement in infant care, so opportunities for men to be more involved and engaged with their children, possibly through promotion of more family friendly work place policies and promotion of the UK's shared parental leave policy, may be beneficial for individual well-being and couples' relationships.

This research has many strengths. Firstly, by replicating the analysis in two outcomes, parental psychological distress and relationship satisfaction, gives confidence to the results as similar patterns were observed in both outcomes with the exposures of interest. Furthermore, the similarities in both sets of analyses were also able to demonstrate the results confirming the hypotheses on the importance of concordance between attitudes towards maternal employment and actual maternal employment as well as attitudes within couples. Secondly, the sample size and wealth of data on both mothers and fathers allowed for an analysis of both parents and was able to identify similarities and differences in these groups. Thirdly, we were able to explore two types of potential dissonance and associate such dissonance with mental health and relationship satisfaction, by testing two sets of interaction models, individual attitudes and maternal employment behaviours, and couples attitudes in a diverse sample. However, this work was limited by the cross-sectional nature of the data used, as it was not possible to identify causal pathways. Additionally, we were unable to compare parents attitudes from before the child was born, which would be of interest to many researchers as the transition to parenthood is often associated with changes in relationship satisfaction and well-being. The transition to parenthood is also likely to cause changes in the division of paid and domestic labour in couples and conflicts in gender attitudes regarding childrearing (Schober and Scott, 2012; Yavorsky et al., 2015; Perry-Jenkins and Claxton, 2011; Don and Mickelson, 2014).

In this chapter gender attitudes and behaviours have been linked to parental well-being as measured by psychological distress and relationship satisfaction. The theory of cognitive dissonance was highlighted as a possible explanation for distress in individuals who's gender role attitudes did not match the maternal employment situation in the family, or for couples who had discordant attitudes. The concept was investigated with interactions in two sets of models testing concordant attitudes and behaviours and concordant beliefs in couples. Dissonance was found in both cases. The next chapter will take this analysis outside of the parental dyad and into the family, by exploring whether parents' gender attitudes and behaviours regarding paid and domestic labour have any similar associations with child well-being.

Chapter 5

Children's socio-emotional development

5.1 Summary

Introduction: This chapter uses a longitudinal design to investigate parental gender related variables as predictors of socio-emotional well-being across childhood, from age 9 months to 11 years.

Objective: To investigate associations of parental gendered attitudes and behaviours with children's Strengths and Difficulties Questionnaire (SDQ) outcomes, within the context of the household socio-economic and demographic circumstances. Additionally parents' psychological distress is considered as a possible mediator in the relationship between gendered attitudes and behaviours and children's SDQ.

Methods: This study uses the UK Millennium Cohort study, a nationally representative cohort study of children born between 2000-2002, utilising data from sweep 1 when the cohort child was approximately 9 months old to sweep 5 at age 11. Data are modelled in STATA13 using multilevel mixed linear regression where cohort member occurrences at level 1 are embedded within the family at level 2. Children's SDQ scores are modelled over time with parental gender attitudes, division of labour and parental characteristics as exposures. Analyses were also stratified by gender.

Results: Parental gender attitudes at baseline were associated with children's SDQ throughout childhood, whereby negative attitudes towards maternal employment predicted greater difficulties for children. In unadjusted and partially adjusted models both boys and girls were similarly affected by gender attitudes. More egalitarian divisions of labour were also associated with lower difficulty scores for children. After adjusting and stratifying models, parental gender attitudes remained

strongly associated with SDQ scores in girls while the division of labour remained significant for boys.

Conclusions: This research extends the literature on parental gender attitudes and divisions of labour as predictors of well-being by demonstrating a link with childhood socio-emotional development in a recent UK cohort.

5.2 Introduction and hypotheses

The previous chapter investigated whether the gender division of paid labour, domestic labour and gender attitudes to maternal employment - collectively thought of as the gender home environment - was associated with parental well-being measured by the Malaise Inventory and the Golombok Rust Inventory of Marital State (GRIMS), which served as measures of psychological distress and relationship satisfaction respectively. For both mothers and fathers the variables of the gender home environment, including interactions between parents attitudes and behaviours were found to be associated both with malaise and relationship satisfaction. This chapter will extend this research to investigate whether these variables are also associated with child well-being.

Research has increasingly demonstrated a lack of detrimental effects of maternal employment on children's social-emotional development and academic achievement (Lucas-Thompson et al., 2010). However, less is known about the total dynamic labour environment within a family, part of which combines divisions of paid and domestic labour and gendered attitudes to labour. In the UK, recent research using the MCS has also shown that maternal employment does not harm children, and authors are even beginning to suggest that maternal employment may be beneficial (McMunn et al., 2011; Hope et al., 2012). After adjustment for a variety of socio-demographic variables which attenuated some of the results, children of continuously non-employed mothers remained at greater risk of socio-emotional problems compared to children of employed mothers (Hope et al., 2012). Paternal employment has been studied and generally perceived to be a benefit. However, due to gender role attitudes and beliefs maternal employment has been suspected of detrimental effects in the past, and generally thought of differently to paternal employment.

This study aims to take this question further to explore the impact of family paid work patterns along with the division of domestic labour and gender attitudes on children's SDQ scores. Much less research has been conducted on domestic labour and gender attitudes and children's socio-emotional outcomes. Some studies have looked at related areas such as connecting parental gender attitudes and child gender attitudes, or parental gender attitudes and divisions of labour with children's sibling relationships (Dawson et al., 2016, 2015). However, investigating SDQ and parental gender attitudes with divisions of labour in the UK's MCS will be a novel addition to the literature. This chapter will investigate whether the gendered home environment is associated with socio-emotional difficulties in pre-adolescent children and whether the gendered home environment is associated with any gender differences in children's socio-emotional difficulties. Within the SDQ, there are two major sub-domains: externalising and internalising behaviours. Previous research has identified significant differences between boys and girls, boys have higher difficulties scores on conduct problems and hyperactivity (externalising behaviours) and also score higher on peer problems but not emotional symptoms (internalising behaviours) (Mieloo et al., 2012). These potential gender differences in externalising and internalising behaviours warrant separate investigation in addition to SDQ total difficulty scores.

Objective: To assess the relationship between the gendered home environment including the interactive relationships of the family division of labour and parental gender attitudes with children's social-emotional outcomes over time.

Hypotheses:

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- More egalitarian divisions of labour (e.g. higher levels of maternal employment and greater partner engagement in domestic labour) will be associated with fewer difficulties measured by the SDQ across childhood.
- 2. More egalitarian gender attitudes to maternal employment will be associated with fewer difficulties measured by the SDQ across childhood.
- 3. Children whose parents are discordant in their attitudes towards maternal employment will be more likely to have socio-emotional difficulties and greater gender differences in children's outcomes. In other words, children's developmental outcomes will be more differentiated by child's gender as a result of the general gender environment.
- 4. The gender home environment variables attitudes to maternal employment and divisions of labour - will influence children's gender socialisation so that associations with SDQ will strengthen over time as children's exposure to a gendered environment increases.

5.3 Measures

As this chapter uses longitudinal data, there are two categories of measures used, time invariant and time varying.

Time invariant

The division of domestic labour and gender attitudes remain the same as used in previous chapters as two of the three main exposures of the gender home environment. Baseline control variables used in the models to adjust for socio-economic position are parents' highest academic and vocational qualifications and social class. Parental mental health is also included in final models as a possible mediator. There are two parental mental health variables, one of which is time varying and will be addressed below and the other is the Malaise Inventory, which was previously introduced and used in chapter 4.

Stable Family

A new variable is added at this sweep, which is time invariant and was not included in the baseline. It is a useful variable because it includes information from across the MCS to create a single marker of family stability. The stable family variable is a binary measure designed to indicate whether at any point during the study the cohort member's parents or caregivers changed. All members included in this study were in families where there was a mother and father figure in the household and they were in a relationship at the first sweep. Two parent families at the first sweep were chosen due to the interest in sharing work between partners and discordant attitudes to this study. However, in this chapter which uses data from all sweeps, couples could split up after the first sweep, form new partnerships, or other family members could become the respondents. Therefore, this stable family variable was created as an indicator of whether the family structure remains the same at all sweeps or it has changed. The variable was created using a combination of variables for accuracy. The main variable used asked whether the respondent was the same as at the previous sweeps for both the main and partner responses, and the variable was repeated at each subsequent sweep. Additionally, carers' relationship to the cohort member and to each other were also checked to ensure accuracy or where there may have been errors in the data. The main aim of this stable family variable was to adjust for the fact that previous chapters indicated that parents with unequal divisions of labour or conflicting gender attitudes experienced more psychological distress and less relationship satisfaction. If these factors led couples to split up, then any associations observed between parental divisions of labour, gender attitudes and children's SDQ may have been confounded by parental separation.

Time varying

Paid labour

Paid labour is measured the same way as was laid out in the baseline measures

section, but as parental work was asked at each sweep, the paid labour variables have been recreated for each sweep making time varying work variables possible. *Other control variables*

OECD equivalized income was also repeated and is included as a time varying control variable. Parental age and number of children in the household are also included as time varying variables as they were repeated measures throughout the MCS and in the case of number of children in the house it is very likely that many families will have changed and grown since the baseline survey. These variables are also virtually the same as they were in the baseline sweeps, however, as the number of children in the house has grown over time, the number of children variable has expanded from 1, 2, 3 or more, to 1, 2, 3, 4 or more to account for the increasing diversity in family sizes in the MCS.

New time varying measures are also included in this study and detailed as follows:

MCS Sweep

As this chapter will include longitudinal analyses, a new variable has been created to account for the temporal structure of the data. The MCS sweep variable, is the time indicator in the models, the sweep numbers and corresponding child ages are: sweep 1 - 9 months (baseline), sweep 2 - 3 years, sweep 3 - 5 years, sweep 4 -7 years, sweep 5 - 11 years old.

Parent psychological distress: Kessler Scale (K6)

The Malaise Inventory was replaced after the first sweep of the MCS by the Kessler psychological distress scale (Kessler et al., 2002). The MCS used the 6 item Kessler scale which is repeated from MCS sweep 2-5. One key difference between the Kessler scale and the Malaise Inventory is that the Kessler questions have a defined temporal element to the question, referring to the last 30 days. The questions were as follows: "during the last 30 days, about how often did you feel" 1)"so depressed that nothing could cheer you up?" 2)"hopeless" 3)"restless or fid-

gety" 4)"that everything was an effort" 5)"worthless" 6)"nervous". Response categories were: "all of the time, most of the time, some of the time, a little of the time, none of the time". The scores were summed into a single continuous variable where higher scores indicate greater distress.

Outcomes

Children's Strengths and Difficulties Questionnaire (SDQ)

The Millennium Cohort Study included the SDQ (Goodman, 1997). The SDQ was designed to be an improvement on the Rutter scales which had previously been a common tool for understanding children's behavioural and emotional difficulties. One of the desires for the new scale was to include more focus on children's strengths as well as difficulties, and cover the five domains of interest displayed below equally (Goodman, 1997). These are achieved through a series of twenty-five questions (five in each domain), the full list of which can be found in appendix C. Questions represent strengths and difficulties that a child may have such as "considerate of other people's feelings" or "restless, over-active, cannot stay still for long" with response options of "not true," "somewhat true," and "certainly true." Scores are summed up and continuous so that high scores indicate more difficulties (strengths questions are reversed coded). The range for total difficulties is 0-35 in this sample (out of a potential 40), externalising is 0-20 and internalising is 0-19 (out of a potential 20). Means and standard deviations are available in table 5.1. In table 5.2 descriptive results are pooled by covariates of interest, and by each MCS sweep and child gender.

The SDQ benefits from covering a range of five socio-emotional domains which can be interpreted individually. The domains can also be combined to identify three useful constructs: total difficulties combining all four difficulty domains, externalising behaviours combining conduct problems and hyperactivity/inattention, and internalising behaviours combining emotional symptoms and peer relationship problems. There were some missing domain data in the SDQ. Although the scoring al5. Children's socio-emotional development

Figure 5.1: SDQ domains and formation of internalising, externalising and total difficulties



lowed for individual missing items within a domain, some respondents had whole missing domains that would be dropped in analysis, this is because following SDQ scoring rules at least 3/5 questions had to be answered, so if only 2 were complete on conduct problems that domain would be dropped. The maximum available data available were used for analysis, therefore internalising, externalising and total difficulties have slighty different sample sizes as can be seen in the descriptive tables 5.1 and 5.2. The parents completed the SDQ for their child at ages 3, 5, 7 and 11. The SDQ has been found to be a consistent predictor of children's mental health in studies with repeated measures (Goodman, 1997; Becker et al., 2014; Sveen et al., 2013). The SDQ is a validated predictor for child mental health generally as well as being a useful tool for identifying children with or at heightened risk of developing specific conditions such as ADHD (Rimvall et al., 2014).

Using SDQ data from sweeps 2-5 in the MCS, this chapter will investigate if parental divisions of labour and parental gender attitudes have implications for children's development of socio-emotional problems throughout young and middle childhood. This chapter will focus on these three constructs from the SDQ. Total difficulties will be analysed as well as separate analyses for internalising and externalising behaviours respectively.

5.4 Analytic strategy

The purpose of this chapter is to investigate changes between children's SDQ scores in relation to the division of labour and parental gender attitudes. The sample begins with the same baseline sample used throughout the thesis, the smaller sample sizes shown in the descriptive tables are the result of sampling attrition in the MCS and some missing SDQ measures, as not every family completed the Strengths and Difficulties Questionnaires. As this chapter uses multilevel mixed effects models in STATA13, the sample is left intact (e.g. not reduced to complete cases only) as STATA's mixed model commands can account for the varying sample size over time so that full information can be used under the MAR assumption. Further details on the model construction will be detailed below as part of the description of the analytic processes undertaken in this chapter.

The analysis begins with unweighted descriptive statistics on the children's mean SDQ scores and exposures of interest in table 5.1. A separate table looks at the mean SDQ scores and gender across sweeps 2-5 (table 5.2). To utilise the wealth of data available in the MCS and the repeated measurements of SDQ, this chapter uses multilevel mixed effects models with random coefficients. These models offer a number of benefits. By treating the longitudinal data structure as nested levels the models can account for correlation within individuals over time. These models also allow for the mixed use of variables with only one measurement occasion, such as gender attitudes that were only measured at sweep 1, as well as temporally varied measures such as the parental work variables, which were repeated at each sweep, These models also take advantage of available data at each sweep, so if for example, a child is missing at sweeps 4 and 5, their data from sweeps 1-3 can still contribute information to the models. All models were made in STATA12, survey set analysis (using "svy:" prefix) was not available for mixed models, and so all models were adjusted with longitudinal attrition adjusted sampling weights pro-

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vided in the MCS dataset and using robust variance estimators (stata "vce"), which make the estimates more robust to some models misspecification, and is recommended when using sampling p-weights (McCullagh and Nelder, 1989; StataCorp, 2013). Models are also sex stratified as previous literature has suggested that there are gender differences in the associations between parental paid labour and children's socio-emotional outcomes (McMunn et al., 2011). These models also present several interactions of the variables of interest to investigate potential interactions between the gender home environment variables and time. Lastly, there were significant interactions between gender and the time variable (MCS sweep number) in all three domains of SDQ during preliminary work. These additional reasons also informed the decision to present models stratified by gender.

Figure 5.2: Data structure of the MCS



Figure 5.2 shows the structure of the MCS data used in this chapter. The cohort child, and all related family details, are held together under a single MCS family ID structure, which forms the second level of the data structure. Occasions of measurement are at level 1. Each 'occasion' is an MCS sweep, where occasions 2-5 (MCS

Sweeps 2-5) hold unique SDQ data for each child. There are a series of time varying and time invariant variables representing family characteristics.

The statistical equation for the multilevel mixed model is as follows

$$y_{ij} = \beta_0 + \beta_i x_{ij} + u_0 i + u_1 j \operatorname{time}_i j e_{ij}$$

where y=SDQ, i=Child within family level, j=Occasion within child, the beta terms indicate the intercept and exposures and covariates (only one exposure is presented in the equation here). In the fixed portion of the model, u_i =the random effect (intercept) at the child/family level, u_1j time_ij is a random slope for the child (time) and e_{ij} = the residual errors

Thus each child has it's own random regression line where $N(\beta_0, \sigma_0^2)$ is the intercept and $N(\beta_1, \sigma_1^2)$ is the slope for time.

5.5 Descriptive results

Table 5.1: SDQ scores at age 3 by parent baseline characteristics at 9 months, boys and girls combined

Exposures at baseline	To	otal Diff.	Exte	ernalising	Inte	ernalising
	Ν	M (SD)	Ν	M (SD)	Ν	M (SD)
Mother's work status/work						
hours (grouped)						
not in work (0 hours/week)	3973	9.83 (5.4)	4039	6.84 (3.9)	4042	3.04 (2.6)
Low p/t (1-19 hours/week)	1990	8.67 (4.7)	2016	6.20 (3.5)	2005	2.51 (2.3)
High p/t (20-34 hours/week)	2116	8.46 (4.6)	2133	6.02 (3.4)	2125	2.45 (2.2)
F/T (35-44 hours/week)	1345	8.24 (4.6)	1360	5.86 (3.5)	1350	2.41 (2.2)
High f/t (45+ hours/week)	238	7.53 (4.3)	238	5.37 (3.3)	239	2.16 (2.0)
Father's work status/work						
hours (grouped)						
not in work (0 hours/week)	948	11.10 (5.8)	966	7.61 (4.0)	970	3.53 (2.8)
Low p/t (1-19 hours/week)	114	10.14 (4.8)	116	6.54 (3.3)	118	3.67 (2.5)
High p/t (20-34 hours/week)	353	9.09 (5.0)	360	6.31 (3.6)	356	2.85 (2.5)
F/T (35-44 hours/week)	3643	8.99 (4.9)	3690	6.34 (3.6)	3669	2.69 (2.4)
High f/t (45+ hours/week)	4604	8.57 (4.8)	4654	6.11 (3.6)	4648	2.49 (2.2)
Domestic labour division quintile						
1st (most egalitarian)	2632	8.99 (5.1)	2260	6.35 (3.7)	2667	2.68 (2.4)
2nd	2266	8.80 (4.8)	2295	6.25 (3.5)	2287	2.59 (2.3)
3rd	1462	9.03 (5.0)	1482	6.39 (3.7)	1476	2.67 (2.4)
4th	1384	9.07 (5.0)	1405	6.35 (3.6)	1397	2.75 (2.4)
5th (least egalitarian)	1918	9.24 (5.1)	1944	6.48 (3.8)	1934	2.81 (2.4)
Gender attitudes (to maternal employment), grouped						
Mother's 0-4 (most positive)	2447	8.42 (4.8)	2471	6.06 (3.6)	2464	2.38 (2.1)
Mother's 5-8	5914	9.22 (5.0)	5999	6.50 (3.6)	5983	2.77 (2.4)
Mother's 9-12 (least positive)	1301	9.21 (5.2)	1316	6.28 (3.8)	1314	2.94 (2.6)
Father's 0-4 (most positive)	2182	8.52 (4.8)	2207	6.13 (3.6)	2194	2.41 (2.2)
Father's 5-8	5757	9.09 (5.0)	5834	6.39 (3.6)	5824	2.75 (2.4)
Father's 9-12 (least positive)	1723	9.38 (5.1)	1745	6.53 (3.8)	1743	2.88 (2.5)
Mother's highest NVQ level*						
None of these	776	11.99 (6.0)	792	8.07 (4.1)	800	3.40 (3.1)

Exposures at baseline	Total	difficulties	Exte	ernalising	Inte	rnalising
1	Ν	M (SD)	Ν	M (SD)	Ν	M (SD)
Overseas qualifications only	184	10.57 (5.5)	191	7.19 (3.8)	187	3.39 (2.8)
NVQ level 1	635	10.90 (5.3)	643	7.34 (3.9)	651	3.3 (2.5)
NVQ level 2	2776	9.50 (4.9)	2817	6.74 (3.6)	2807	2.8 (2.4)
NVQ level 3	1505	8.88 (4.7)	1517	6.36 (3.5)	1513	2.6 (2.3)
NVQ level 4	3349	7.75 (4.4)	3384	5.52 (3.3)	3365	2.24 (2.1)
NVQ level 5	437	7.4 (4.6)	442	5.08 (3.3)	438	2.35 (2.3)
Father's highest NVQ level*						
None of these	972	10.98 (5.7)	989	7.56 (4.0)	986	3.47 (2.9)
Overseas qualifications only	257	10.42 (5.3)	259	6.92 (3.6)	266	3.59 (2.8)
NVQ level 1	614	10.36 (5.3)	622	7.33 (4.0)	628	3.07 (2.4)
NVQ level 2	2684	9.32 (5.0)	2720	6.64 (3.6)	2710	2.72 (2.4)
NVQ level 3	1566	9.04 (4.8)	1582	6.42 (3.5)	1581	2.66 (2.3)
NVQ level 4	2996	8.03 (4.5)	3030	5.70 (3.4)	3015	2.36 (2.2)
NVQ level 5	573	7.22 (4.3)	584	4.98 (3.3)	575	2.29 (2.2)
OECD income weighted						
Lowest quintile	879	11.86 (5.9)	898	8.06 (4.1)	908	3.88 (2.9)
Second quintile	1940	10.35 (5.4)	1976	7 17 (3 9)	1965	3 20 (2.6)
Third quintile	2227	9 15 (4 7)	2254	6 51 (3 6)	2249	2.69 (2.3)
Fourth quintile	2357	8.12 (4.4)	2376	5.85 (3.3)	2372	2.30 (2.1)
Highest quintile	2259	7.55 (4.3)	2282	5.36 (3.3)	2267	2.20 (2.1)
Family stable						
(by parent response)						
Remains stable	5024	8.46 (4.7)	5081	5.98 (3.5)	5062	2.51 (2.3)
Changes in parents	4638	9.61 (5.3)	4705	6.76 (3.8)	4699	2.89 (2.5)
N. children in house (inc.						
CM)						
(inc. CM)						
1 (CM only)	3935	9.06 (4.9)	3975	6.33 (3.6)	3969	2.76 (2.4)
2 children	3674	8.88 (4.9)	3719	6.41 (3.7)	3709	2.52 (2.3)
3 children	1444	8.99 (5.3)	1467	6.24 (3.7)	1464	2.79 (2.5)
4 or more	609	9.57 (5.4)	625	6.51 (3.9)	619	3.12 (2.6)
Mother's malaise						
Low or no malaise	8847	8.64 (4.8)	8538	6.11 (3.5)	8523	2.55 (2.3)
High malaise	1215	11.65 (5.7)	1248	8.03 (4.0)	1238	3.70 (2.9)
Father's malaise						
Low or no malaise	8821	8.86 (4.9)	8926	6.25 (3.6)	8912	2.65 (2.4)
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Exposures at baseline	Total	difficulties	Externalising		Internalising	
	Ν	M (SD)	Ν	M (SD)	Ν	M (SD)
High malaise	841	10.60 (5.8)	860	7.47 (4.1)	849	3.20 (2.7)
TOTAL	9662	9.01 (5.0)	9786	6.36 (3.7)	9761	2.69 (2.4)

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N.B. All descriptives are unweighted and sample based. NVQ= National Vocational Qualifications and includes equivalence for academic qualifications.

Descriptive table 5.1 uses data from from the baseline survey with SDQ scores from sweep 2 only, to give an example of SDQ scores according to parental baseline characteristics at age 9 months as well as giving total sample numbers across these characteristics. Children with working parents had lower mean difficulties scores, and the more hours in employment, the lower the score. For descriptive purposes, work hours have been grouped in this table but are continuous variables in analyses, gender attitudes were also grouped for this table only. Children whose parents had more egalitarian attitudes towards maternal employment also had lower difficulties scores on average. Children whose parents had degrees or higher degrees and were in more affluent households on average had lower difficulties scores. Domestic labour did not appear to be strongly connected to SDQ scores, but remains in the analysis as it is one of the variables of interest. Statistical significance tests were checked (as appropriate, ttest, ANOVA or regression), significance from bivariate regressions are found in table 5.3, all variables of interest were associated with SDQ in bivariate analyses except domestic labour.

Table 5.2 presents the means and standard errors for children's SDQ across all sweeps. There were significant gender differences in total difficulties and externalising difficulties across all sweeps, with boys having higher scores on both measures. There were significant gender differences in internalising difficulties at sweeps 2 (age 3) and 4 (age 7), but generally the gender differences in internalising difficulties were very small and the boys and girls scores actually changed direction over time. Boys had higher difficulties at earlier ages, but girls begin to have higher scores at age 11, but these are very small and non-significant differences. Therefore, most of the gender differences in total difficulties are driven by externalising behaviours, which is why it is important to investigate the two domains separately. All total labour models found in the chapter are replicated separately for externalising and internalising difficulties in appendix C. Another trend noticeable in table 5.2, is that difficulties are high at age 3, then drop at age 5 and slowly rise again at ages 7 and 11. This is a common trend in SDQ and is not specific to this sample.

	То	tal diffic	ulties		E	Externali	sing		I	nternali	sing	
Sweep	N	Mean	SE		N	Mean	SE		N	Mean	SE	
2 (age 3)												
Boys	4912	9.53	0.07	*	4991	6.78	0.05	*	4956	2.79	0.03	*
Girls	4750	8.48	0.07		4795	5.92	0.05		4805	2.60	0.03	
Total	9662	9.01	0.05		9786	6.36	0.04		9761	2.69	0.02	
3 (age 5)												
Boys	3951	6.96	0.07	*	3966	4.73	0.05	*	3967	2.25	0.04	
Girls	3828	5.96	0.07		3840	3.80	0.05		3840	2.17	0.04	
Total	7779	6.47	0.05		7806	4.28	0.04		7807	2.21	0.03	
4 (age 7)												
Boys	3471	7.25	0.09	*	3481	4.85	0.06	*	3477	2.42	0.05	*
Girls	3373	5.90	0.08		3377	3.63	0.05		3381	2.28	0.04	
Total	6844	6.59	0.06		6858	4.25	0.04		6858	2.35	0.03	
5 (age 11)												
Boys	3254	7.30	0.10	*	3257	4.53	0.06	*	3261	2.78	0.05	
Girls	3266	6.15	0.09		3267	3.35	0.05		3272	2.80	0.05	
Total	6520	6.73	0.07		6524	3.94	0.04		6533	2.79	0.04	

Table 5.2: Child socio-emotional difficulty domains from the SDQ by gender and sweep (child age)

N.B. All descriptives are unweighted and sample based. Work hours and gender attitudes are grouped here for descriptive purposes only. *=gender difference significant at $p \le 0.05$.

5.6 Regression results

Table 5.3 shows the results of bivariate regressions, pooled across all waves, for total difficulties, externalising behaviours and internalising behaviours individually with each exposure at baseline. Girls had lower total difficulty scores, as well as lower externalising and internalising behaviours, although the difference was greater in externalising behaviours. Domestic labour was not associated with children's SDQ. Mothers' and fathers' negative gender attitudes were associated with greater difficulties. In these unadjusted analyses the remaining parental sociodemographic variables were also related with child SDQ.

Exposures	То	tal difficu	lties	Exter	rnalising d	ifficulties	Interna	lising dif	ficulties
-	В	95%	CI	В	95%	CI	В	95%	CI
Gender									
Girl	-1.169	-1.333	-1.006	-1.063	-1.174	-0.952	-0.114	-0.192	-0.036
Domestic labour quintiles									
1st (most egalitarian)	ref								
2nd	-0 227	-0.459	0.005	-0 144	-0 302	0.015	-0.078	-0 188	0.032
3rd	0.227	-0.175	0.352	0.144	-0.134	0.015	0.070	-0.087	0.052
Ath	0.000	-0 109	0.332	0.040	-0.100	0.227	0.050	-0.051	0.103
-ui 5th (least egalitarian)	0.100	-0.107	0.420	0.004	-0.100	0.207	0.070	-0.031	0.203
Sur (least egantarian)	0.170	-0.0+0	0.437	0.100	-0.001	0.275	0.000	-0.027	0.201
Mother gender attitudes (high	0.137	0.100	0.174)	0.039	0.014	0.065	0.098	0.080	0.115
scores=more negative)									
Father gender attitudes	0.090	0.054	0.126	0.038	0.013	0.062	0.053	0.036	0.070
Mother in work (no)	rof								
Mother in work (yes)	1 218	1 220	1 106	0 823	0.002	0.745	0 487	0.546	0 427
Father in work (yes)	-1.210	-1.550	-1.100	-0.823	-0.902	-0.745	-0.467	-0.540	-0.427
Father in work (110)	0.706	0 822	0 599	0.528	0.621	0.456	0.260	0 2 2 2	0 107
Famer III work (yes)	-0.700	-0.823	-0.388	-0.558	-0.021	-0.430	-0.200	-0.325	-0.197
Mother work hours	-0.031	-0.034	-0.027	-0.023	-0.025	-0.020	-0.011	-0.013	-0.009
Father work hours	0.003	0.000	0.005	0.006	0.004	0.008	-0.005	-0.006	-0.004
Mother's highest NVO level*									
None of these	2 8 2 2	3 5 3 0	4 1 2 7	2 206	2 003	2 400	1 6/1	1 500	1 783
Oversees qualifications only	2.055	2.239	4.127	2.200	2.005	2.409	1.041	1.300	1.705
NVO level 1	2.072	2.510	3.420 2.270	1.500	1.120	1.009	1.404	1.130	1.0/1
NVQ level 1	2.955	2.390	5.270	1.938	1.720	2.190	0.995	0.851	1.133
NVQ level 2	1.040	1.445	1.847	1.145	1.000	1.284	0.510	0.414	0.007
IN VQ IEVEL 3	1.055	0.812	1.299	0.730	0.362	0.898	0.328	0.211	0.445
IN VQ level 4	ref.	0 777	0.000	0.400	0.004	0.122	0.021	0.161	0.000
NVQ level 5	-0.377	-0.777	0.023	-0.408	-0.684	-0.132	0.031	-0.161	0.222

	То	tal difficu	lties	Exter	nalising d	ifficulties	Interna	ficulties	
	В	95%	CI	В	95%	CI	В	95%	CI
Father's highest NVO level*									
None of these	2 972	2 687	3 256	1 875	1 680	2 070	1 107	0 970	1 244
Overseas qualifications only	2.244	1 746	2.742	1 301	0.959	1 644	0 974	0.735	1.211
NVO level 1	2.254	1 908	2.599	1 549	1 311	1 786	0 705	0.539	0.871
NVO level 2	1.184	0.973	1.394	0.866	0.722	1.011	0.323	0.222	0.424
NVO level 3	1.037	0.789	1.285	0.745	0.575	0.916	0.292	0.173	0.411
NVO level 4	ref.	01/02	11200	017 10	01070	01710	0/_	01170	01111
NVQ level 5	-0.817	-1.177	-0.458	-0.584	-0.831	-0.337	-0.242	-0.415	-0.070
MCS Sweep									
Sweep 2 (age 3)	ref.								
Sweep 3 (age 5)	-2.270	-2.360	-2.179	-1.894	-1.955	-1.832	-0.384	-0.437	-0.331
Sweep 4 (age 7)	-2.126	-2.219	-2.034	-1.918	-1.981	-1.855	-0.219	-0.273	-0.165
Sweep 5 (age 11)	-2.038	-2.141	-1.936	-2.230	-2.300	-2.160	0.170	0.110	0.231
OECD income weighted quintiles*									
Lowest quintile	1.585	1.405	1.765	0.980	0.853	1.107	0.756	0.660	0.851
Second quintile	1.197	1.048	1.347	0.771	0.666	0.876	0.535	0.455	0.615
Third quintile	0.444	0.318	0.570	0.291	0.202	0.381	0.187	0.118	0.256
Fourth quintile	ref.								
Highest quintile	-0.441	-0.570	-0.312)	-0.250	-(0.342	to -0.159)	-0.231	-0.302	-0.161
N. children in house (inc.									
CM)									
1 (CM only)	0.736	0.572	0.901	0.604	0.488	0.719	0.151	0.065	0.238
2 children	ref.								
3 children	-0.051	-0.192	0.090	-0.218	-0.317	-0.119	0.171	0.098	0.245
4 or more	0.167	-0.038	0.371	-0.205	-0.348	-0.063	0.460	0.356	0.565

Tables 5.4, 5.5, 5.6, 5.7 present a series of models of child SDQ total difficulty scores using multilevel mixed models. Firstly there are individual models for gender attitudes and the division of labour behaviour (tables 5.4, 5.5). These models were then combined with household context variables (table 5.6), and lastly combined into fully adjusted models with parental mental health as a potential mediator. Models in this chapter present results for total difficulties only, but appendix C has replicated models for externalising and internalising behaviours separately.

	Boys (no interactions)			tions)	Boys (with interactions)				Girls (no interactions)				Girls (with interactions)			
Total difficulties	Coef.	P/SE ¹	95%	CI	Coef.	P/SE	¹ 95%	CI	Coef.	P/SE	¹ 95%	CI	Coef.	P/SE	¹ 95%	CI
Sweep																
2nd (age 3)																
3rd (age 5)	-2.27	**	-2.42	-2.13	-0.65		-1.78	0.47	-2.25	**	-2.38	-2.11	-1.84	*	-2.92	-0.77
4th (age 7)	-1.95	**	-2.11	-1.78	-1.55	*	-2.83	-0.26	-2.21	**	-2.37	-2.06	-1.81	*	-2.99	-0.62
5th (age 11)	-1.84	**	-2.04	-1.64	-1.08		-2.57	0.42	-2.00	**	-2.18	-1.82	-1.85	*	-3.24	-0.46
Mothers' gender attitudes (high scores=more negative)	0.17	**	0.10	0.24	0.43	**	0.21	0.64	0.05		-0.01	0.12	0.47	**	0.27	0.67
SweepXmothers gender atts																
3rd (age 5)/gend atts					-0.22		-0.42	-0.02					-0.09		-0.28	0.09
4th (age 7)/gend atts					0.00		-0.23	0.23					-0.05		-0.24	0.15
5th (age 11)/gend atts					-0.02		-0.28	0.25					-0.02		-0.25	0.22
Fathers' gender attitudes	-0.04		-0.10	0.02	0.23	*	0.04	0.43	0.02		-0.04	0.09	0.39	**	0.20	0.58
SweepXfathers gender atts																
3rd (age 5)/gend atts					-0.24	*	-0.42	-0.06					0.01		-0.16	0.18
4th (age 7)/gend atts					-0.10		-0.31	0.10					-0.02		-0.21	0.17
5th (age 11)/gend atts					-0.12		-0.35	0.12					-0.05		-0.27	0.17
MothersXfathers gend atts					-0.04	*	-0.07	-0.01					-0.06	**	-0.09	-0.03
Sweep*mothersXfathers gend atts																
3rd (age 5)xMxF gend atts					0.03	*	0.00	0.06					0.00		-0.02	0.03
4th (age 7)xMxF gend atts					0.01		-0.03	0.04					0.00		-0.03	0.03
5th (age 11)xMxF gend atts					0.00		-0.04	0.04					0.01		-0.03	0.04
Model constant	8.62	**	8.15	9.10	6.93	**	5.67	8.19	7.90	**	7.48	8.32	5.45	**	4.27	6.62

Table 5.4: Parental	gender attitude	s and children	's total difficultie	s over time by	child gender

	Boys (no interactions)			Boys (with interactions)				Girls (no interactions)				Girls (with interactions)				
Total difficulties	Coef.	P/SE ¹	95%	CI	Coef.	P/SE ¹	95%	CI	Coef.	P/SE ¹	95%	CI	Coef.	P/SE ¹	95%	CI
Daudam effects recordense	F ~4	CE	0507	CI	E ~4	CE	0507	CI	T a4	CE	0507	CI	E a4	SE	0501	CI
Random-effects parameters	ESI.	SE	95%	CI	ESI.	SE	95%	CI	ESI.	SE	95%	CI	ESI.	SE	95%	CI
sd(sweep)	1.29	0.05	1.20	1.38	1.29	0.05	1.20	1.38	1.12	0.05	1.03	1.22	1.11	0.05	1.02	1.21
sd(constant)	5.19	0.14	4.92	5.48	5.19	0.14	4.92	5.48	4.88	0.14	4.62	5.15	4.76	0.13	4.51	5.03
corr(sweep, constant)	-0.63	0.02	-0.67	-0.58	-0.63	0.02	-0.67	-0.58	-0.68	0.02	-0.72	-0.63	-0.65	0.02	-0.70	-0.61
sd(residual)	2.78	0.04	2.71	2.86	2.78	0.04	2.71	2.86	2.55	0.04	2.48	2.63	2.62	0.03	2.55	2.69

Table 5.4: Parental	gender attitudes an	d children's total difficultie	s over time by child gender
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N.B. In model 2, Wald tests on interactions: for boys all interactions were $p \le 0.05$. For girls, only parental gender attitude concordance was $p \le 0.05$, sweep interactions were non-significant. ¹= p-value for fixed effects and standard error for random effects $*=p \le 0.05$, $**=p \le 0.001$
	Be	ovs (no	o interactions)		Bo	vs (wit	h intera	ctions)	Girls (no interactions)				Girls (with interactions)			
Total difficulties	Coef.	P/SE ¹	95%	CI	Coef.	P/SE	¹ 95%	CI	Coef.	P/SE	¹ 95%	CI	Coef.	P/SE	¹ 95%	CI
Sweep																
2nd (age 3)																
3rd (age 5)	-2.32	**	-2.47	-2.17	-2.67	**	-3.13	-2.21	-2.31	**	-2.45	-2.17	-2.69	**	-3.13	-2.24
4th (age 7)	-1.98	**	-2.16	-1.81	-1.86	**	-2.37	-1.36	-2.26	**	-2.42	-2.10	-2.73	**	-3.21	-2.25
5th (age 11)	-1.80	**	-2.01	-1.60	-0.78		-1.62	0.05	-1.95	**	-2.14	-1.76	-2.26	**	-2.98	-1.54
Father work hours	-0.01	*	-0.01	-0.00	-0.01	*	-0.01	-0.00	-0.01	**	-0.01	-0.00	-0.01	**	-0.02	-0.01
Mother work hours	-0.01		-0.01	0.00	-0.01		-0.01	0.00	0.00		-0.01	0.00	0.00		-0.01	0.00
Mother in work (no)	ref.															
Mother in work (yes)	-0.38	*	-0.60	-0.16	-1.50	**	-2.07	-0.94	-0.62	**	-0.82	-0.42	-1.27	**	-1.80	-0.74
Father in work (no)	ref.															
Father in work (yes)	-0.23		-0.50	0.04	-0.46	*	-0.89	-0.02	-0.09	*	-0.33	0.15	-0.42	*	-0.79	-0.04
domestic labour quintiles																
2nd	-0.27		-0.64	0.11	-0.77	*	-1.33	-0.21	-0.34	*	-0.68	-0.01	-0.17		-0.68	0.34
3rd	0.19		-0.26	0.64	-0.31		-0.94	0.31	-0.18		-0.58	0.22	-0.31		-0.91	0.28
4th	0.26		-0.17	0.70	-0.20		-0.81	0.40	-0.36	*	-0.76	0.03	-0.86	*	-1.43	-0.29
5th (least egalitarian)	0.17		-0.25	0.58	-0.30		-0.87	0.27	0.00		-0.37	0.37	-0.09		-0.61	0.43
domestic labourXmother																
work																
2nd/in work					0.70	*	0.16	1.25					-0.27		-0.77	0.24
3rd/in work					0.73	*	0.12	1.33					0.18		-0.39	0.75
4th/in work					0.68	*	0.09	1.27					0.77	*	0.21	1.33
5th/in work					0.69	*	0.13	1.25					0.12		-0.39	0.63
FatherXmother work status																
In work/in work					0.53	*	0.13	0.93					0.40	*	0.04	0.76

Table 5.5: Parental division of labour and children's total difficulties over time by child gender	r
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	Bo	oys (no	interac	tions)	Bo	ys (wit	h intera	ctions)	Gi	irls (no) interac	ctions)	Gir	ls (wit	h intera	ctions)
Total difficulties	Coef.	P/SE	¹ 95%	CI	Coef.	P/SE	¹ 95%	CI	Coef.	P/SE	¹ 95%	CI	Coef.	P/SE ¹	95%	CI
SweepXfather in work																
3rd (age 5)/in work					0.06		-0.40	0.52					0.19		-0.25	0.62
4th (age 7)/in work					-0.15		-0.65	0.34					0.23		-0.24	0.70
5th (age 11)/in work					-1.11	*	-1.92	-0.31					0.16		-0.55	0.87
sweepXmother in work																
3rd (age 5)/in work					0.46	*	0.13	0.79					0.32	*	0.02	0.62
4th (age 7)/in work					0.02		-0.37	0.40					0.40	*	0.05	0.75
5th (age 11)/in work					0.01		-0.48	0.50					0.26		-0.20	0.72
Constant	10.19	**	9.82	10.56	10.81	**	10.22	11.40	9.43	**	9.09	9.77	10.00	**	9.43	10.57
Random-effects parameters	Est.	SE	95%	CI	Est.	SE	95%	CI	Est.	SE	95%	CI	Est.	SE	95%	CI
Unstructured																
sd(sweep)	1.27	0.05	1.18	1.37	1.27	0.05	1.18	1.37	1.10	0.05	1.01	1.20	1.10	0.05	1.01	1.19
sd(constant)	5.14	0.14	4.86	5.43	5.15	0.14	4.88	5.44	4.71	0.13	4.45	4.97	4.68	0.13	4.43	4.95
corr(sweep,constant)	-0.63	0.02	-0.68	-0.59	-0.64	0.02	-0.68	-0.59	-0.66	0.02	-0.70	-0.61	-0.65	0.02	-0.70	-0.61
sd(residual)	2.80	0.04	2.72	2.87	2.79	0.04	2.72	2.87	2.63	0.04	2.56	2.70	2.62	0.04	2.56	2.69

N.B. In model 2, Wald tests on interactions for boys all interactions $p \le 0.05$ except domestic labour*mother in work $p \le 0.06$. For girls, only domestic labour*mother in work significant at $p \le 0.05$. ¹= p-value for fixed effects and standard error for random effects *= $p \le 0.05$, **= $p \le 0.001$

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5. Children's socio-emotional development

Table 5.4, shows parental gender attitudes and 'sweep' which is the time measure with corresponding child ages given. Model 1, presents unadjusted results for boys and girls and model 2 adds a three-way interaction (and it's corresponding components) between sweep, and mothers' and fathers' gender attitudes. Including sweep in the interactions investigated whether SDQ associations with parents gender attitudes changed over time and the inclusion of both parental gender attitudes at the same time was to investigate the relevance of parental gender attitude concordance, which was a significant predictor of parental mental health. There was a strong relationship between mothers' and fathers' gender attitudes and child SDQ in the second model with interactions, so that children's total difficulties increased with increasing negative parental gender attitudes. The interaction between parents gender attitudes was important, and showed the same effect of concordance as with the parental well-being, increasing negative gender attitudes was associated with greater total difficulties, but parental concordance slightly modified the effect so that children in discordant homes would be worse off that those in concordant homes. The coefficient for mothers gender attitudes (where lower scores indicate more egalitarian attitudes), was similar for boys (0.43) and girls (0.47) in the model with interactions, while fathers' gender attitudes results were for girls (coef: 0.39) and boys (coef:0.23). The parental attitudes concordance interaction was significant, so that concordance in attitudes dulled the effect of negative gender attitudes slightly, and was slightly greater for girls than boys (interaction coef: -0.06 for girls and -0.04 for boys). A Wald test (using STATA's 'testparm'), suggested that the inclusion of this three-way interaction was an improvement on the model and that the interaction terms were of statistical significance for the boys (Wald tests for all interaction terms were $p \le 0.05$). This suggested that not only were the gender attitudes variables and concordance important for the boys, there was also an interaction with the sweep variable suggesting change over time.

Figure 5.3 shows a simple predictive margins plot of this interaction for boys

(from the fixed portion of the model only) to demonstrate the interaction of parental gender attitude concordance and discordance over time, showing in particular that boys with discordant parents where the mother is anti-maternal employment, have the highest predicted SDQ difficulties and are moving further from all the other groups by sweep 5. For girls, although the three-way interaction was supported by the Wald tests, on inspection of the individual terms, the interactions with time were not significant, only gender attitudes and parental concordance were significant.

Figure 5.3: Predictive margins of boys total difficulties showing concordant and non-concordant parents gender attitudes over time from model fixed portion only



Table 5.5, presents the results for the division of labour. Model 1 again presents variables of interest without any interactions, while model 2 adds interactions between time and work, maternal work and domestic labour, and both parents work status. Fathers' increasing work hours were associated with fewer difficulties for boys and girls, while mothers' work hours were not associated with children's difficulties. However, mothers being in work was strongly associated with fewer total

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difficulties. Fathers being in work was also associated with fewer difficulties, but with smaller coefficient sizes than for mothers' employment. For boys, mothers' work status has a coefficient of -1.50 and for girls the coefficient was -1.27, while fathers' work status was -0.46 for boys and -0.42 for girls in the models with interactions. The interactions between parents work status showed that if both parents were in work there was a slight elevation in difficulties scores, although generally not enough to eliminate the overall positive association with mothers' or fathers' work. Domestic labour was not strongly associated with children's SDQ. The inclusion of an interaction between domestic labour and maternal employment did not add much to the boys models, but for girls there was a significant interaction between maternal employment and domestic labour. The interaction terms were also tested with Wald tests, and for boys all the work division of labour interactions were significant at $p \le 0.05$, except for the domestic labour interaction with maternal employment (p < 0.06). The interaction over time for boys saw the negative effect of parental unemployment (either both unemployed or fathers only unemployed) strengthen at older ages (between 7 and 11), so that parental unemployment was associated with significantly greater difficulties at the older ages compared to young children (where the gap still existed but was more narrow). For girls, conversely there were fewer significant interactions, only the domestic labour with maternal employment interaction was significant in the Wald tests.

		B	oys			6	Firls	
Total difficulties	Coef.	P/SE ¹	95%	CI	Coef.	P/SE ¹	95%	CI
Sweep								
2nd (age 3)								
3rd (age 5)	-2 58	**	-3.03	-2.12	-2 60	**	-3.04	-2.16
$\frac{310}{400} \left(\frac{1}{200} \frac{3}{2} \right)$	1.60	**	2 10	1 10	2.00	**	3.04	2.10
4ul (age 7)	-1.09		-2.19	-1.19	-2.30	 ماد عاد	-5.05	-2.11
5th (age 11)	-0.55		-1.38	0.29	-2.09	**	-2.81	-1.37
Mother's gender atti-	0.19	*	0.00	0.37	0.28	**	0.13	0.44
tudes (high scores=more								
negative)								
Father's gender attitudes	-0.01		-0.17	0.14	0.23	*	0.08	0.38
-								
Parent's gender attitudes	-0.01		-0.04	0.01	-0.04	**	-0.06	-0.02
interaction								
meruentin								
Mother's work hours	0.00		0.01	0.01	0.00		0.00	0.01
Father's work hours	0.00		-0.01	0.01	0.00	*	-0.00	0.01
Father's work nours	0.00		-0.01	0.00	-0.01		-0.01	-0.00
	c							
Father in work (no)	ret.							
Father in work (yes)	-0.01		-0.44	0.43	-0.07		-0.45	0.30
Mother in work (no)	ref.							
Mother in work (yes)	-0.95	**	-1.51	-0.38	-0.74	*	-1.27	-0.22
•								
SweepXfather's work								
interaction								
Sween 3 / in work	0.02		0.47	0.44	0.13		0.31	0.56
Sweep 57 III work	-0.02		-0.47	0.44	0.13		0.22	0.50
Sweep 47 In work	-0.20	ala ala	-0.75	0.23	0.14		-0.52	0.60
Sweep 5 / in work	-1.31	**	-2.11	-0.51	0.03		-0.68	0.74
Parents in work interac-								
tion								
both in work	0.30		-0.10	0.70	0.25		-0.11	0.61
SweepXmother's work								
interaction								
Sween 3 / in work	0.41	*	0.08	0 74	0.27		-0.03	0.56
Sweep 57 in work	0.41		0.00	0.74	0.27		0.05	0.50
Sweep 47 III work	-0.10		-0.49	0.20	0.50		-0.05	0.04
Sweep 57 in work	-0.10		-0.59	0.40	0.17		-0.28	0.03
Domestic labour quin-								
tiles (1st=most egalitar-								
ian)								
2nd quintile	-0.66	*	-1.20	-0.12	0.06		-0.44	0.56
3rd quintile	-0.18		-0.79	0.43	-0.07		-0.64	0.50
4th quintile	-0.08		-0.66	0.51	-0.48		-1.04	0.07
5th quintile (least egali-	-0.29		-0.84	0.25	0.05		-0.46	0.57
tarian)								
(unitality)								
Mother in work V do								
mastic labour interest								
mestic labour interaction	0.61		0.00		0.15		0.05	0.02
in work / (2nd quintile)	0.61	*	0.08	1.14	-0.46		-0.95	0.03

Table 5.6: Family context adjusted models of children's total difficulties over time by child gender

	5.	Children's	socio-e	emotional	devel	opment
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Total difficulties Coef. P/SE ¹ 95% C1 Coef. P/SE ¹ 95% C1 in work / (3rd quintile) 0.52 -0.07 1.11 -0.03 -0.66 1.04 in work / (3rd quintile) 0.48 -0.10 1.11 -0.03 -0.66 1.04 in work / (3rd quintile) 0.50 -0.04 1.05 -0.11 -0.61 0.39 Mother's education 0.00 ** 1.39 2.60 1.59 ** 1.00 2.18 NVQ 2 or equivalent 0.85 ** 0.46 1.24 0.27 -0.07 0.62 NVQ 5 or equivalent 0.31 -0.30 0.91 0.01 -0.49 0.52 Overseas qualification 0.79 * 0.18 1.40 1.01 ** 0.46 1.57 NVQ 3 or equivalent 0.39 * 0.03 0.74 0.39 * 0.38 0.70 NVQ 4 or equivalent 0.70 * -1.24 -0.17			F	Boys			6	irls	
in work / (3rd quintile) 0.52 -0.07 1.11 -0.03 -0.60 0.53 in work / (4th quintile) 0.48 -0.10 1.05 0.49 -0.061 1.04 in work / (5th quintile) 0.50 -0.04 1.05 -0.11 -0.61 0.39 Mother's education 2.00 ** 1.39 2.60 1.59 ** 1.00 2.18 NVQ 2 or equivalent 1.12 ** 0.78 1.46 0.83 ** 0.51 1.14 NVQ 5 or equivalent 0.31 -0.30 0.91 0.01 -0.49 0.52 Overseas qualification 0.79 $*$ 0.18 1.40 1.01 ** 0.46 1.57 NVQ 2 or equivalent 0.39 $*$ 0.03 0.74 0.39 * 0.38 2.16 NVQ 3 or equivalent 0.70 $*$ -1.24 -0.17 -0.63 $*$ -1.05 -0.21 NVQ 4 or equivalent 0.70 $*$ -1.24 -0.17 $-$	Total difficulties	Coef.	P/SE ¹	<u>95%</u>	CI	Coef.	P/SE ¹	95%	CI
in work / (4h quintile) in work / (5h quintile)0.48 0.50-0.101.05 -0.040.49 1.05-0.061.04 0.39Mother's education (NVQ 1 or equivalent) NVQ 3 or equivalent NVQ 5 or equivalent 0.852.00**1.392.601.59**1.002.18NVQ 5 or equivalent OVY 5 or equivalent 0.851.12**0.781.460.83**0.511.14NVQ 5 or equivalent 0.910.31-0.300.910.01-0.490.52Overseas qualification only None of these0.79*0.181.401.01**0.461.57NVQ 2 or equivalent (NVQ 1 or equivalent) NVQ 3 or equivalent NVQ 3 or equivalent NVQ 5 or equivalent NVQ 5 or equivalent NVQ 5 or equivalent NVQ 5 or equivalent 0.720.79*0.181.401.01**0.461.57NNQ 5 or equivalent only0.70*-1.24-0.17-0.63*-1.05-0.21Overseas qualification only0.72-0.141.571.27*0.382.16None of these1.18**0.581.781.15**0.641.67OECD equivalent inorme0.31*0.070.550.19-0.210.41Ord these1.18**0.581.781.15**0.641.67OECD equivalied in inorme0.31*0.070.550.19-0.210.410.53Stable family respo	in work / (3rd quintile)	0.52		-0.07	1.11	-0.03		-0.60	0.53
in work / (5th quintile) 0.50 -0.04 1.05 -0.11 -0.61 0.39 Mother's education (NVQ1 or equivalent) 2.00 ** 1.39 2.60 1.59 ** 1.00 2.18 NVQ 2 or equivalent NVQ 5 or equivalent 1.12 ** 0.78 1.46 0.83 ** 0.51 1.14 NVQ 5 or equivalent overseas qualification only 0.31 -0.30 0.91 0.01 -0.49 0.52 None of these 3.23 ** 2.56 3.89 2.30 ** 1.70 2.90 Father's education (NVQ1 or equivalent) 0.79 * 0.18 1.40 1.01 ** 0.46 1.57 NVQ 5 or equivalent only 0.79 * 0.18 1.40 1.01 ** 0.46 1.57 NVQ 4 or equivalent only 0.79 * 0.18 1.40 1.01 ** 0.46 1.57 NVQ 5 or equivalent (NVQ 4 or equivalent only 0.39 * 0.03 0.74 0.39 * 0.08 0.70 NVQ 5 or equivalent only 0.46 * 0.06 0.85 0.55 * 0.19 0.64 1.67 NVQ 5 or equivalent only 0.46 * 0.66 0.85 0.55 * 0.19 0.64 1.67 NVQ 5 or equivalent only 0.34 * 0.00 0.68 0.10 -0.21 0.41 NVQ 5 or equivalent only 0.34 * 0.65 0.19 <	in work / (4th quintile)	0.48		-0.10	1.05	0.49		-0.06	1.04
Mother's education (NVQ1 or equivalent) NVQ 2 or equivalent NVQ 5 or equivalent NVQ 5 or equivalent Overseas qualification only None of these2.00**1.392.601.59**1.002.180.31 0.91 0.01 -0.30 0.91 1.85 0.46 1.24 0.27 0.27 -0.07 0.62 0.62 None of these 3.23 2.33** 2.56 2.56 3.89 2.30 2.30** 1.70 2.93Father's education (NVQ1 or equivalent) NVQ 2 or equivalent) NVQ 2 or equivalent NVQ 5 or equivalent Overseas qualification only 0.79 2.33 * 0.11 2.93 -0.46 2.30 1.57 Father's education (NVQ1 or equivalent) NVQ 2 or equivalent NVQ 5 or equivalent Overseas qualification only 0.79 2.72 -0.18 -0.70 2.124 0.101 -0.74 $**$ 0.39 2.30 $**$ 1.15 0.46 0.85 0.39 2.30 $**$ 0.19 0.70 0.91 None of these 1.18 2.72 -0.14 -0.17 0.72 -0.14 -0.63 1.57 -1.05 0.21 0.21 0.21 0.38 OECD equivalised in- come 0.34 -0.71 0.07 -0.26 0.11 0.26 -0.53 -0.73 -0.44 0.41 -0.73 OECD equivalised in- come 0.31 -0.71 -0.21 -0.64 -0.71 -0.26 -0.73 -0.44 -0.73 -0.21 -0.32 OHECD equivalised in- come 0.31 -0.71 -0.21 -0.44 -0.71 -0.26 -0.53 -0.73 <td>in work / (5th quintile)</td> <td>0.50</td> <td></td> <td>-0.04</td> <td>1.05</td> <td>-0.11</td> <td></td> <td>-0.61</td> <td>0.39</td>	in work / (5th quintile)	0.50		-0.04	1.05	-0.11		-0.61	0.39
NVQ 2 or equivalent NVQ 3 or equivalent NVQ 4 or equivalent NVQ 5 or equivalent 	Mother's education (NVQ1 or equivalent)	2.00	**	1.39	2.60	1.59	**	1.00	2.18
NVQ 3 or equivalent NVQ 4 or equivalent0.85**0.461.240.27 -0.07 0.62NVQ 5 or equivalent Overseas qualification only0.31 -0.30 0.910.01 -0.49 0.52None of these3.23**2.563.892.30**1.702.90Father's education 	NVQ 2 or equivalent	1.12	**	0.78	1.46	0.83	**	0.51	1.14
NVQ 4 or equivalent NVQ 5 or equivalent Overseas qualification only None of these0.31 -0.30 0.77 0.91 2.93 0.01 1.35 -0.49 0.52 0.52 0.57 2.12 0.57 Father's education (NVQ1 or equivalent) NVQ 2 or equivalent NVQ 3 or equivalent NVQ 4 or equivalent NVQ 5 or equivalent NVQ 5 or equivalent NVQ 5 or equivalent NVQ 5 or equivalent 0.46 0.18 0.06 1.40 0.55 1.01 $**$ 0.46 0.46 1.57 0.77 NVQ 5 or equivalent NVQ 5 or equivalent NVQ 5 or equivalent NORe of these 0.39 $*$ 0.03 0.72 0.74 0.06 0.39 $*$ 0.14 0.39 $*$ 0.65 0.08 0.55 0.08 0.070 NVQ 5 or equivalent None of these 0.70 0.72 -0.14 0.72 0.17 0.14 -0.63 1.57 -1.05 0.21 OECD equivalised in- come (1st quintile ard quintile 3.13 0.34 $*$ 0.00 0.68 0.10 0.10 -0.21 0.41 OECD equivalised in- come (1st quintile 3.13 0.31 $*$ 0.07 0.55 0.19 0.19 -0.21 0.41 OHECD equivalised in- come (1st quintile 3.13 0.07 0.21 0.34 -0.71 0.26 0.26 0.10 0.26 -0.45 0.02 Stable family response Yes -0.64 0.15 -0.18 0.15 0.34 -0.53 -0.37 -0.37 -0.32 0.46 -0.71 -0.22 Number of kids in HH 1 (CM only) 2 4 or more 0.02 0.02 -0.18 	NVQ 3 or equivalent	0.85	**	0.46	1.24	0.27		-0.07	0.62
NVQ 5 or equivalent Overseas qualification only 0.31 -0.30 0.91 0.01 -0.49 0.52 None of these 3.23 ** 2.56 3.89 2.30 ** 0.57 2.12 Father's education (NVQ 1 or equivalent) 0.79 * 0.18 1.40 1.01 ** 0.46 1.57 NVQ 2 or equivalent NVQ 4 or equivalent 0.39 * 0.03 0.74 0.39 * 0.08 0.70 NVQ 5 or equivalent Overseas qualification only 0.72 -0.14 1.57 0.55 * 0.19 0.91 NOne of these 1.18 ** 0.58 1.78 1.15 ** 0.64 1.67 OECD equivalised in- come (1st quintile - least income) 0.31 * 0.07 0.55 0.19 -0.04 0.41 Aft quintile 4th quintile (CM only) 0.64 ** 0.07 0.55 0.19 -0.04 0.41 Stable family response Yes -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 0.07 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 0.07 -0.37 -0.32 0.18 3 0.15 -0.18 0.34 0.07 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only)<	NVQ 4 or equivalent								
Overseas qualification only None of these 1.85 ** 0.77 2.93 1.35 ** 0.57 2.12 Father's education (NVQ1 or equivalent) NVQ 2 or equivalent NVQ 5 or equivalent Overseas qualification only 0.79 * 0.18 1.40 1.01 ** 0.46 1.57 NVQ 3 or equivalent Overseas qualification only 0.39 * 0.03 0.74 0.39 * 0.08 0.70 NVQ 5 or equivalent overseas qualification only 0.70 * -1.24 -0.17 -0.63 * -1.05 -0.21 Overseas qualification only 0.72 -0.14 1.57 1.27 * 0.38 2.16 None of these 1.18 ** 0.58 1.78 1.15 ** 0.64 1.67 OECD equivalised in- come (1st quintile 4th quintile the quintile -0.21 0.31 * 0.07 0.55 0.19 -0.21 0.41 Stable family response Yes -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 0.07 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.34 0.07 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08	NVQ 5 or equivalent	0.31		-0.30	0.91	0.01		-0.49	0.52
only None of these 3.23 ** 2.56 3.89 2.30 ** 1.70 2.90 Father's education (NVQ1 or equivalent NVQ 2 or equivalent NVQ 3 or equivalent NVQ 4 or equivalent NVQ 5 or equivalent NOR of these 0.39 * 0.03 0.74 0.39 * 0.08 0.70 NVQ 4 or equivalent NVQ 5 or equivalent NVQ 5 or equivalent Overseas qualification only None of these 0.70 * -1.24 -0.17 -0.63 * -1.05 -0.21 Overseas qualification only None of these 0.72 -0.14 1.57 1.27 * 0.38 2.16 OECD equivalised in- come (1st quintile 3rd quintile 0.34 * 0.00 0.68 0.10 -0.21 0.41 3.73 ** 0.07 -55 0.19 -0.04 0.41 3rd quintile strin quintile (most in- come) 0.31 * 0.07 0.55 0.19 -0.71 -0.22 Number of kids in HH 1 (CM only) - -0.64 ** -0.18 0.48 0.11	Overseas qualification	1.85	**	0.77	2.93	1.35	**	0.57	2.12
None of these 3.23 ** 2.56 3.89 2.30 ** 1.70 2.90 Father's education (NVQ1 or equivalent) 0.79 * 0.18 1.40 1.01 ** 0.46 1.57 NVQ 2 or equivalent NVQ 3 or equivalent 0.39 * 0.03 0.74 0.39 * 0.08 0.70 NVQ 5 or equivalent OVerseas qualification only 0.46 * 0.06 0.85 0.55 * 0.19 0.91 NVQ 5 or equivalent OVerseas qualification only 0.72 -0.14 1.57 -0.63 * -1.05 -0.21 Overseas qualification only 0.72 -0.14 1.57 1.27 * 0.38 2.16 None of these 1.18 ** 0.58 1.78 1.15 ** 0.64 1.67 OECD equivalised in- come (1st quintile ard quintile ard quintile of this quintile -0.21 0.31 * 0.07 0.55 0.19 -0.21 0.41 Ard quintile the quintile (most in- come) 0.31 * 0.07 0.57 0.19 -0.45 -0.08 Stable family response Yes -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 0.07 -0.32 0.18 2 0.08 -0.18 0.34 0.07 -0.32 0.18 3 0.15 -0.18 0.48 0.11 <td>only</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	only								
Father's education (NVQ1 or equivalent) NVQ 2 or equivalent NVQ 3 or equivalent NVQ 4 or equivalent NVQ 5 or equivalent Overseas qualification only None of these 0.79 $*$ 0.18 1.40 1.01 $**$ 0.46 1.57 0.70 0.46 $*$ 0.06 0.85 0.55 $*$ 0.19 0.91 $0.VQ$ 5 or equivalent Overseas qualification only None of these 0.70 0.72 -1.24 0.17 0.72 -0.63 1.18 $*$ 1.05 -0.21 0.38 2.16 OECD equivalised in- come (1st quintile - least income) 2nd quintile 3rd quintile 	None of these	3.23	**	2.56	3.89	2.30	**	1.70	2.90
NVQ 2 or equivalent NVQ 3 or equivalent $0.39 * 0.39 * 0.03 0.74 0.39 * 0.08 0.70 0.51 0.55 * 0.19 0.91$ NVQ 3 or equivalent NVQ 5 or equivalent NVQ 5 or equivalent $0.46 * 0.06 0.85 0.55 * 0.19 0.91$ NVQ 5 or equivalent Overseas qualification only $-0.70 * -1.24 -0.17 -0.63 * -1.05 -0.21 0.21 0.72 * 0.38 2.16 0.72 * 0.14 1.57 1.27 * 0.38 2.16 0.72 * 0.14 1.57 1.27 * 0.38 2.16 0.71 0.72 * 0.14 1.57 1.27 * 0.38 2.16 0.71 0.72 * 0.14 1.57 1.27 * 0.64 1.67 0.72 * 0.14 1.57 1.27 * 0.64 1.67 0.72 * 0.14 1.57 1.27 * 0.64 1.67 0.72 * 0.14 1.57 1.27 * 0.38 2.16 0.71 0.72 * 0.14 1.57 1.27 * 0.38 2.16 0.71 0.72 * 0.14 1.57 1.27 * 0.38 2.16 0.71 0.72 * 0.14 1.57 1.27 * 0.38 2.16 0.71 0.72 * 0.14 1.57 1.27 * 0.38 2.16 0.71 0.72 * 0.14 1.57 1.27 * 0.38 2.16 0.71 0.72 * 0.14 1.57 1.27 * 0.38 2.16 0.71 0.71 0.71 0.71 0.71 0.71 0.71 0.71$	Father's education (NVO1 or equivalent)	0.79	*	0.18	1.40	1.01	**	0.46	1.57
NVQ 3 or equivalent NVQ 4 or equivalent NVQ 5 or equivalent NVQ 5 or equivalent Overseas qualification only 0.46 * 0.06 0.85 0.55 * 0.19 0.91 Overseas qualification only -0.70 * -1.24 -0.17 -0.63 * -1.05 -0.21 Overseas qualification only 0.72 -0.14 1.57 1.27 * 0.38 2.16 OECD equivalised in- come (1st quintile - least income) 0.34 * 0.00 0.68 0.10 -0.21 0.41 OECD equivalised in- come (1st quintile 0.31 * 0.07 0.55 0.19 -0.04 0.41 3rd quintile -0.07 -0.26 0.11 -0.26 * -0.45 -0.08 5th quintile (most in- come) -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.48 0.11 -0.20 0.42 4 or more 0.02 -0.42 0.46 -0.14 <td>NVO 2 or equivalent</td> <td>0.39</td> <td>*</td> <td>0.03</td> <td>0.74</td> <td>0.39</td> <td>*</td> <td>0.08</td> <td>0.70</td>	NVO 2 or equivalent	0.39	*	0.03	0.74	0.39	*	0.08	0.70
NVQ 4 or equivalent NVQ 5 or equivalent Overseas qualification only None of these -0.70 * -1.24 -0.17 -0.14 -0.63 * -1.05 -0.21 0.38 2.16 OP Overseas qualification only None of these 1.18 ** 0.58 1.78 1.15 ** 0.64 1.67 OECD equivalised in- come (1st quintile - least income) 0.34 * 0.00 0.68 0.10 -0.21 0.41 OECD equivalised in- come (1st quintile - least income) 0.31 * 0.07 0.55 0.19 -0.04 0.41 Aft quintile 3rd quintile 4th quintile (most in- come) 0.31 * 0.07 0.55 0.19 -0.04 0.41 Stable family response Yes -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 2 0.08 -0.18 0.34 -0.07 -0.32 0.18 2.4 0.15 -0.18 0.48 0.11 -0.20 0.42 3 0.15 -0.18 0.48 0.11 -0.20 0.42 4 or more 0.02 -0.42 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42	NVQ 3 or equivalent	0.46	*	0.06	0.85	0.55	*	0.19	0.91
NVQ 5 or equivalent Overseas qualification only -0.70 * -1.24 -0.17 -0.63 * -1.05 -0.21 None of these 1.18 ** 0.58 1.78 1.27 * 0.38 2.16 OECD equivalised in- come (1st quintile - least income) 0.34 * 0.00 0.68 0.10 -0.21 0.41 OECD equivalised in- come (1st quintile - least income) 0.34 * 0.00 0.68 0.10 -0.21 0.41 OECD equivalised in- come (1st quintile - least income) 0.31 * 0.07 0.55 0.19 -0.04 0.41 3rd quintile 4th quintile (most in- come) -0.21 -0.26 0.11 -0.26 * -0.45 -0.08 Stable family response Yes -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 -0.07 -0.32 0.18 2 0.02 -0.42 0.46 -0.14 -0.20 0.42 4 or more 0.02 -0.42 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42 Random-effects pa-Est.SE 95% CIEst.SE 95% CI	NVQ 4 or equivalent								
Overseas qualification only 0.72 -0.14 1.57 1.27 * 0.38 2.16 None of these 1.18 ** 0.58 1.78 1.15 ** 0.64 1.67 OECD equivalised income (1st quintile - least income) 0.34 * 0.00 0.68 0.10 -0.21 0.41 2nd quintile 0.31 * 0.07 0.55 0.19 -0.04 0.41 3rd quintile 0.31 * 0.07 0.55 0.19 -0.45 -0.08 5th quintile (most income) -0.07 -0.26 0.11 -0.26 * -0.73 -0.32 Stable family response -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH (CM only) 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41	NVQ 5 or equivalent	-0.70	*	-1.24	-0.17	-0.63	*	-1.05	-0.21
only None of these 1.18 ** 0.58 1.78 1.15 ** 0.64 1.67 OECD equivalised in- come (1st quintile - least income) 0.34 * 0.00 0.68 0.10 -0.21 0.41 Ord quintile 3rd quintile 4th quintile 5th quintile (most in- come) 0.31 * 0.07 0.55 0.19 -0.04 0.41 Stable family response Yes -0.07 -0.26 0.11 -0.26 * -0.73 -0.32 Number of kids in HH 1 (CM only) -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.48 0.11 -0.20 0.42 4 or more 0.02 -0.42 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42	Overseas qualification	0.72		-0.14	1.57	1.27	*	0.38	2.16
None of these 1.18 ** 0.58 1.78 1.15 ** 0.64 1.67 OECD equivalised in- come (1st quintile - least income) 0.34 * 0.00 0.68 0.10 -0.21 0.41 Ord quintile 3rd quintile 4th quintile 4th quintile (most in- come) 0.31 * 0.07 0.55 0.19 -0.04 0.41 Stable family response Yes -0.07 -0.26 0.11 -0.26 * -0.73 -0.32 Number of kids in HH 1 (CM only) -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.48 0.11 -0.20 0.42 4 or more 0.02 -0.42 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42	only								
OECD equivalised in- come (1st quintile - least income) 0.34 * 0.00 0.68 0.10 -0.21 0.41 2nd quintile 0.31 * 0.07 0.55 0.19 -0.04 0.41 3rd quintile -0.07 -0.26 0.11 -0.26 * -0.45 -0.08 4th quintile -0.07 -0.26 0.11 -0.26 * -0.45 -0.08 5th quintile (most in- come) -0.21 -0.44 0.02 -0.53 ** -0.73 -0.32 Stable family response Yes -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.44 0.01 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42 Random-effects pa- Est. SE 95% CI Est. SE 95% CI	None of these	1.18	**	0.58	1.78	1.15	**	0.64	1.67
Income) 0.31 * 0.07 0.55 0.19 -0.04 0.41 3rd quintile -0.07 -0.26 0.11 -0.26 * -0.45 -0.08 5th quintile (most in- come) -0.21 -0.44 0.02 -0.53 ** -0.73 -0.32 Stable family response Yes -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.44 0.11 -0.20 0.42 4 or more 0.02 -0.42 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42	OECD equivalised in- come (1st quintile - least	0.34	*	0.00	0.68	0.10		-0.21	0.41
Ath quintile -0.07 -0.26 0.11 -0.26 * -0.45 -0.08 Sth quintile (most in- come) -0.21 -0.44 0.02 -0.53 ** -0.73 -0.32 Stable family response Yes -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.48 0.11 -0.20 0.42 4 or more 0.02 -0.42 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42 Random-effects pa- Est. SE 95% CI Est. SE 95% CI	2nd quintile	0.31	*	0.07	0.55	0.19		-0.04	0.41
An quintle -0.07 -0.20 0.11 -0.20 -0.42 -0.43 -0.20 -0.43 -0.32 Stable family response -0.64 ** -0.91 -0.37 -0.46 ** -0.73 -0.32 Number of kids in HH -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.48 0.11 -0.20 0.42 4 or more 0.02 -0.42 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42 Random-effects pa- Est. SE 95% CI Est. SE 95% CI	Ath quintile	-0.07		-0.26	0.11	-0.26	*	-0.45	-0.08
Stable family response Yes -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 -0.07 -0.32 0.18 2 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.48 0.11 -0.20 0.42 4 or more 0.02 -0.42 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42 Random-effects pa- Est. SE 95% CI Est. SE 95% CI	5th quintile (most in-	-0.21		-0.20	0.11	-0.53	**	-0.43	-0.08
Stable family response Yes -0.64 ** -0.91 -0.37 -0.46 ** -0.71 -0.22 Number of kids in HH 1 (CM only) 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.48 0.11 -0.20 0.42 4 or more 0.02 -0.42 0.46 ** 6.22 8.42 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42 Random-effects pa- Est. SE 95% CI Est. SE 95% CI	come)	0.21		0.11	0.02	0.55		0.75	0.52
Number of kids in HH	Stable family response Yes	-0.64	**	-0.91	-0.37	-0.46	**	-0.71	-0.22
1 (CM omy) 0.08 -0.18 0.34 -0.07 -0.32 0.18 2 0.08 -0.18 0.34 -0.07 -0.32 0.18 3 0.15 -0.18 0.48 0.11 -0.20 0.42 4 or more 0.02 -0.42 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42 Random-effects pa- Est. SE 95% CI Est. SE 95% CI	Number of kids in HH								
3 0.15 -0.18 0.48 0.11 -0.20 0.42 4 or more 0.02 -0.42 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42 Random-effects pa- Est. SE 95% CI Est. SE 95% CI	2	0.08		-0.18	0 34	-0.07		-0.32	0.18
4 or more 0.02 -0.42 0.46 -0.14 -0.58 0.29 Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42 Random-effects pa- Est. SE 95% CI Est. SE 95% CI	3	0.15		-0.18	0.48	0.11		-0.20	0.42
Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42 Random-effects pa- Est. SE 95% CI Est. SE 95% CI	4 or more	0.02		-0.42	0.46	-0.14		-0.58	0.29
Constant 8.64 ** 7.41 9.88 7.32 ** 6.22 8.42 Random-effects pa- Est. SE 95% CI Est. SE 95% CI		0.02		0112	0110			0.00	0.29
Random-effects pa-Est.SE95%CIEst.SE95%CI	Constant	8.64	**	7.41	9.88	7.32	**	6.22	8.42
rameters	Random-effects pa- rameters	Est.	SE	95%	CI	Est.	SE	95%	CI
			0.67		1.0-		0.67	1.01	
sd(sweep) $1.27 0.05 1.18 1.37 1.10 0.05 1.01 1.20$	sd(sweep)	1.27	0.05	1.18	1.37	1.10	0.05	1.01	1.20
sd(constant) $4.98 0.14 4.71 5.27 4.55 0.14 4.29 4.82$	sd(constant)	4.98	0.14	4.71	5.27	4.55	0.14	4.29	4.82
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	corr(sweep,constant)	-0.00	0.02	-0.70 271	-0.01 2.86	-0.68	0.02	-0.72	-0.03 2.60

¹= p-value for fixed effects and standard error for random effects *= $p \le 0.05$, **= $p \le 0.001$

		В	oys			G	lirls	
Total difficulties	Coef.	P/SE ¹	95%	CI	Coef.	P/SE ¹	95%	CI
Sweep (2)								
2nd (age 3)								
3rd (age 5)	-3.32	**	-4.16	-2.49	-2.51	**	-3.32	-1.70
4th (age 7)	-1 99	**	-2.87	-1.12	-2 55	**	-3.43	-1.67
5th (age 11)	0.70		1.87	0.23	2.55	**	3.57	1.67
Jul (age 11)	-0.79		-1.62	0.23	-2.00		-3.37	-1.05
Mother's gonder atti	0.16		0.02	0.24	0.16	*	0.01	0.21
Mother's gender atti-	0.10		-0.02	0.34	0.10		0.01	0.51
tudes (nigh scores=more								
negative)			o .					
Father's gender attitudes	-0.01		-0.17	0.14	0.18	*	0.03	0.33
Parent's gender attitudes	-0.01		-0.04	0.01	-0.03	*	-0.06	-0.01
interaction								
Mother's work hours	0.00		-0.01	0.01	0.00		-0.01	0.01
Father's work hours	0.00		-0.01	0.00	0.00		-0.01	0.01
Mother in work (no)	ref							
Mother in work (yes)	-0.65	*	-1.15	-0.15	-0.19		-0.66	0.28
Father in work (yes)	-0.05		-1.15	-0.15	-0.17		-0.00	0.20
Father in work (no)			0.76	0.74	0.55		1.25	0.16
Father III work (yes)	-0.01		-0.70	0.74	-0.55		-1.23	0.10
SweepXfather's work								
interaction								
Sweep 3 / in work	0.85	*	0.02	1.68	0.18		-0.63	0.99
Sweep 4 / in work	0.12		-0.76	1.01	0.27		-0.61	1.16
Sweep 5 / in work	-0.94		-1.97	0.08	0.67		-0.29	1.63
SweepXmother's work								
interaction								
Sweep 3 / in work	0.30		-0.07	0.67	0.10		-0.23	0.43
Sweep 4 / in work	-0.13		-0.55	0.30	0.18		-0.21	0.57
Sweep 5 / in work	0.15		0.55	0.30	0.10		0.21	0.57
Sweep 57 III work	-0.23		-0.70	0.50	0.04		-0.44	0.32
Domostic Johour quin								
Domestic labour quin-								
tiles (1st=most egalitar-								
ian)	0.60							
2nd quintile	-0.69	*	-1.25	-0.12	0.48		-0.05	1.01
3rd quintile	-0.38		-1.02	0.25	0.19		-0.42	0.80
4th quintile	-0.15		-0.77	0.47	-0.23		-0.82	0.36
5th quintile (least egali-	-0.53		-1.11	0.04	0.16		-0.38	0.70
tarian)								
,								
Mother in work X do-								
mestic labour interaction								
in work / (2nd quintile)	0.77	*	0.21	1 32	-0.84	*	-1 36	-0.31
in work / (3rd quintile)	0.77	*	0.21	1.32	0.04		0.87	0.31
in work / (Ath avintila)	0.07	-	0.04	1.31	0.24		-0.07	0.59
in work / (4th quintile)	0.52	*	-0.11	1.14	0.25		-0.54	0.00
in work / (5th quintile)	0.73	ጥ	0.15	1.30	-0.14		-0.67	0.39

Table 5.7: Family context and parental mental health adjusted models and children's total difficulties over time by child gender

		B	soys				aris	
Total difficulties	Coef.	P/SE ¹	95%	CI	Coef.	P/SE ¹	95%	CI
Mother's education	2.02	**	1.39	2.65	1.17	**	0.58	1.77
(NVQ1 or equivalent)								
NVQ 2 or equivalent	1.01	**	0.68	1.35	0.67	**	0.36	0.98
NVO 3 or equivalent	0.83	**	0.44	1.21	0.24		-0.11	0.60
NVO 4 or equivalent								
NVO 5 or equivalent	-0.04		-0.63	0.54	-0.26		-0.77	0.25
Overseas qualification	1.21	*	0.07	2.35	0.58		-0.20	1 36
only	1.21		0.07	2.00	0.00		0.20	1.50
None of these	2.81	**	2 11	3 52	1 71	**	1.05	2 36
	2.01		2.11	5.52	1.71		1.02	2.30
Father's education	0.73	*	0.10	1 36	0.97	**	0.40	1 54
(NVO1 or equivalent)	0.75		0.10	1.00	0.57		0.10	1.5 1
NVO 2 or equivalent	0.27		-0.09	0.63	0.36	*	0.05	0.67
NVO 3 or equivalent	0.27		-0.07	0.05	0.30	*	0.05	0.83
NVO 4 or equivalent	0.50		0.04	0.15	0.77		0.10	0.05
NVO 5 or equivalent	-0.59	*	_1.00	-0.08	-0.50	*	_1.02	_0.16
Oversees qualification	0.39		0.09	-0.08 1 77	1.09	*	-1.02	2 00
	0.64		-0.08	1.//	1.08	·	0.00	2.09
Name of these	0.70	*	0.10	1.20	1.01	**	0.62	1 70
None of these	0.70		0.10	1.50	1.21		0.05	1.79
OFCD equivalised in								
OECD equivalised II-								
come (1st quintile - least								
income)	0.00		0.17	0.00	0.11		0.07	0.40
2nd quintile	0.26		-0.17	0.68	0.11		-0.27	0.49
3rd quintile	0.23		-0.05	0.51	0.23		-0.02	0.48
4th quintile	-0.09		-0.29	0.12	-0.19		-0.39	0.01
5th quintile (most in-	-0.15		-0.40	0.09	-0.43	**	-0.65	-0.22
come)								
St. 1.1. C								
Stable family response	0.27	*	0.64	0.10	0.20	*	0.62	0.14
res	-0.37	Ŧ	-0.64	-0.10	-0.39	*	-0.63	-0.14
Number of kids in UU								
1 (CM only)								
1 (CM Olly)	0.14		0.14	0.42	0.14		0.41	0.12
2	0.14		-0.14	0.45	-0.14		-0.41	0.12
3	0.10		-0.20	0.51	-0.08		-0.41	0.25
4 or more	0.21		-0.27	0.68	-0.35		-0.81	0.11
Mother malaise								
High malaise	1.58	**	1.00	2.07	1 25	**	0.81	1.60
Ingli malaise	1.56		1.09	2.07	1.23		0.01	1.09
Father malaise								
High malaise	0.61	*	0.00	1 1 2	0.41		-0.05	0.88
Mother Kessler score	0.01	**	0.05	0.32	0.76	**	0.05	0.00
$(s^2, 5)$	0.20		0.23	0.52	0.20		0.22	0.27
(82-3) Fathar Kasalar soora	0.07	**	0.04	0.10	0.01		0.02	0.04
(a2, 5)	0.07		0.04	0.10	0.01		-0.02	0.04
(82-3) Constant	7.50	**	6.16	0.05	7 10	**	5.02	0.20
Constant	7.50	ጥጥ	0.10	8.83	/.10	ጥጥ	5.83	8.38
Random-effects na-	Fet	SE	95%	CI	Fet	SE	95%	CI
romotors	1236.		15 10	C1	1231.		15 10	UI.
1 a1117171 5								
sd(sween)	1 1 5	0.05	1.05	1 26	1.00	0.05	1.00	1 20
su(sweep)	1.1.5	0.05	1.05	1.20	1.07	0.05	1.00	1.40

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5. Children's socio-emotional development	nt
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		E	Boys			G	Firls	
Total difficulties	Coef.	P/SE ¹	95%	CI	Coef.	P/SE ¹	95%	CI
sd(constant)	4.54	0.16	4.24	4.86	4.41	0.15	4.12	4.71
corr(sweep,constant)	-0.65	0.03	-0.70	-0.59	-0.71	0.02	-0.75	-0.66
sd(residual)	2.69	0.04	2.61	2.77	2.51	0.04	2.44	2.59

¹= p-value for fixed effects and standard error for random effects $*=p\leq0.05$, $**=p\leq0.001$

Table 5.6 combines the gender attitudes and division of labour variables together, while additionally adjusting for family and socio-economic context. The associations between gender attitudes and SDQ remained in some cases but was diminished. For girls, mothers' and fathers' attitudes and the interaction between them remained significant but were reduced in this combined model. For boys, only mothers' gender attitudes remained significant after the adjustment for all the family context variables. For both boys and girls, mothers' work status remained significant, although fathers' work status was no longer significant. Parental education, income and the other additional family context variables all had some significant associations with children's total difficulties scores, which is in accordance with previous literature, and explains why some of the associations with paid labour were no longer significant. Despite this attenuation of the findings, these results still suggest that the gendered home environment is associated with child well-being, after adjusting for the family context, parental gender attitudes remained significant predictors for children's SDQ total difficulty scores as did maternal employment.

Lastly, given the strong findings in Chapter 5, between gender attitudes, the division of labour and parental mental health and relationship satisfaction, and given that parental mental health has been linked previously to children's mental health, parental mental health variables were added to create the final model in table 5.7. It was thought that parental mental health might mediate between parental gender attitudes and behaviours and child SDQ. However, even after checking for this mediation, some relationships between gender attitudes and behaviours and children's SDQ remained significant. Parents' mental health was of course strongly associated with the children's SDQ as suggested by the literature: all mental health variables

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for boys, and mothers' mental health for girls were significant. However, these results did not attenuate all the other relationships previously discussed. For boys the association with mothers' gender attitudes was reduced, but for girls both parents' gender attitudes and the interaction between them remained significant predictors of total difficulties. For girls maternal employment was explained by the mental health mediation in this model but for boys maternal employment remained a predictor of total difficulties.

Appendix C contains tables of the analyses of externalising and internalising behaviours. Generally, the results were broadly similar to the total difficulties results and to each other. For example, as in the total difficulties scores, in the final mental health adjusted models, mothers' gender attitudes and gender attitude concordance with her partner remained significant predictors for girls externalising and internalising difficulties while for boys the results had been attenuated by mental health.

5.7 Discussion

Consistent with previous studies, paid labour was positively associated with better socio-emotional outcomes for children. Children from households where both parents were not employed had the highest difficulties whereas children from dual earner households had the fewest difficulties. Interestingly, there was not much difference in total difficulties for either girls or boys between mother-led single earner households and father-led single earner households (i.e. no "male-breadwinner" benefit).

Parental attitudes to maternal employment were associated with children's SDQ scores over time. Attitudes against maternal employment were associated with greater difficulties for children. Prior to fully adjusting the models, there were several interactions with the gender home environment and changes over time in the children's SDQ trajectories, although these were not strong enough to remain sig-

nificant in the adjusted models. In models adjusted for a variety of family context variables, mothers' gender attitudes significantly predicted boys and girls SDQ scores, and fathers' attitudes remained a factor for girls, where in both cases negative attitudes were associated with higher SDQ difficulty scores.

Girls' results were similar to parents' well-being models discussed in chapter 5, with interactions between parents' attitudes, indicating discordance, associated with greater difficulties compared to children's whose parents had concordant attitudes. For girls, parental attitude discordance was associated with greater difficulties. Boys' difficulties were much more strongly shaped by the mothers' attitudes alone. When mothers had pro-employment attitudes, the fathers' attitudes did not generate differences in SDQ scores. However, as mothers' negative attitudes increased, boys with fathers who scored average or higher than average on the gender attitudes scale, indicating less egalitarian attitudes, boys scored significantly higher on total difficulties.

Domestic labour was not strongly associated with children's SDQ total difficulties scores, and only had mild associations when interacted with maternal labour. This is perhaps not surprising as it is possible that parental domestic labour changes over time but that is not measured as there were no repeat measures of domestic labour.

In the previous chapter it was found that parental mental health was strongly associated with the gender home environment variables. Therefore, it was hypothesized that the relationship between the gender home environment variables and child SDQ could be mediated by parental mental health. Parental mental health measured for both mothers and fathers at baseline using the Malaise Inventory, and repeated measures thereafter with the Kessler 6, were associated with children's SDQ total difficulties. However, even after allowing for this mediation, some significant direct associations with the gender home environment remained, suggesting some other process linking the gender home environment and children's socioemotional development.

Parental socio-economic variables were associated with children's SDQ scores, but they did not fully explain the relationships between the division of labour and gender attitudes variables had with SDQ. Parental mental health, which was strongly linked to gender attitudes in the previous chapter, although also strongly associated with children's SDQ outcomes, also did not fully explain the relationships observed either. It was hypothesized that parent mental health would mediate the relationship between unequal divisions of labour and non-egalitarian gender attitudes with child SDQ. However, some independent associations with gender attitudes and labour variables remained in these fully adjusted models. Externalising and internalising behaviours were also separately examined and can be found in the appendices; their results broadly correspond with the total difficulties results.

A strength of this research is that there were multiple sweeps of SDQ data to investigate changes over time in the associations between the gender home environment and children's SDQ difficulty scores. An unfortunate limitation of this research is that not all of the data was not longitudinal, which would have been interesting especially as gendered attitudes and behaviours can change over time for a variety of reasons such as a return to work when a child has entered school or family priority changes after additional children enter the home. This chapter linked gender attitudes and behaviours to children's socio-emotional development, linking previous literature which had separately linked gender attitudes to mental health and family satisfaction to children's well-being (Glass and Fujimoto, 1994; Paul and Moser, 2009; Claffey and Mickelson, 2009). Furthermore, it corresponds with the literature on parental depression and child mental health when the mediation analysis showed strong links between the parent mental health variables and children's SDQ scores (Sweeney and MacBeth, 2016; Cho et al., 2015).

This chapter has shown that the gender home environment of a child, made up of parental gender attitudes and paid and domestic labour behaviours, and the interactions between parents are associated with child socio-emotional outcomes. This links with the previous chapters' findings that these variables are associated with parental well-being, and begins to establish a picture of the gender home environment relating to family well-being and child development, which is the overarching aim of this thesis. The next and final analysis chapter will expand this research to consider a different kind of outcome. Moving away from well-being, chapter 6 will explore the gender home environment exposures and child cognitive development.

Chapter 6

Children's cognitive development

6.1 Summary

Introduction: This chapter explores whether parental gender attitudes and behaviours during a child's infancy are associated with children's cognitive test scores at age 7, whether such associations vary by gender, and whether they help explain gender differences in children's test scores.

Objective: To investigate whether the family gender environment acts as a predictor of children's cognitive development.

Methods: This study uses the UK Millennium Cohort Study, a nationally representative cohort study of children born between 2000-2002. Using data from sweep 1, when the cohort child was approximately 9 months old, baseline divisions of labour and parent gender attitudes are modelled as predictors of children's performance on BAS Word Reading and Pattern Construction and an abbreviated NFER Progress in Maths assessment at age 7. Data are modelled in STATA13 using linear regression and STATA13 survey setting tools to adjust for the structure of the data.

Results: Sex stratified models show that the interaction between maternal employment and domestic labour was marginally associated with girls' maths and pattern construction scores and was robust to parental socio-economic controls. Parental gender attitudes were also associated with children's cognitive scores, but were mostly explained when the parental controls were added, although a significant association between mothers' gender attitudes and girls' reading remained after adjustment. In gender difference models, maternal gender attitudes were associated with the difference between boys and girls reading, with gender differences in children's reading becoming more differentiated as attitudes against maternal employment increased. The difference between boys and girls in maths was slight and adding child gender interactions with the parental gender attitudes reduced the independent effect of gender, although the interactions themselves were only weakly associated with the outcomes.

Conclusions: This research extends the literature of parental gender attitudes and divisions of labour by demonstrating a link with childhood cognitive development in a recent UK cohort. In particular it highlights the role of parental gender attitudes as a predictor of the gender gap between boys and girls reading scores.

6.2 Introduction and hypotheses

This chapter investigates whether there is any relationship between the gender environment in the home, as measured by parental divisions of labour and gender attitudes, with children's cognitive outcomes at age 7. Previous research has identified associations between parental gender attitudes and divisions of labour with parent well-being and child social emotional development (e.g. Stevens et al., 2001; Kingsbury and Coplan, 2012; Hope et al., 2014). Parental divisions of labour and gender attitudes have also been linked to the child's labour market participation later in life (Johnston et al., 2014), but less is known about whether those differences may have precedent in earlier life cognitive development. This chapter aims to explore if parental divisions of labour and gender attitudes are linked to children's cognitive outcomes in preadolescence. Children's cognitive outcomes will be analysed both generally - answering whether or not divisions of labour and gender attitudes are associated with better test scores, as well as additionally focusing on whether the divisions of labour and gender attitudes can be used to explain gender differences in cognitive outcomes between boys and girls.

Despite general evidence that there are few gender differences in cognitive test scores among children (Hyde, 2005), there remains an interest in gender differences, and a belief in gender differences linked to social gender stereotypes (e.g.

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Department for Children and Families, 2007). Where gender differences do seem to exist they usually are identified at older ages, for example in OECD Programme for International Student Assessment (PISA) tests, and vary by country and region (Reilly, 2012). At older ages, children have already been exposed to years of gender socialisation in schools, via the media and in the home. Therefore, there is an interest in exploring gender differences at earlier ages. Evidence from the MCS has already shown that there are few gender differences in cognitive test scores and that where they exist they are fairly small (Hansen and Jones, 2010). If gaps in attainment are sex-based, then one would expect them to be universal, if they are gender related than they could vary socially and temporally, which is what is in fact generally seen in the literature (World Health Organization, 2015).

This research will add to the literature by exploring the relationship of cognitive outcomes with parental predictor variables related to gender, via both gender attitudes and behaviours (i.e. paid labour and domestic labour arrangements including interactions and care during infancy) in the context of other social economic indicators to investigate whether the gendered home environment is associated with cognitive test outcomes in pre-adolescent children. It also aims to see if variations in parents' gender attitudes and behaviours are linked to variations in children's attainment and in particular linked to any gender gaps or differences between boys and girls in cognition in the UK context.

Objective: To investigate aspects of the family gender environment as predictors of children's cognitive development and to assess the relationship between the family division of labour, parental gender attitudes and children's cognitive development, by the gender of the child.

Hypotheses:

 More egalitarian divisions of labour (e.g higher levels of maternal employment and greater partner engagement in domestic labour) will be associated with higher cognitive scores in children.

- 2. Less egalitarian gender attitudes to maternal employment, and/or conflicting attitudes between parents, will be associated with lower cognitive test scores in children.
- Less egalitarian divisions of labour will be associated with greater gender differences in children's cognitive outcomes.
- 4. Less egalitarian gender attitudes will be associated with greater gender differences in children's cognitive outcomes.

6.3 Methods

This chapter again uses the same baseline sample from the first sweep of the MCS used throughout the thesis. The only loss of sample size is down to missing outcome measures on the three cognitive tests (described below). As all the analyses will be done separately by cognitive test each will have it's own sample size, although all are quite similar and number over 9000.

6.3.1 Measures

This chapter uses the baseline variables that have been used throughout the study: domestic labour, gender attitudes to maternal employment, paid work, parental education, equivalized income, parental age, number of children and a stable family variable like the one introduced in the previous chapter. In addition this chapter also adjusts for child age and brings in new child cognitive outcome variables.

Child Age

The child's age in months at sweep 4 (when children are approximately 7 years old) is additionally controlled for, although the cognitive outcomes are standardised for age, they are standardized in three month age bands, so children's age in months is centred and added to the models.

Children's maths, word and pattern tests, age 7

Child cognitive outcomes were taken from the fourth sweep of the MCS when the child was 7 years old. Three cognitive assessments were used at this age. Firstly, the British Ability Scales (BAS) II sub-test in pattern construction, where the child is asked to replicate a pattern design as a measure of spatial problem solving (Connelly, 2013). Secondly, also from the BAS II, an achievement scale in word reading, where the child is asked to read a series of words presented to them to assess their reading knowledge (Connelly, 2013). Thirdly, the children completed a shortened version of a Progress in Maths (PiM) test, by the National Foundation for Education Research (NFER), which tested the child's mathematical skills and knowledge and was read aloud to the child by interviewers (Connelly, 2013).

Standardised scores have been adjusted for item difficulty and age. These measures are set as follows: BAS pattern Construction has a mean of 50 and SD of 10 banded between 10 and 80. BAS Word Reading and Progress in Maths had means of 100 and SD of 15. The BAS tests were normed using national data however, the maths results were normed using MCS data (because there was no national external sample to use). In the results we can therefore see that the maths score in our analysis sample is much closer to the 'norms' whereas the word and pattern results are higher than national averages. (Our achieved sample is biased towards higher education and income than would be expected in a nationally representative sample).

6.3.2 Analysis plan

The sample for this chapter was selected from the full MCS study according to the following criteria; firstly, had to be present in sweep 1 when the gender attitudes, division of labour etc. were measured (n=12014). Secondly, had to be present in sweep 4 for the outcomes (dropped 2723 n=9291). The final sample varied slightly for each cognitive measure as not everyone completed all cognitive tests. Numbers in each cognitive domain as well as the unweighted mean and standard deviations

can be found in table 6.1. Aside from the small numbers not completing individual cognitive tests, (missing test results ranged n=138 to n=273), the most significant drop of data between the baseline analytic sample and those present in sweep 4 and available for analysis in this chapter was down to attrition.

The analysis presents unweighted descriptives of the data for the sample across all three tests. For the remaining analyses, from a bivariate regression table throughout all of the remaining models, the complex sample structure of the MCS is accounted for by using STATA's survey settings. The MCS offers very good sampling and attrition adjusted weights for use with STATA's survey settings. A comparison of missing data between the baseline sample and the sample used in this chapter is available in appendix D. For the missing data comparison, the sample for the Word Reading test was used, as it was the test with the most missing responses out of the three tests used in the chapter.

The results are presented in two parts. First, linear regression models were used to investigate associations between divisions of labour and gender attitudes with child cognitive outcomes in sex stratified models to see whether our exposures of interest predicted cognitive outcomes. Sex stratified models were used in this first set of models to focus on the gender division of labour and gender attitudes variables as predictors of children's cognitive outcomes, while enabling the use of inter-actions without too many complex terms. For every outcome there are two sets of models, one which focuses on the gender division of labour, and the second which focuses on gender attitudes. In each set model 1 includes just the variables of interest with not interactions or controls. Model 2 includes the variables of model 1 plus interactions of interest. Model 3 includes models 1 & 2 and additionally controls for household/family context variables are not presented in the main text but full tables with all variables are found in appendix D.

The second part of the results section focuses on gender differences in the chil-

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dren and whether these gender differences can be explained by the family gender environment variables. Models were constructed to investigate whether cognitive test score differences between boys and girls could be explained by the inclusion of interactions between child gender and the gender home environment. This secondary analysis did not use the pattern construction tests as the gender difference in this outcome was very small, and the majority of the literature on gender differences focus on maths and reading.

Some additional analyses were also conducted and are located in appendix D, family context models in full (including the same context variables as in the first part of the analyses) were prepared. An additional model was also generated, testing the potential mediating role of parental mental health in associations between the family gender environment and children's cognitive outcomes. Although parental mental health was associated independently with children's cognitive outcomes, its inclusion in the additional model did not substantially change the main results of interest in this chapter, which is why they are only included in the appendix.

6.4 Descriptive results

Table 6.1: Means, standard deviations and correlations of cognitive test scores a	ıt
sweep 4 (age 7, unweighted)	

	N	M	SD	Word score	Pattern score	Math score
Word score	9018	112.95	17.61	1.00		
Pattern score	9112	54.07	10.86	0.32	1.00	
Math score	9138	99.10	15.45	0.51	0.46	1.00
— 11 (1 1		•				0.1.1

Table 6.1 shows the mean scores, standard deviations and correlations of the three cognitive tests for analysis in sweep 4. Additionally, T-tests were conducted to investigate group differences between boys and girls, which are shown in the descriptive table 6.2. On pattern construction the boys and girls were most similar, boys had a mean score of 53.77 (sd=11.18) and girls had a mean score of 54.38 (sd=10.51). Although this is a small difference, the p-value indicated a statistically significant difference (p=0.007). The maths scores showed slightly more variation by gender with boys (m=99.53 sd=16.00) scoring slightly higher than girls (m=98.67 sd=14.85), (p-value of difference =0.007). For both pattern construction and maths scores there was a slight overlap in the 95% confidence intervals. Nevertheless, when the survey adjusted bivariate regressions were run on both scores with gender as a predictor there was a small but significant effect of gender for both. Overall, when it comes to pattern construction and maths scores this simple analysis seems in keeping with the evidence that gender differences are small to non-existent in early years and where questions of gender may emerge it seems better to ask "which boys or which girls" than to talk simply of boys versus girls (Martino, 2008). For the word reading score, the gender gap was slightly larger than math and pattern construction. Girls had a mean score of 114.28 (sd=16.44) and boys average was m=111.64 (sd=18.60). The T-test p-value for difference on this test was $p \le 0.0001$. This is in keeping with previous research that has found some 166

evidence of a gender gap in reading. It also shows that the gender gap is still quite small given the range of the test scores and the standard deviation. The second half of this analysis will seek to identify what exposures might be linked to child gender that can explain this gap in achievement.

Table 6.2: Cognitive test scores at age 7 by exposure variables at T1 - age 9 months survey, unweighted

Exposures at T1	N=	%	Math	s	Word		Patter	m
			N=	M (SD)	N=	M (SD)	N=	M (SD)
Gender								
Boy	4702	50.61	4607	99.53 (16.0)	4548	111.64 (18.6)	4588	53.77 (11.2)
Girl	4589	49.39	4531	98.67 (14.9)	4470	114.28 (16.4)	4524	54.38 (10.5)
Mother in work (no)	3834	41.27	3748	96.99 (15.6)	3709	110.93 (18.5)	3737	52.81 (11.1)
Mother in work (yes)	5457	28.73	5390	100.57 (15.0)	5309	114.36 (16.8)	5375	54.95 (10.6)
Father in work (no)	930	10.01	893	94.14 (15.9)	880	106.53 (19.6)	885	50.87 (11.4)
Father in work (yes)	8361	89.99	8245	99.64 (15.3)	8138	113.64 (17.2)	8227	54.42 (10.7)
OECD income weighted								
quintiles*								
Lowest quintile	900	9.69	868	92.36 (16.0)	858	105.53 (19.3)	863	49.94 (11.1)
Second quintile	1883	20.27	1836	94.98 (15.6)	1804	107.55 (17.9)	1834	51.32 (10.6)
Third quintile	2111	22.72	2075	98.82 (15.1)	2054	111.70 (17.0)	2072	53.82 (10.6)
Fourth quintile	2234	24.04	2218	100.54 (14.7)	2187	115.37 (16.3)	2207	55.46 (10.4)
Highest quintile	2163	23.28	2141	104.15 (14.3)	2115	119.27 (15.8)	2136	56.93 (10.6)
Mother's highest NVQ								
level*								
None of these	841	9.05	805	91.22 (15.6)	800	103.63 (19.1)	802	49.11 (11.3)
Overseas qualifications	198	2.13	192	96.40 (17.8)	192	109.81 (18.9)	191	49.84 (10.9)
only								
NVQ level 1	593	6.38	577	94.80 (15.9)	568	106.07 (18.1)	574	51.04 (10.4)
NVQ level 2	2643	28.45	2593	97.42 (15.0)	2563	110.57 (17.2)	2587	53.23 (10.5)
NVQ level 3	1421	15.29	1404	99.26 (14.6)	1391	113.59 (16.4)	1400	54.27 (10.4)
NVQ level 4	3176	34.18	3156	102.61 (14.8)	3097	117.37 (16.3)	3144	56.25 (10.6)
NVQ level 5	419	4.51	411	104.97 (14.1)	407	121.53 (15.4)	414	57.89 (10.3)
Father's highest NVQ								
level*								
None of these	969	10.43	926	92.74 (15.8)	913	105.44 (18.8)	923	49.68 (10.9)
Overseas qualifications	257	2.77	250	94.99 (16.1)	248	108.48 (18.5)	248	51.21 (10.9)
only								

Exposures at T1	N=	%	Math	8	Word		Patter	m
			N=	M (SD)	N=	M (SD)	N=	M (SD)
NVQ level 1	586	6.31	574	95.77 (15.0)	573	107.09 (17.5)	579	50.60 (10.1)
NVQ level 2	2543	27.37	2512	97.60 (15.4)	2485	110.47 (17.0)	2500	53.31 (10.5)
NVQ level 3	1476	15.89	1449	99.04 (15.0)	1421	112.76 (17.1)	1442	54.40 (10.9)
NVQ level 4	2901	31.22	2873	102.29 (14.5)	2832	117.37 (16.4)	2866	56.37 (10.7)
NVQ level 5	559	6.02	554	105.44 (14.7)	546	122.49 (15.0)	554	57.02 (10.2)
Domestic labour division								
quintile	0541	27.25	2400	00.06 (15.6)	2116	112 00 (17 0)	0.470	50.00 (11.1)
lst (most egalitarian)	2541	27.35	2488	98.86 (15.6)	2446	112.80 (17.9)	2478	53.80 (11.1)
2nd	2162	23.27	2140	99.39 (15.3)	2105	113.88 (17.6)	2134	54.54 (10.6)
3rd	1404	15.11	1377	99.03 (15.4)	1364	113.17 (17.5)	1373	54.17 (10.8)
4th	1343	14.45	1322	99.14 (15.5)	1312	113.17 (17.5)	1321	54.07 (11.0)
5th (least egalitarian)	1841	19.81	1811	99.11 (15.5)	1791	111.72 (17.3)	1806	53.83 (10.7)
Family stable (by parent response)								
Remains stable	6210	66.84	6141	100.2 (15.0)	6044	114.64 (17.0)	6120	54.95 (10.6)
Changes in parents	3081	33.16	2997	96.82 (16.1)	2974	109.51 (18.3)	2992	52.30 (11.1)
Gender attitudes (to maternal employment), grouped								
Mother's 0-4 (most positive)	2347	25.26	2325	100.58 (15.1)	2287	113.76 (17.1)	2316	54.96 (10.6)
Mother's 5-8	5652	60.83	5540	98.76 (15.4)	5466	112.77 (17.7)	5524	53.97 (10.9)
Mother's 9-12 (least	1292	13.91	1273	97.88 (16.0)	1265	112.24 (18.0)	1272	52.90 (11.0)
positive)				(,				
	2002	22.52	2057	100 47 (15 5)	2021	114 01 (17 0)	2050	54 (0 (10 0)
positive)	2092	22.52	2057	100.47 (15.5)	2021	114.31 (17.3)	2058	54.68 (10.8)
Father's 5-8	5502	59.22	5417	98.96 (15.4)	5350	112.50 (17.8)	5398	54.00 (10.9)
Father's 9-12 (least	1697	18.26	1664	97.88 (15.5)	1647	112.73 (17.4)	1656	53.56 (10.8)
positive)								
Mother's work hours								
(grouped)								
(grouped) Not in work	2821	41.27	37/8	06.00 (15.86)	3700	110.03 (18.5)	2727	52 81 (11 1)
$\frac{1}{1000} \frac{1}{1000} \frac{1}{1000} \frac{1}{10000} \frac{1}{10000000000000000000000000000000000$	1002	41.27	1077	90.99 (13.80)	1051	110.95(10.3) 112.90(17.1)	1067	54.29 (10.4)
LOW p/t (U-19	1902	20.47	10//	79.13 (13.1)	1001	113.80 (17.1)	190/	34.38 (10.4)
High p/t (20.24	2022	21 77	2000	101 02 (14 9)	1070	114 70 (16 5)	1000	55 20 (10.9)
hours/week)	2023	21.//	2000	101.02 (14.8)	19/9	114.70 (10.3)	1998	55.29 (10.8)
F/T (35-44 hours/week)	1308	14.08	1292	100.90 (15.1)	1264	114.53 (17.1)	1290	55.18 (10.5)
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6. Children's cognitive development

Exposures at T1	N=	%	Math	S	Word		Patter	n
			N=	M (SD)	N=	M (SD)	N=	M (SD)
High f/t (45+	224	2.41	221	101.74 (14.6)	215	115.04 (16.5)	220	55.36 (10.8)
hours/week)								
Father's work hours								
(grouped)								
Not in work	930	10.01	893	94.14 (15.9)	880	106.53 (19.6)	885	50.87 (11.4)
Low p/t (0-19	119	1.28	117	96.84 (17.2)	113	110.19 (19.7)	116	52.22 (10.7)
hours/week)								
High p/t (20-34	348	3.75	341	97.09 (15.4)	337	112.07 (17.6)	338	53.00 (10.8)
hours/week)								
F/T (35-44 hours/week)	3469	37.34	3416	99.87 (15.5)	3373	114.22 (17.3)	3409	54.36 (10.8)
High f/t (45+	4425	47.63	4371	99.73 (15.1)	4315	113.40 (17.1)	4364	54.63 (10.7)
hours/week)								
Total	9291	100	9138	99.10 (15.4)	9018	112.95 (17.6)	9112	54.07 (10.9)

6.	Children'	s cognitive	development

Table 6.2 contains the total sample numbers for each test at age 7 (BAS Word Reading, BAS Pattern, and NFER Progress in Maths) by various exposures of interest. Across all tests children of employed mothers and fathers had higher mean scores than children with an out of work parent. Mean scores were also highest where a family was in the highest income group or where parents had a degree or higher degree. Patterns across domestic labour quintiles were not observed. Children in homes where the parents maintained the same pattern of responses across sweeps, that is, where both parents remained in the household and continued reporting as main and partner across all sweeps, formed our stable family group and had higher mean scores than those with changes in the household parental composition. For descriptive purposes, parental gender attitudes and work hours, which are continuous variables in the analyses have been grouped here. Regarding gender attitudes there appears overall a small trend in favour of egalitarian gender attitudes having higher test scores, however, this pattern is not overt. The expectation is that gender attitudes may interact with child gender, therefore, only minor results in combined analyses are not surprising. Regarding maternal employment hours, there is some evidence that mothers working full-time or even greater than fortyfive hours per week was associated with higher scores compared to non-workers. Although amongst working mothers only, children's cognitive score differences by work hour groups were small. For fathers the working hours trend was slightly more linear, with higher test scores at each increase in paternal work hours, although between full-time workers and high hours full-time workers differences narrow markedly. Table 6.3 below contains the results of bivariate regressions for each cognitive measure with exposures of interest and control variables. All of the exposures were significantly associated with test scores in these bivariate tests.

Variable	Progress in Maths						1 Readir	ıg	Pat	tern	Constru	ction
	В	Р	959	% CI	В	Р	959	% CI	В	Р	95	% CI
Gender (girl)	-0.89	*	-1.72	-0.06	2.91	*	2.07	3.76	0.52	*	0.01	1.03
Mother's gender attitudes	-0.31	**	-0.49	-0.13	-0.19	*	-0.39	0.00	-0.23	**	-0.34	-0.11
(high scores=more negative)												
Father's gender attitudes	-0.16	t	-0.33	0.00	-0.14		-0.33	0.04	-0.10		-0.23	0.02
Domestic labour												
1st quintile	ref.											
2nd quintile	0.73		-0.37	1.83	1.22		-0.02	2.45	1.22	**	0.52	1.91
3rd quintile	0.50		-0.62	1.61	1.03		-0.30	2.37	0.61		-0.23	1.44
4th quintile	0.60		-0.60	1.80	0.82		-0.56	2.20	0.49		-0.34	1.31
5th quintile	0.30		-0.67	1.28	-1.16		-2.37	0.04	0.23		-0.56	1.02
Mother in work (no)	ref.											
Mother in work (yes)	3.11	**	2.29	3.92	3.30	**	2.44	4.15	1.93	**	1.36	2.51
Father in work (no)	ref.											
Father in work (yes)	5.76	**	4.42	7.09	7.79	**	6.27	9.31	3.77	**	2.89	4.66
Mother's work hours	0.92	**	0.66	1.19	0.88	**	0.63	1.14	0.50	**	0.31	0.68
Father's work hours	0.52	**	0.29	0.77	0.54	**	0.27	0.81	0.45	**	0.30	0.60
Mother's education												
NVQ1 or equivalent	ref.											
NVQ 2 or equivalent	3.35	**	1.73	4.96	4.66	**	2.89	6.44	2.09	**	0.91	3.27
NVQ 3 or equivalent	4.85	**	3.12	6.59	7.09	**	5.18	8.99	3.03	**	1.71	4.36

Table 6.3: Bivariate associations with children's cog	gnitive test scores at age 7
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Variable	Pr	ogre	ss in Ma	ths		Word	l Readin	ıg	Patt	ern	Constru	ction
	В	Р	959	% CI	В	Р	95%	% CI	В	Р	959	% CI
NVQ 4 or equivalent	8.60	**	6.89	10.31	11.39	**	9.62	13.16	5.14	**	3.93	6.36
NVQ 5 or equivalent	11.76	**	9.36	14.16	15.98	**	13.58	18.37	7.04	**	5.53	8.55
Overseas qualification only	2.71		-0.52	5.94	3.28		-0.97	7.53	-1.29		-3.54	0.96
None of these	-3.01	*	-5.13	-0.90	-2.49	*	-4.66	-0.33	-2.27	*	-3.74	-0.79
Father's education												
NVQ1 or equivalent	ref.											
NVQ 2 or equivalent	1.04		-0.64	2.73	3.50	**	1.44	5.55	2.76	**	1.63	3.90
NVQ 3 or equivalent	2.99	**	1.39	4.59	5.51	**	3.48	7.54	3.76	**	2.78	4.74
NVQ 4 or equivalent	6.15	**	4.44	7.87	10.14	**	7.99	12.29	5.86	**	4.74	6.98
NVQ 5 or equivalent	10.39	**	8.28	12.51	16.07	**	13.58	18.55	6.84	**	5.49	8.19
Overseas qualification only	-1.39		-4.31	1.53	-0.27		-3.57	3.03	-0.04		-1.97	1.89
None of these	-3.73	**	-5.49	-1.96	-1.98		-4.28	0.32	-1.08		-2.34	0.18
OECD equivalised income												
1st quintile (lowest income)	ref.											
2nd quintile	3.40	**	1.83	4.97	2.88	**	1.15	4.62	1.85	*	0.70	3.01
3rd quintile	6.67	**	5.12	8.21	6.73	**	4.91	8.55	4.39	**	3.31	5.47
4th quintile	8.85	**	7.28	10.43	10.62	**	8.86	12.39	5.86	**	4.82	6.91
5th quintile (highest income)	12.91	**	11.37	14.45	14.65	**	12.88	16.41	7.60	**	6.50	8.71
Stable Family (yes)	3.85	**	3.05	4.64	5.50	**	4.62	6.38	2.74	**	2.22	3.26
child age	-0.49	**	-0.62	-0.36	-0.50	**	-0.64	-0.35	0.04		-0.05	0.13

N.B. All work hours results are presented scaled as 1 unit=10 hours

6.5 Results part 1 - boys and girls cognitive models

Parental division of labour and gender attitudes: associations with children's cognitive development

Table 6.4 show the results of the analysis of divisions of labour and children's Progress in Maths tests scores at age 7. Across models 1 and 2, for both boys and girls, there was a strong positive association of paternal employment with children's maths test scores with higher maths scores for children of employed fathers. However, there was no association with fathers' work hours. Conversely, for mothers there was no independent effect of mothers being in employment in model 1, but there was a positive association with mothers work hours on maths scores. There was no association between children's maths scores and the division of domestic labour. However, as previous literature and other work conducted for this thesis has shown, the effect of domestic labour can be modified by mother's employment status. To explore the domestic labour variable further in the second model an interaction term was added between the division of domestic labour and the binary mother in work variable. However, this interaction was not strongly significant, and as may have been the case in the previous SDQ chapter as well, this could be because domestic labour changes over time in the households but was unmeasured at later sweeps in the MCS.

The final model in table 6.4 added parental education and household income. It was hypothesised that these variables would explain at least some of the relationships between the division of labour and child cognitive outcomes. Aside from a small association for boys in the least egalitarian domestic labour quintile, the relationships between the division of labour and children's maths outcomes were fully attenuated by the parental education and income variables.

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	Model 1							Mo	del 2 (wit	h intera	ctions)			M	odel 3 (wi	th cova	riates)	
Variable		boys			girls			boys			girls			boys			girls	
	В	95	% CI	В	95	% CI	В	95	%CI	В	95	% CI	В	95	% CI	В	95	% CI
Mother in work (no)	ref.																	
Mother in work (yes)	1.07	-0.67	2.82	0.69	-1.04	2.41	3.20	-0.07	6.47	3.51	0.54	6.48	1.34	-1.67	4.36	1.50	-1.39	4.39
Father in work (no)	ref.																	
Father in work (yes)	6.29	3.29	9.29	4.09	1.31	6.87	6.02	3.00	9.05	3.58	0.76	6.40	1.80	-1.38	4.98	0.86	-1.84	3.56
Mother's work hours	0.76	0.18	1.33	0.82	0.23	1.41	0.61	0.02	1.21	0.67	0.07	1.26	-0.15	-0.73	0.43	0.03	-0.55	0.62
Father's work hours	-0.19	-0.73	0.34	-0.02	-0.47	0.43	-0.19	-0.73	0.34	0.00	-0.46	0.46	-0.45	-0.98	0.07	-0.36	-0.77	0.06
Domestic labour																		
1st quintile	ref.																	
2nd quintile	0.71	-0.84	2.26	1.20	-0.21	2.61	1.34	-1.63	4.32	2.58	-0.20	5.36	0.64	-2.19	3.48	1.40	-1.22	4.01
3rd quintile	0.78	-0.84	2.41	1.29	-0.38	2.96	2.27	-0.70	5.24	3.44	0.61	6.27	0.91	-1.85	3.67	2.23	-0.56	5.02
4th quintile	0.63	-1.11	2.38	1.71	-0.10	3.51	2.76	-0.34	5.86	4.05	0.92	7.19	1.36	-1.65	4.38	2.87	-0.14	5.88
5th quintile	1.72	0.15	3.28	0.63	-0.91	2.16	3.44	0.73	6.15	3.08	0.51	5.64	2.54	-0.04	5.12	2.25	-0.17	4.68
Mother work*domestic																		
labour																		
1st quintile, in work (ref)																		
2nd quintile, in work							-0.78	-4.52	2.96	-1.75	-4.86	1.36	-0.62	-4.24	3.00	-1.47	-4.40	1.46
3rd quintile, in work							-2.20	-6.19	1.80	-3.14	-6.45	0.16	-0.44	-4.23	3.35	-2.68	-5.92	0.56
4th quintile, in work							-3.56	-7.59	0.47	-3.56	-7.34	0.23	-2.05	-5.99	1.89	-3.04	-6.54	0.46
5th quintile, in work							-2.90	-6.34	0.55	-4.01	-7.14	-0.88	-1.38	-4.60	1.84	-3.01	-5.95	-0.08
Centered age	-0.46	-0.63	-0.28	-0.48	-0.65	-0.32	-0.45	-0.62	-0.28	-0.48	-0.65	-0.32	-0.39	-0.55	-0.23	-0.44	-0.60	-0.28
Constant	92.22	90.29	94.14	92.65	90.81	94.49	91.17	88.75	93.60	91.22	88.97	93.47	100.73	97.58	103.88	99.87	96.89	102.85

Table 6.4: Division of labour and children's Progress in Maths scores

N.B. All work hours results are presented scaled as 1 unit=10 hours. Model 3 additionally adjusted for parental education, household OECD equivalized income, whether the family is a stable family or changes at any point during the MCS, and children's age at the time of the test.

							Model 2 (with interactions)							Model 2 (with covariates)					
			Mo	del 1				Moo	del 2 (with	h intera	ctions)			Mo	odel 3 (wi	th cova	riates)		
Variable		boys			girls			boys			girls			boys			girls		
	В	95	% CI	В	95	% CI	В	95	%CI	В	95	% CI	В	95	% CI	В	95	% CI	
Mother's gender attitudes	-0.40	-0.66	-0.14	-0.10	-0.33	0.14	-0.87	-1.50	-0.24	-0.59	-1.19	0.01	-0.14	-0.76	0.47	0.02	-0.59	0.62	
(high scores=more																			
negative)																			
Father's gender attitudes	0.04	-0.20	0.28	-0.14	-0.36	0.08	-0.39	-0.99	0.20	-0.60	-1.18	-0.02	0.23	-0.33	0.79	-0.01	-0.60	0.58	
Gender attitudes interaction							0.07	-0.02	0.16	0.08	-0.01	0.16	-0.01	-0.09	0.07	0.01	-0.08	0.09	
Centered age	-0.48	-0.65	-0.30	-0.49	-0.65	-0.32	-0.48	-0.65	-0.30	-0.49	-0.66	-0.32	-0.39	-0.55	-0.23	-0.45	-0.61	-0.28	
Constant	101.73	3 99.79	103.68	100.13	3 98.40	101.86	104.42	2 100.64	108.20	103.01	99.45	106.56	101.34	97.34	105.33	100.45	5 96.25	104.65	

Table 6.5: Gender attitudes and children's Progress in Maths scores

N.B. All work hours results are presented scaled as 1 unit=10 hours Model 3 additionally adjusted for parental education, household OECD equivalized income, whether the family is a stable family or changes at any point during the MCS, and children's age at the time of the test.

Table 6.5 investigated the relationship between gender attitudes and maths scores. In model 1, mothers' gender attitudes negatively predicted maths scores for boys. For each unit increase of mothers attitudes towards maternal employment (increasing towards the belief that a mother should stay home) there was a 0.38 reduction in boys maths scores. There was no association between gender attitudes on girls maths scores. However, this initial model did not take into consideration the moderating effect of parents attitudes on each other. Therefore, the next set of models added the interaction term between parents attitudes that has been used throughout this project. The interaction term was not significant for girls, but this model did suggest a significant association between fathers' gender attitudes and girls maths. For boys, the negative association between mothers' attitudes and boys maths previously seen in model 1 is strengthened when the interaction with fathers' attitudes is considered as the interaction itself has a positive association (suggesting a slight lessening of the negative impact when parents attitudes are in agreement). Although the interaction was not significant in itself, an adjusted Wald test for the interaction parameters suggested some evidence in favour of keeping the interaction term in the model, this was mostly driven by the importance for maternal gender attitudes which strengthened in this model. The relationship between these variables and boys maths scores is plotted in figure 6.1. While this figure shows the weakness of the interaction (and overlapping confidence intervals) it does show the shape and direction of the parental gender attitudes association with boys maths scores, in particular the drop in boys scores when mothers' gender attitudes shift from being in favour of maternal employment to being against maternal employment (represented here by 1.5 standard deviations below and above average scores on the gender attitudes continuous variables).

In model 3 parental education and income and the stable family variables were added. As was found with the division of labour, education and income explained the remaining relationships between parental gender attitudes and maths test scores



Figure 6.1: Boys' Progress in Maths scores at age 7 by parental gender attitudes

(eliminating the association for mothers' attitudes and boys' scores and fathers' attitudes and girls' scores). However, this cannot be taken to assume that gender attitudes are not important as they are related to income and education, and income and education may be on the causal path between gender attitudes and maths outcomes. Although the interaction terms between parents' gender attitudes were not strongly associated with boys and girls outcomes they were left in the models for comparison with other cognitive outcomes. Final models were also checked without the interactions, but parental gender attitudes were equally non-significant in those models, so leaving the interactions in for comparison was not damaging to the gender attitudes in the final models as they were non-significant.

	Model 1							Мо	del 2 (wit	h intera	ctions)			Mo	del 3 (wi	th covar	riates)	
Variable		boys			girls			boys			girls			boys			girls	
	В	959	% CI	В	959	% CI	В	95	%CI	В	959	% CI	В	959	% CI	В	959	% CI
Mother in work (no)	ref																	
Mother in work (yes)	0.95	-0.89	2.78	1.17	-0.66	2.99	2.44	-1.06	5.93	2.12	-0.94	5.19	1.30	-1.28	4.73	0.55	-2.34	3.45
Father in work (no)	ref																	
Father in work (yes)	10.54	7.16	13.91	7.19	4.18	10.21	9.57	6.13	13.00	6.44	3.33	9.54	5.39	2.21	8.85	3.70	0.75	6.66
Mother's work hours	0.70	0.11	1.28	0.44	-0.17	1.04	2.31	1.09	3.53	1.21	0.02	2.39	0.41	-1.14	0.04	-0.49	-1.09	0.12
Father's work hours	-0.54	-1.13	0.06	-0.24	-0.72	0.24	0.00	-0.71	0.71	0.02	-0.58	0.62	-0.53	-1.39	-0.28	-0.56	-1.03	-0.08
Domestic labour																		
1st quintile	ref																	
2nd quintile	1.27	-0.47	3.02	0.93	-0.69	2.56	1.40	-2.11	4.91	1.89	-1.02	4.81	1.36	-1.74	4.78	0.73	-2.06	3.52
3rd quintile	1.17	-0.58	2.93	1.17	-0.71	3.06	1.83	-1.68	5.35	1.29	-1.87	4.45	1.11	-1.66	4.40	0.09	-2.94	3.11
4th quintile	0.05	-2.08	2.19	2.10	0.25	3.94	2.18	-1.53	5.90	3.39	0.38	6.40	1.59	-1.45	5.31	1.68	-1.19	4.55
5th quintile	-1.15	-3.05	0.74	-0.19	-1.89	1.52	0.05	-3.29	3.39	0.87	-1.80	3.53	-0.11	-2.75	3.21	-0.03	-2.56	2.49
Mother work*domestic																		
labour																		
1st quintile, in work (ref)																		
2nd quintile, in work							0.19	-3.92	4.31	-1.22	-4.61	2.16	-0.53	-4.71	2.94	-1.28	-4.48	1.93
3rd quintile, in work							-0.71	-5.25	3.84	0.25	-3.54	4.04	0.47	-4.00	3.88	0.46	-3.19	4.10
4th quintile, in work							-3.81	-8.35	0.72	-2.03	-5.69	1.63	-3.05	-7.74	0.50	-1.53	-4.97	1.91
5th quintile, in work							-2.14	-6.06	1.78	-1.68	-5.05	1.69	-1.04	-5.13	1.95	-1.04	-4.14	2.06
Mother*Father work hours							-0.04	-0.07	-0.02	-0.01	-0.03	0.00	-0.02	-0.04	0.00	0.00	-0.02	0.02
Centered age	-0.47	-0.67	-0.27	-0.48	-0.67	-0.30	-0.46	-0.66	-0.26	-0.48	-0.66	-0.30	-0.34	-0.53	-0.16	-0.48	-0.65	-0.30
Constant	102.97	7 100.49	105.45	107.53	105.50	109.55	100.73	3 97.64	103.82	106.37	7 103.88	108.87	111.95	108.30	115.60	116.17	112.77	119.57

Table 6.6: Division of labour and children's BAS Word Reading scores

N.B. All work hours results are presented scaled as 1 unit=10 hours. Model 3 additionally adjusted for parental education, household OECD equivalized income, whether the family is a stable family or changes at any point during the MCS, and children's age at the time of the test.

			Mo	del 1				Moo	del 2 (with	h intera	ctions)			Mc	del 3 (wi	th covar	iates)		
Variable		boys			girls			boys			girls			boys			girls		
	coef.	959	% CI	coef.	959	% CI	coef.	95	%CI	coef.	959	% CI	coef.	95% CI		coef.	959	% CI	
Mother's gender attitudes	-0.35	-0.64	-0.06	0.07	-0.21	0.34	-1.18	-1.99	-0.37	-1.01	-1.73	-0.29	-0.29	-1.05	0.46	-0.38	-1.08	0.33	
(high scores=more																			
negative)																			
Father's gender attitudes	0.02	-0.28	0.32	-0.17	-0.41	0.08	-0.75	-1.48	-0.03	-1.18	-1.83	-0.53	0.00	-0.68	0.68	-0.52	-1.20	0.16	
Gender attitudes interaction							0.13	0.01	0.24	0.16	0.06	0.27	0.04	-0.07	0.15	0.10	-0.01	0.21	
Centered age	-0.49	-0.69	-0.30	-0.50	-0.68	-0.31	-0.50	-0.70	-0.30	-0.50	-0.69	-0.31	-0.34	-0.53	-0.16	-0.49	-0.67	-0.32	
Constant	113.98	3 111.94	116.02	115.64	113.58	117.70	118.82	2 114.12	123.52	121.95	5 117.92	125.97	114.31	109.77	118.85	118.71	114.01	123.41	

Table 6.7: Parental gender attitudes and children's BAS Word Reading scores

N.B. All work hours results are presented scaled as 1 unit=10 hours. Model 3 additionally adjusted for parental education, household OECD equivalized income, whether the family is a stable family or changes at any point during the MCS, and children's age at the time of the test.

Table 6.6 shows the results of the analysis of the division of labour and children's BAS Word Reading tests scores at age 7. Children's word reading scores were not strongly linked to the division of labour in childhood. Fathers' employment status was the only consistent predictor for both boys and girls. For boys moving from model 1 to model 3 the coefficient for paternal employment ranged from 9.40 (95% CI 6.07 to 12.73) to 5.39 (95% CI 2.21 to 8.85). For girls the coefficients ranged from 6.62 (95% CI 3.59 to 9.65) to 3.70 (95% CI 0.75 to 6.66). Boys' word reading scores were additionally affected by a positive association with mothers' work hours in unadjusted models 1 and 2. Additionally for boys there was a small interaction between parents' work hours in model 2. This interaction means that while there is a positive relationship between mothers' work and boys' reading, as both mothers' and fathers' hours at work increased there was a slight negative association so both parents working long hours could reduce boys word reading scores. Although included in the models out of interest as important to hypotheses, the domestic labour variables independently and interacted with maternal employment were not significantly associated with the children's reading. Model 3 adjusted for education and income, for both boys and girls, the division of labour variables that remained significant were the fathers' employment variables, both being in work and work hours. Being in work was positively associated with children's reading scores, but father work hours were slightly negatively associated suggesting that while paternal work is beneficial, fathers working very long hours (which is quite common in the MCS) has some negative associations with children's word reading scores.

Similar to the maths results, boys' word reading scores were negatively affected by maternal gender attitudes in models 1 and 2 in table 6.7. However, unlike the maths results the interaction between parents' gender attitudes was also significant in model 2 for both boys and girls and additionally the gender attitudes of each parent were significant in this interaction model. The interaction showed that there was
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an effect of parental gender attitudes concordance. Mothers' and fathers' attitudes against maternal employment were negatively associated with children's word reading, the interaction of parental attitude concordance was slightly positive. These interactions are plotted in figures 6.2 and 6.3, they show that discordance between parents results in the lowest word reading scores for children, so that positive to maternal employment mothers with positive fathers results in the highest scores, while negative mothers and fathers had mid-range scores and discordant pairs (one more positive the other more negative) resulted in the lowest word reading scores. Model 3 adjusted for education and income and this reduced the impact of gender attitudes to non-significance in the models. This may suggest a likely confounding relationship particularly for income, while education may be confounding or indeed be on the causal path and operating through the gender attitudes variables.

Figure 6.2: Boys' BAS Word Reading at age 7 by parental gender attitudes



Boys' word reading tests by parental gender attitudes interactions with 95% CIs



Figure 6.3: Girls' BAS Word Reading at age 7 by parental gender attitudes

			Mc	del 1				Mc	del 2 (wit	h intera	ctions)	Model 3 (with covariates)						
Variable		boys			girls			boys			girls			boys			girls	
	В	95	% CI	В	95	% CI	В	95	%CI	В	95	% CI	В	95	% CI	В	95	% CI
Mother in work (no)	ref																	
Mother in work (yes)	1.06	-0.28	2.40	1.07	-0.18	2.31	2.74	0.56	4.91	2.80	0.68	4.91	1.44	-0.55	3.43	1.46	-0.62	3.53
Father in work (no)	ref																	
Father in work (yes)	2.25	0.27	4.23	2.02	0.11	3.93	2.03	0.01	4.05	1.71	-0.20	3.63	-0.84	-2.87	1.19	-0.21	-2.10	1.67
Mother's work hours	0.29	-0.15	0.72	0.24	-0.19	0.66	0.17	-0.25	0.60	0.15	-0.29	0.60	-0.26	-0.67	0.15	-0.26	-0.68	0.17
Father's work hours	0.14	-0.19	0.48	0.29	-0.03	0.61	0.15	-0.19	0.49	0.30	-0.02	0.62	-0.05	-0.38	0.28	0.16	-0.15	0.46
Domestic labour																		
1st quintile	ref																	
2nd quintile	1.03	0.10	1.96	1.29	0.21	2.37	1.77	-0.32	3.86	2.40	0.37	4.44	1.42	-0.52	3.35	1.61	-0.45	3.68
3rd quintile	0.66	-0.50	1.83	0.73	-0.49	1.95	1.22	-1.01	3.46	2.07	0.25	3.89	0.53	-1.57	2.62	1.27	-0.55	3.09
4th quintile	-0.09	-1.22	1.04	1.27	0.01	2.52	1.56	-0.62	3.74	2.82	0.80	4.83	0.90	-1.21	3.00	1.58	-0.45	3.61
5th quintile	0.24	-0.97	1.45	0.61	-0.55	1.76	1.81	-0.34	3.96	1.90	0.20	3.60	1.42	-0.61	3.44	1.19	-0.58	2.95
Mother work*domestic																		
labour																		
1st quintile, in work (ref)																		
2nd quintile, in work							-0.99	-3.40	1.41	-1.50	-3.88	0.88	-0.85	-3.05	1.36	-1.21	-3.62	1.19
3rd quintile, in work							-0.55	-3.41	2.30	-1.96	-4.22	0.31	0.40	-2.33	3.13	-1.48	-3.69	0.74
4th quintile, in work							-2.75	-5.55	0.04	-2.38	-4.81	0.05	-1.84	-4.50	0.82	-1.64	-4.03	0.74
5th quintile, in work							-2.81	-5.39	-0.23	-1.94	-4.24	0.37	-1.91	-4.26	0.44	-1.18	-3.48	1.12
Centered age	0.05	-0.07	0.16	0.05	-0.07	0.17	0.05	-0.07	0.16	0.06	-0.06	0.17	0.10	-0.01	0.21	0.06	-0.05	0.18
Constant	49.67	48.19	51.16	49.52	48.16	50.88	48.84	46.91	50.77	48.62	47.00	50.23	55.16	52.73	57.59	54.93	52.60	57.27

Table 6.8: Division of labour and children's BAS Pattern Construction scores

N.B. All work hours results are presented scaled as 1 unit=10 hours. Model 3 additionally adjusted for parental education, household OECD equivalized income, whether the family is a stable family or changes at any point during the MCS, and children's age at the time of the test.

			Мо	del 1				Мс	del 2 (wit	h intera	ctions)		Model 3 (with covariates)					
Variable		boys	ys girls		boys girls		boys		girls									
	В	95	% CI	В	95	% CI	В	95	5%CI	В	95	% CI	В	95	% CI	В	95	% CI
Mother's gender attitudes	-0.26	-0.43	-0.09	-0.19	-0.36	-0.01	-0.57	-1.09	-0.06	-0.14	-0.59	0.31	-0.19	-0.71	0.33	0.16	-0.27	0.59
(high scores=more																		
negative)																		
Father's gender attitudes	0.03	-0.16	0.22	-0.07	-0.24	0.11	-0.25	-0.70	0.20	-0.02	-0.45	0.40	0.08	-0.38	0.53	0.29	-0.13	0.70
Gender attitudes interaction							0.05	-0.03	0.12	-0.01	-0.07	0.06	0.01	-0.06	0.08	-0.04	-0.10	0.03

Table 6.9: Parental gender attitudes and children's BAS Pattern Construction scores

N.B. All work hours results are presented scaled as 1 unit=10 hours. Model 3 additionally adjusted for parental education, household OECD equivalized income, whether the family is a stable family or changes at any point during the MCS, and children's age at the time of the test.

-0.08

56.89 53.92 59.85

0.15

0.06 -0.06

55.53 52.87 58.19

0.18

0.11 0.00

55.28 52.10 58.47

0.22

0.07

-0.05

55.21 52.24

0.18

58.18

0.04

0.04 -0.08

55.11 53.70

0.15

56.53

0.06 -0.06

55.79 54.52

0.18

57.05

Centered age

Constant

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Lastly, children's BAS Pattern Construction scores were investigated. In table 6.8 model 1, there were very few associations between divisions of labour and children's pattern construction. There was a small association with the second domestic labour quintile for boys, which is somewhat hard to explain and may be spurious given the other quintiles were non-significant. Both boys and girls pattern construction was positively boosted by paternal employment. The second set of models included division of labour interactions. For both boys and girls in model 2 there was also a small interaction between parents work hours in an expected direction. Generally children do better on pattern tests as their parents work, however, when both parents work long hours there is a slight negative effect on children's pattern test scores. In model 3, when education and income are added to the models the division of labour associations were largely explained, similar to the results for maths and word reading.

In table 6.9, the gender attitudes models for pattern construction are presented. Although some associations were found for maternal gender attitudes and boys pattern construction scores, these were attenuated in the model adjusted for income and education. Paternal gender attitudes were not significant for boys, and girls pattern scores were not affected by maternal or paternal gender attitudes.

6.6 Results part 2 - exploring the gender gaps in reading and maths

Parental division of labour and gender attitudes: explaining gender differences in cognitive development

Table 6.10 shows the results of the linear regression models for gender differences in reading and the extent to which parental gender attitudes and divisions of labour explain them. These models used interaction terms to explore whether the parental gender attitudes and behaviours explained the observed gender differences in children's reading, by hypothesising that gender differences are at least partially developed as a result of the gendered home environment. Model 1 shows the result of linear regression with child age and gender with parental education and family income as the base model, (for child gender and age only see table 6.3). In models 2 and 3 the variables representing the gendered home environment are progressively added. In model 2, gender home environment variables (division of labour and gender attitudes) did not explain the gender difference in reading favouring girls. Child gender interactions were tested with the parental division of labour variables but they were not significant and are not included in the models. Lastly, model 3 tested for child gender interactions with parental gender attitudes, and the difference between boys and girls was explained by the child gender interaction with mother's gender attitudes. When mothers have positive attitudes towards maternal employment the gender difference in reading between boys and girls is negligible, the gap widens with mother's increasingly negative attitudes to maternal employment. The pattern of the interaction is displayed in figure 6.4.

Word Reading		Mode	1		Model	2	Model 3			
Variable	coef.	9	5% CI	coef.	95	5% CI	coef.	95	5% CI	
Gender (Girl)	2.98	2.19	3.76	2.96	2.18	3.75	1.84	-0.58	4.25	
Dad's gender attitudes (high scores=more negative)				0.15	-0.05	0.34)	0.21	-0.09	0.50	
Child gender*Dad gend atts										
Girl							-0.14	-0.50	0.22	
Mom's gender attitudes				0.07	-0.13	0.26	-0.10	-0.37	0.17	
Child gender*Mom gend atts										
Girl							0.34	-0.04	0.71	
Domestic labour										
1st quintile				ref.						
2nd quintile				0.30	(-0.88	to 1.48)	0.33	-0.84	1.51	
3rd quintile				0.52	(-0.76	to 1.79)	0.54	-0.74	1.81	
4th quintile				0.07	(-1.31	to 1.45)	0.08	-1.30	1.45	
5th quintile				-0.93	(-2.19	to 0.33)	-0.96	-2.22	0.30	
Mother's work hours/week				-0.36	-0.81	0.08	-0.40	-0.85	0.04	
Father's work hours/week				-0.72	-1.09	-0.36	-0.72	(-1.08	-0.35	
Mother in work (no)	ref.									
				0.08		(120	1 36	3.80	0.76	

Table 6.10: Gender differences in BAS Word Reading scores

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Word Reading	Model 1				Model 2	2	Model 3			
Variable	coef.	959	% CI	coef.	959	% CI	coef.	95	% CI	
6.83	ref.									
Father in work (no)										
Father in work (yes)				4.80	**	(2.67	6.92	6.30	3.67	
8.94										
Mother*father in work (yes)										
both in work							-3.94	-6.79	-1.09	
Mother's education										
NVQ1 or equivalent	-5.90	-7.61	-4.18	-6.09	-7.82	-4.37	-6.03	-7.78	-4.29	
NVQ 2 or equivalent	-2.98	-3.99	-1.97	-3.08	-4.10	-2.05	-3.07	-4.10	-2.05	
NVQ 3 or equivalent	-1.67	-2.87	-0.47	-1.70	-2.91	-0.50	-1.70	-2.91	-0.49	
NVQ 4 or equivalent	ref.									
NVQ 5 or equivalent	1.73	-0.11	3.58	1.84	0.00	3.69	1.83	-0.01	3.67	
Overseas qualification only	-2.82	-6.34	0.70	-3.23	-6.74	0.29	-3.08	-6.60	0.43	
None of these	-6.55	-8.35	-4.75	-6.87	-8.69	-5.05	-6.75	-8.56	-4.94	
Father's education										
NVQ1 or equivalent	-4.98	-7.02	-2.94	-4.60	-6.63	-2.58	-4.51	-6.54	-2.48	
NVQ 2 or equivalent	-3.08	-4.18	-1.99	-2.83	-3.95	-1.70	-2.81	-3.93	-1.68	
NVQ 3 or equivalent	-1.94	-3.25	-0.63	-1.82	-3.12	-0.51	-1.77	-3.07	-0.47	
NVQ 4 or equivalent	ref.									
NVQ 5 or equivalent	3.84	2.21	5.47	3.68	2.05	5.31	3.68	2.05	5.30	
Overseas qualification only	-5.12	-7.85	-2.38	-4.88	-7.64	-2.13	-4.86	-7.60	-2.12	
None of these	-5.58	-7.22	-3.93	-5.22	-6.88	-3.56	-5.14	-6.78	-3.49	

Word Reading		Model 1			Model	2	Model 3			
Variable	coef.	95	5% CI	coef.	95% CI		coef.	95	5% CI	
OECD equivalised income										
1st quintile (lowest income)	-3.21	-5.08	-1.35	-3.00	-5.20	-0.80	-2.53	-4.79	-0.28	
2nd quintile	-2.12	-3.36	-0.88	-2.36	-3.68	-1.04	-2.40	-3.72	-1.08	
3rd quintile	ref.									
4th quintile	1.75	0.61	2.88	2.00	0.85	3.14	2.06	0.91	3.21	
5th quintile (highest income)	3.71	2.53	4.88	4.20	2.98	5.42	4.29	3.07	to 5.52	
Centered age	-0.41	-0.55	-0.28)	-0.41	-0.55	-0.28	-0.41	-0.55	-0.28	
Stable family										
Stable (yes)	2.31	1.48	3.13	2.20	1.37	3.02	2.18	1.36	3.01	
Constant	114.11	112.8	115.4	111.83	108.7	114.9	110.99	107.5	114.4	

N.B. All work hours results are presented scaled as 1 unit=10 hours.

Figure 6.4: Children's BAS Word Reading at age 7 by child gender and mother's gender attitudes



BAS Word Reading by child gender and maternal gender attitudes

1										
	Model	1		Model	2		Model 3			
coef.	95	5% CI	coef.	9:	5% CI	coef.	95	5% CI		
-0.80	-1.58	-0.01	-0.80	-1.58	-0.02	-1.42	-3.72	0.87		
			0.13	-0.04	0.30	0.19	-0.05	0.44		
						-0.13	-0.44	0.18		
			-0.08	-0.25	0.10	-0.19	-0.44	0.05		
						0.24	-0.09	0.57		
			ref.							
			0.38	-0.67	1.42	0.39	-0.67	1.44		
			0.57	-0.56	1.71	0.58	-0.56	1.71		
			0.52	-0.62	1.66	0.52	-0.62	1.66		
			1.06	-0.00	2.13	1.05	-0.02	2.11		
			-0.01	-0.44	0.40	-0.02	-0.45	0.40		
			-0.39	-0.76	-0.03	-0.39	-0.75	-0.02		
			0.07	-1.10	1.24	0.83	-1.98	3.64		
	coef. -0.80	Model coef. 95 -0.80 -1.58	Model 1 coef. 95% CI -0.80 -1.58 -0.01	Model 1 coef. coef. 95% CI coef. -0.80 -1.58 -0.01 -0.80 0.13 -0.08 -0.08 -0.08 ref. 0.38 -0.57 0.52 1.06 -0.01 -0.039 -0.01	Model 1 Model coef. 95% CI coef. 92 -0.80 -1.58 -0.01 -0.80 -1.58 0.13 -0.04 -0.03 -0.04 -0.08 -0.25 -0.08 -0.25 ref. 0.38 -0.67 0.57 -0.56 0.52 -0.62 1.06 -0.00 -0.01 -0.44 -0.39 -0.76 0.07 -1.10 -0.07 -1.10	Model 1Model 2coef.95% CIcoef.95% CI-0.80-1.58-0.01-0.80-1.58-0.020.13-0.040.30-0.08-0.250.10-0.08-0.250.10ref.0.38-0.671.420.57-0.561.710.52-0.621.661.06-0.002.13-0.01-0.440.40-0.39-0.76-0.030.07-1.101.24	Model 1 Coef. 95% CI coef. 95% CI coef. -0.80 -1.58 -0.01 -0.80 -1.58 -0.02 -1.42 0.13 -0.04 0.30 0.19 -0.13 -0.080 -0.25 0.10 -0.13 -0.080 -0.25 0.10 -0.13 -0.08 -0.25 0.10 -0.19 -0.13 -0.08 -0.25 0.10 -0.19 -0.13 -0.08 -0.25 0.10 -0.19 -0.13 -0.08 -0.25 0.10 -0.19 -0.13 -0.08 -0.25 0.10 -0.19 -0.14 -0.08 -0.25 0.10 -0.19 -0.25 0.10 -0.19 -0.24 -0.24 -0.55 1.42 0.39 -0.56 1.71 0.58 0.52 -0.62 1.66 0.52 1.05 -0.39 -0.01 -0.44 0.40 -0.39 -0.39 -	Model 1Model 2Model $coef.$ 95% CI $coef.$ 95% CI $coef.$ 92 -0.80 -1.58 -0.01 -0.80 -1.58 -0.02 -1.42 -3.72 0.13 -0.04 0.30 0.19 -0.05 -0.13 -0.04 0.30 0.19 -0.44 -0.08 -0.25 0.10 -0.19 -0.44 -0.08 -0.25 0.10 -0.19 -0.44 -0.08 -0.25 0.10 -0.19 -0.44 -0.08 -0.25 0.10 -0.19 -0.44 -0.08 -0.25 0.10 -0.19 -0.44 -0.08 -0.25 0.10 -0.19 -0.44 -0.08 -0.25 0.10 -0.19 -0.44 -0.08 -0.25 0.10 -0.19 -0.44 -0.08 -0.25 0.10 -0.19 -0.44 -0.08 -0.25 0.10 -0.19 -0.44 -0.09 -0.57 -0.56 1.71 0.58 -0.56 0.52 -0.62 1.66 0.52 -0.62 1.06 -0.00 2.13 1.05 -0.02 -0.01 -0.44 0.40 -0.02 -0.45 -0.39 -0.76 -0.03 -0.39 -0.75 0.07 -1.10 1.24 0.83 -1.98		

Table 6.11: Gender diff	erences in	Progress	in Maths	scores

Maths		Model	1		Model	2		Model 3			
	coef.	9:	5% CI	coef.	95	5% CI	coef.	9:	5% CI		
Father in work (yes)				1.40	-0.79	3.59	1.71	-0.61	4.03		
Mother*Father in work (yes)											
both in work							-0.82	-3.47	1.84		
Mother's education											
NVQ1 or equivalent	-4.47	-6.08	-2.85	-4.43	-6.06	-2.79	-4.41	-6.04	-2.78		
NVQ 2 or equivalent	-2.41	-3.38	-1.43	-2.41	-3.41	-1.42	-2.41	-3.40	-1.42		
NVQ 3 or equivalent	-1.78	-2.79	-0.78	-1.78	-2.78	-0.78	-1.77	-2.78	-0.77		
NVQ 4 or equivalent	ref.										
NVQ 5 or equivalent	1.15	-0.53	2.83	1.17	-0.50	2.85	1.17	-0.50	2.85		
Overseas qualification only	-1.53	-4.09	1.03	-1.59	-4.14	0.97	-1.55	-4.09	1.00		
None of these	-5.71	-7.42	-4.01	-5.76	-7.50	-4.03	-5.75	-7.49	-4.01		
Father's education											
NVQ1 or equivalent	-2.06	-3.68	-0.44	-2.00	-3.63	-0.37	-1.98	-3.61	-0.35		
NVQ 2 or equivalent	-2.18	-3.26	-1.10	-2.10	-3.17	-1.04	-2.09	-3.16	-1.03		
NVQ 3 or equivalent	-0.94	-1.95	0.07	-0.88	-1.89	0.12	-0.88	-1.88	0.12		
NVQ 4 or equivalent	ref.										
NVQ 5 or equivalent	2.43	0.83	4.03)	2.42	0.82	4.01	2.42	0.83	4.01		
Overseas qualification only	-3.25	-5.61	-0.89	-3.25	-5.59	-0.91	-3.24	-5.57	-0.91		
None of these	-4.21	-5.59	-2.83	-4.18	-5.56	-2.79	-4.16	-5.54	-2.78		
OECD equivalised income											
1st quintile (lowest income)	-3.90	-5.47	-2.33	-4.13	-5.90	-2.36	-4.04	-5.84	-2.24		

Maths		Model 1 Model 2					Model 3			
	coef.	95	% CI	coef.	95% CI		coef.	95	% CI	
2nd quintile	-1.95	-3.12	-0.78	-2.07	-3.30	-0.83	-2.07	-3.30	-0.84	
3rd quintile	ref.									
4th quintile	0.68	-0.40	1.76	0.75	-0.33	1.82	0.76	-0.32	1.84	
5th quintile (highest income)	3.27	2.12	4.43	3.48	2.27	4.69	3.49	2.26	4.72	
Centered age	-0.43	-0.55	-0.30	-0.43	-0.55	-0.30	-0.43	-0.55	-0.30	
Stable family										
Stable	1.38	0.65	2.12	1.36	0.62	2.10	1.35	0.61	2.09	
Constant	101.46	100.2	102.7	100.95	98.4	103.5	100.97	97.9	104.0	

N.B. All work hours results are presented scaled as 1 unit=10 hours.

Figure 6.5: Children's Progress in Maths scores at age 7 by child gender and father's gender attitudes



Progress in maths by child gender/paternal gender attitudes interaction

Table 6.11 investigates the gender difference in children's maths scores. The initial gender difference in maths between boys and girls was not very large, adding the gendered environment variables and testing interactions between them and child gender, reduced the effect of gender. In addition to the gender effect being quite weak to begin with, the gendered home environment variables do not add much to the overall model. However, the father's gender attitude interaction with child gender could be considered as providing some evidence to explain the slight gender differences in maths at later ages. Figure 6.5 plots the interaction between child gender and fathers' gender attitudes to maternal employment. Although the confidence intervals touch at all levels of the fathers' gender attitudes, the plot is similar that of mothers' gender attitudes and child reading. In maths, the gender gap is narrowest between children of the most egalitarian fathers and widens as fathers attitudes tend against maternal employment.

6.7 Discussion

The purpose of this chapter was to explore whether parental gender attitudes and the gendered division of labour were associated with children's cognitive development and to examine whether these parental factors could explain any gender gaps in children's achievement. Parental involvement in the form of activities with children and mental health were also investigated as possible mediators, and although they can be important factors in children's cognitive development, for the most part they did not change the results in our models in terms of the exposures of interest, a table with these additional variables is included in appendix D.

This study contributes to the literature broadly in three significant ways. Firstly, it demonstrates that gender attitudes and the division of labour are linked to children's cognitive outcomes. Although many of these associations were attenuated by the addition of income and education into the models, this does not necessarily mean that the division of labour and gender attitudes are not important considerations for understanding child development. Income, education, labour and attitudes are all interrelated. Linking to the previous chapters, this work suggests a closer look at the gender home environment as one possible site for gender socialisation in children's cognitive development.

The finding that parental education and income attenuated many of the associations between the division of labour and children's cognitive outcomes does not suggest that the division of labour is unimportant. Rather as there are significant relationships between the division of labour, education and income (Sullivan, 2000a), it is possible that income and education are confounding results, or that education could actually act through the division of labour as education for many will have been completed before beginning work. Regarding income the relationships between these variables are complex and can be viewed as potentially bi-directional, especially in the context of families with young children. Paid labour can have obvious impacts on income but household income can also impact whether a mother participates in paid labour. This research cannot confirm any directionality between these variables as they were all measured at the same time at sweep 1.

With regards to the finding that effects of gender attitudes were no longer significant when education and income variables were added to the model two possible explanations can be made. Firstly, it is possible that there was confounding - that gender attitudes happen to be associated with income and education which are then in turn associated with children's outcomes. Secondly, as with the division of labour, there may be bi-directional relationships. The intergenerational transmission of gender attitudes have been found in several studies, so they may shape the education and career paths of individuals (Davis, 2007; Johnston et al., 2014; Davis and Wills, 2010). But gender ideologies can also change over time, as general trends move to more egalitarian ideologies, and education itself may change peoples gender ideologies (Moen et al., 1997). Therefore, disentangling bidirectional relationships between gender attitudes and education in particular can be very difficult, and due to the fact that all the parental covariates are taken from the same MCS sweep of data, it is a limitation of this study that directionality between the division of labour, gender attitudes and education and income variables cannot be considered.

The second contribution to the literature made in this chapter was uncovering the varying importance of the gender environment variables for boys and girls in sex stratified models. This suggests that there is a gender effect on when and how some children may be affected by their parents' attitudes and behaviours more than other children. This suggests that the gender home environment variables may in some ways be reflecting the gender socialisation of children within the home and how such gender socialisation can impact on cognitive outcomes.

6. Children's cognitive development

Thirdly, this research explored whether the attitude and behaviour variables, interpreted as partially representing the gendered home environment could explain some of the small but significant observed gender differences in reading and maths. Including child gender interaction terms with the gendered home environment variables resulted in good evidence that the difference between boys' and girls' reading ability is not natural but rather shaped by gender socialisation. Regarding word reading, the interaction between child gender and mothers' gender attitudes provided a very interesting picture to explain the gender differences observed between boys and girls reading abilities. As maternal attitudes against paid labour increased the gap between boys and girls widened quite sharply.

This research could be enhanced however, in a few ways. The division of paid labour could be looked at more closely taking advantage of the longitudinal nature of the data. Paid labour was used at 9 months in this chapter because it matched the domestic labour and gender attitudes questions, and because early life employment is often seen as a particularly important period. Unfortunately the MCS does not have domestic labour measured at later sweeps to study the full division of labour, but this research could be expanded or replicated in a cohort with more measures of domestic labour. Also a measure of domestic labour from the perspective of fathers would be beneficial. Likewise a study which could measure a greater range of parental gender attitudes, and gender attitudes over time, would be of great benefit as attitudes towards maternal work are only one dimension of gendered attitudes. Others such as stereotype associations with types of work, or gendered beliefs about personality traits may be more illuminating in terms of cognitive development. Lastly it would be interesting to see how gender gaps widen in adolescence and whether and to what extent the gendered home environment can be linked to such developments.

If we understand better the relationships of the gendered home environment and the gender gap in early years, it might help highlight possible ways to close

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the gap or prevent it from continuing to widen in adolescence. A gendered gap in achievement is something that can and should be stopped to enable boys and girls to achieve more equitable outcomes in later educational and career pursuits.

Chapter 7

Discussion and conclusions

7.1 Discussion

This thesis aimed firstly, to explore the attitudes and behaviours that shape the gendered division of labour in UK families, and secondly to investigate the potential impacts of these gender behaviours and attitudes on family well-being. Family well-being and development was explored using two measures for parents and two for children. Well-being was explored for both mothers and fathers using the Malaise Inventory, as a measure of mental health, and relationship satisfaction. For children, the Strengths and Difficulties Questionnaires were analysed, along with cognitive abilities using BAS Word Reading, Pattern Construction and NFER Progress in Maths.

7.1.1 Gender attitudes to maternal employment

The purpose of including gender attitudes in this thesis was to understand a vital aspect of the performance of labour in households. Gender role attitudes have long been hypothesized as markers of gender socialisation to be a driver for the continuing gendered division of labour despite women's increased participation in higher education and many employment fields. Theories of the division of labour based solely on gender neutral ideals of economic or time availability have been unable to explain the persistent gap between the domestic labour performed by women and men. Using attitudes to maternal employment this research adds to the literature by showing the importance of gender attitudes in predicting domestic labour independent of paid work and socio-economic factors.

The measure of gender attitudes used in the thesis was a composite variable of three questions on mother's happiness, child suffering and family well-being when a mother works. These three attitudes to maternal employment were asked of both mothers and fathers, allowing each parent to have their own gender attitude measure. Ideally, more gender attitudes questions could have been used, for example attitudes towards father involvement with children and domestic labour, parental earnings, or the importance of employment, labour or earnings for individual parents satisfaction. However, as a large national cohort study, the MCS simply could not ask a large battery of questions on gender role attitudes as it had so many other topics to cover. The benefit of such cohort studies are the freely available data for researchers across the country to engage with data on a large nationally representative dataset. The downside is that individual researchers do not always get every question they would like in the data. The limited nature of the MCS gender attitudes questions is not necessarily as negative as it may seem. Despite only having gender attitudes to maternal employment, the gender attitudes variables were consistently associated with many of our outcomes of interest in this thesis. These results suggest that gender attitudes are associated with family well-being and could also be used to promote further inclusion and investigation of gender attitudes on different topics, such as work roles, income, or domestic labour in future research.

Across the four analysis chapters of this thesis, results have shown associations between gender role attitudes and all the outcomes of interest explored. Gender attitudes towards maternal employment were associated with the unequal division of domestic labour in contemporary UK two parent families. Negative gender attitudes were also associated with parental malaise and relationship dissatisfaction for both mothers and fathers in the sample. Gender attitudes were also linked to children's SDQ scores, even after adjusting for family context and parental mental health. Lastly mother's gender attitudes were found to explain a gender gap in children's word reading. A major area of interest in this thesis concerned the concept of concordance which was tested in two ways in chapter 4: individual gender attitudes and the actual maternal employment in a household was associated with mothers' and

7. Discussion and conclusions

fathers' malaise and relationship satisfaction, as was parental concordance on gender attitudes. Furthermore, across all chapters, interactions between parents' gender attitudes had strong associations with the variables of interest - division of domestic labour, malaise and relationship satisfaction, children's SDQ scores, and some aspects of cognitive abilities.

That gender attitudes have an impact on the unequal division of labour is important because attitudes can be persistent not only in individuals but across generations. There is a growing body of evidence on the intergenerational transmission of gender role attitudes (Davis, 2007; Davis and Wills, 2010; Moen et al., 1997; Cunningham, 2001). Moreover, the intergenerational transmission of gender ideologies has been associated with children and young adults academic aspirations, career paths and employment engagement (Johnston et al., 2014; Montañés et al., 2012). This thesis is concordant with such research, especially in it's finding that maternal gender attitudes can shape children's reading behaviour and performance or engagement.

This thesis also tried to frame the exploration of parental gender attitudes and behaviours within the family gender environment as a site of gender socialisation. Following Bandura and Bussey's social cognitive theory explanations for gender socialisation, three modes of influence that shape gender socialisation were considered: models, enactive experience and direct teaching (Bussey and Bandura, 1999; Bandura and Bussey, 2004). The conceptualisation of the family gender environment as measured by parental gender attitudes to maternal labour and parental divisions of paid and domestic labour can be applied to these three modes of gender socialisation. Firstly, parents as models could directly represent a delineation of male and female typed labour if they had an unequal division of labour wherein, stereotypically, fathers performed the paid labour and mothers were responsible for the domestic labour, thus modelling gender stereotyped roles for children to observe in the family gender environment (Bussey and Bandura, 1999; Bandura

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and Bussey, 2004). The second mode of influence in gender socialisation is enactive experience wherein a child adopts socially sanctioned gender behaviours that are rewarded (Bussey and Bandura, 1999; Bandura and Bussey, 2004). This mode was harder to investigate in the data available, as we do not know whether or how parents might be rewarding gendered behaviour within the family. However, considering the finding on the gender gap in children's reading, it is clear that in households with egalitarian mothers, children perform equally well in reading, whereas in households with non-egalitarian mothers the gender reading gap is wider. It could be hypothesised and explored in future research whether in the reading behaviours of children in non-egalitarian households are differently rewarded or sanctioned by gender than in egalitarian households. The final mode of influence in gender socialisation is direct teaching (Bussey and Bandura, 1999; Bandura and Bussey, 2004). Direct teaching could explain how gender attitudes (that may or may not be in conflict with actual behaviours) may influence children as gender attitudes were associated with SDQ and some cognitive outcomes. How a parent's internal gender belief is translated to the child is unclear, but direct teaching (as well as enactive experience/rewarding perceived appropriate behaviours) may indicate a way forward for research to further investigate the pathways between parent gender attitudes and children's development.

The family gender environment therefore, provides an opportunity for conceptualising aspects of gender socialisation within the family home. This fits in well with the literature that has linked parental gender attitudes to child gender attitudes and gender preferences (Dawson et al., 2016) and career trajectories (Johnston et al., 2014). This also is congruent with findings that gender divisions in domestic labour having been linked to child gender socialisation (Dawson et al., 2015).

The associations between parental gender attitudes and children's outcomes were especially interesting considering this thesis was only able to use gender attitudes to maternal employment. Parental gender attitudes to maternal employment were treated as a marker of the gender home environment for children, but it is an admittedly narrow perspective on gender attitudes in the home. Strong results with this measure suggest that a more detailed measure of parental gender attitudes, such as gender attitudes to education, chores, play, clothing, sports etc. would provide many interesting avenues for further research.

7.1.2 Division of labour

This study found stark differences in division of labour across the cohort. For the most egalitarian families, fathers were sharing much of the domestic labour in the household (though still less than their partners) and paid labour was also shared. For many, an equitable division of paid and domestic labour was associated with greater relationship satisfaction, and a lower probability of having high malaise. However, in the least egalitarian domestic labour households, women reported doing the bulk of all household chores. Many of these women were not in work but some were, suggesting a 'double burden' is still a risk to some women. Most of the men in the least egalitarian group were in work, but there was a small percentage who were not in paid work, which could lead to a perception of unfairness in the division of labour, although it also suggests that some men may still be 'doing gender' (Arber, 1991). The imbalances in the performance of domestic labour and paid labour between men and women were observed using the lens of the Total Social Organisation of Labour (TSOL). The TSOL highlights the importance of studying all forms of labour rather than focusing on a traditional measurement of paid labour alone. This research confirmed the importance of this approach as without studying paid and domestic labour together, the efforts of women can be under recorded and under appreciated.

Paid labour was measured throughout the thesis by parental work hours per week, and an additional binary in/out of work variable to balance the analysis since paid labour was skewed by spikes at zero hours per week for those not in employment; particularly for the mothers. At the time the survey took place few women were on maternity leave as the statutory maternity leave policies at the time did not extend to nine months. A very small minority of about two percent of women were on leave, and the majority 97% were categorized as in work because they supplied enough information on other work variables to be counted as employed. The very small numbers of women on leave would be a result of employers having either extended maternity leave, or other types of unpaid or parental leave outside of the government requirements of the time. Paid labour was measured throughout the MCS but for the majority of the analysis in the thesis, paid leave was used only from data in sweep 1. For the analysis on parental mental health and relationship satisfaction this was because all the measures in the analysis were based in sweep 1. For the children's cognitive outcomes at age 7, the thesis focused on sweep 1 attitudes and behaviours as predictors for later child cognitive development because the gender attitudes and domestic labour variables were only available for the first sweep. Furthermore, there are often particular research questions of interest regarding maternal labour in the first year of life for a baby as opposed to maternal employment once children are in nursery and primary school.

The domestic labour measure included household chores such as cooking and cleaning, and infant care chores such as feeding the baby or getting up at night with the baby. These were combined into one variable with a continuous score ranging from least to most egalitarian. Due to the skew of the variable (towards mothers doing most domestic labour) the variable was cut into quintiles. Quintiles were chosen as five groups most suited the characteristics of the sample so that the fifth quintile was made up entirely of mothers who reported doing all domestic labour tasks, and the first quintile could be viewed as a relatively egalitarian group. The domestic labour measure was the only single report exposure of interest (gender attitudes and paid labour had reports from both parents). Unfortunately, the full list of questions on domestic labour were asked of the mothers only, the fathers were only

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asked a few of the baby care questions. Furthermore, they were not repeated at later sweeps, therefore, this variable was only available at the baseline.

Later sweeps of the MCS included parental involvement variables, which asked parents about participation in a variety of activities with children such as reading or play. These variables were considered but ultimately not incorporated into the main text of the thesis. In the analysis on parental mental health and relationship satisfaction in chapter 4 it would have been inappropriate to use additional variables of parental involvement from later sweeps as the analysis was cross-sectional using the first sweep data only. Chapter 6 on children's cognitive outcomes, focused on the predictors from sweep 1, to investigate gender attitudes, domestic labour and paid labour simultaneously. However, parental involvement is an important concept for cognitive development and could be linked to the division of labour (e.g. the parent with less paid work could be more involved, or fathers who participate in domestic labour may also be more likely to be involved). Therefore, a series of questions on parental activities with the child were added in a mediation analysis in appendix D. The inclusion of the mediation variables did not change the overall conclusions regarding the main exposures of interest and were therefore, placed in the appendix. Parental involvement is a very important concept for children's outcomes, and a more detailed analysis of divisions of labour and parental involvement would be very interesting. In particular, it would be useful for future analyses to have divisions of labour, childcare, gender attitudes and parental involvement variables all measured at the same time, as in this analysis the domestic labour and gender attitudes were measured before the parental involvement variables and not repeated at later sweeps.

Breastfeeding is another potential form of family labour that was not included in the analysis. Breastfeeding may be of interest to many as a form of labour that has a greater burden on mothers than fathers, however, due to some overlap with a domestic labour measure "most responsibility for feeding" an additional breastfeeding variable was not included in the analysis. The inclusion of breastfeeding could have masked the effects of divisions of domestic labour to some extent. Additionally, there were low levels of breastfeeding when the survey was taken. By age 9 months, when the first sweep of data was taken, 87.3% of women were not breastfeeding. 42.4% of women had ceased breastfeeding within days (or had never breastfeed at all), while a further 17.6% of women reported they had stopped breast-feeding within weeks (not months) while the remaining 27.3% had given up breast-feeding within months and before the time of the survey. With regards to maternal paid employment and breastfeeding, of the 12.7% of women still breastfeeding at age 9 months, 51.5% were not working, while 48.5% were working. There were some unadjusted associations between gender attitudes, domestic labour and breast-feeding variables, but the inclusion of breastfeeding in models did not affect the division of labour and gender attitudes variables of interest.

Aside from the effect that breastfeeding may have on the balance of labour between couples, there may be an interest in whether the omission of breastfeeding could be detrimental more generally as breastfeeding has been associated with certain benefits for children.

Whether a mother was still breastfeeding at nine months was not associated with the outcome variables used in chapter 4 (mother's and father's relationship satisfaction and psychological distress). Breastfeeding has been linked to certain aspects of children's developmental outcomes. In the MCS breastfeeding has been linked to fine motor skills (Sacker et al., 2006), which can be associated with later academic achievement (Cameron et al., 2012). Breastfeeding has also been associated with children's SDQ in the MCS (Heikkilä et al., 2011). Breastfeeding was excluded regarding children's outcomes, as the focus was on parental gender attitudes and divisions of labour with adjustment for parental socio-economic and psychosocial controls. However, as a check, children's total difficulties models were run with the addition of breastfeeding (at the time of the survey) to see if breastfeeding at the

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time of measurement of the other exposures affected any of the models in terms of the variables of interest (tables in appendix C). Breastfeeding was associated with the children's outcomes; however, it did not change the models or affect the significance (or non-significance) of the variables of interest in the thesis confirming that it did not need to be adjusted for in the main text.

The division of labour variables used in the thesis were chosen to represent significant aspects of the division of labour (hours spent in work, and 'who does what' housework and infant care) in efficient ways so that model parsimony could be maintained when adjusting for a variety of other relevant socio-economic and demographic characteristics. While the division of domestic labour was strongly associated with parents well-being, it was less linked to children's SDQ or cognitive outcomes. Suggesting that for these outcomes it may not be the most pertinent component of the gender home environment. It should not however be discounted as the division of domestic labour has been found to affect other areas of child development, such as their sibling relationships (Dawson et al., 2015). It could also be caused by limitations in the dataset. The parents outcomes, malaise and relationship satisfaction, were measured at the same time as domestic labour, but the questions were not repeated at the later sweeps when the children's outcomes were measured, so it is plausible that the domestic labour changed over that time. Certainly more mothers returned to work at later sweeps, and so may have demanded a more equitable division of labour. Also at later sweeps fathers may have become more involved as childcare transitioned from infant care to child education and play. More concurrent measurements of domestic labour would certainly aid future studies in this area.

7.2 Strengths and limitations

In chapter 3, the analysis was cross-sectional in nature. Unfortunately, all the variables of interest regarding the division of domestic labour and gender attitudes were contained in the same survey and did not repeat at later sweeps. Although we can not comment on causality, this research was able to demonstrate the interconnectedness of paid and domestic labour with gender attitudes combined with socioeconomic variables. Chapter 4 also presented cross-sectional analysis results and was therefore limited in the same way as the domestic labour analysis.

Chapters 5 and 6, were able to take advantage of the longitudinal nature of the MCS and were therefore able to examine childhood outcomes with parental baseline predictors measured during the cohort child's infancy. However, these studies would have benefited from more repeated measures as the temporal distance between the predictor variables and some of the outcomes was considerably long. It has been suggested that domestic labour patterns and gender attitudes may change overtime, and therefore, some of the weaker results, in particular for domestic labour, may have been related to behaviour change. Particularly, the burden in the first year of childrearing focused on feeding, cleaning and diaper changes, gives way to educational, sport and play interactions at later ages which may allow partners to share child-rearing tasks more evenly. Especially as children begin school and the bulk of childrearing happens outside of school hours when parental paid work is less of a barrier to child interactions.

Whether the observation of potentially egalitarian or potentially highly gendered behaviours and attitudes affects children was of interest to this study. However, whether any associations were the direct results of the parents attitudes and behaviours, or if parents gendered attitudes and behaviours were acting as markers of other gendered behaviours (e.g. gendered play, gendered school encouragement and household learning environment etc.) cannot be determined from this study

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alone and would be an interesting direction for future work.

Overall, one of the strengths of this thesis was the ability to use the UK's Millennium Cohort Study as a data source. Many of the previous studies related to the more novel aspects of this work, such as exploring the importance of concordant gender attitudes in couples, have previously only been done in small regional studies, generally in the US (Minnotte et al., 2010). It was also important to test these ideas in multiple outcomes domains, both relationship satisfaction and mental health in parents, and of particular interest, the extension to child socio-emotional and development outcomes.

An overall limitation of this work, was the lack of repeated measures on two of the three exposures of interest. Paid work was followed up regularly, and it is unsurprising that the best work on parental divisions of labour are often on paid work because the data available are so strong (Connolly et al., 2016; Norman et al., 2014). If data on domestic labour and gender attitudes were available and as regular as paid work data, it would open up very interesting new research directions for family health and well-being. Table A.5 in the appendix showed the changes in paid labour over time, and figures A.5 and A.6 showed the relationship between baseline gender attitudes and percentages of mothers and fathers in work over time. Although there is a strong link between the baseline gender attitudes and paid work over time, it is possible that gender attitudes and domestic labour also change overtime and that bidirectional relationships between labour and gender attitudes may lead to reciprocal changes across these measures.

The domestic labour measure was also limited in the data because it was only reported by the mothers. Therefore, when discussing and creating research questions on parental concordance the focus was on the gender attitudes to maternal labour (and actual maternal labour) because gender attitudes were measured in both parents. Actual maternal labour could be compared to both women's and men's gender attitudes in the chapter on concordance. Unfortunately, no such attitude/behaviour concordance could be investigated in relation to the division of domestic labour, as there were no attitudes to domestic labour measured and domestic labour behaviours were only reported by the mothers. Some but not all of the measures of interest on domestic labour were asked of the fathers at sweep 1. However, only using domestic labour measures reported by both parents would significantly reduce the domestic labour variable (essentially, restricting it to a few variables on baby care). Questions of gender attitude/behaviour concordance regarding domestic labour chores would be an interesting topic for future research if such variables became available.

7.3 Policy Implications and future research needs

Although family research has often overlooked the importance of fathers, whether deliberately or by lack of data, many researchers have been challenging this norm and drawing the father back into the family field and by extension, drawing the role of fathers into policy (O'Brien, 2009; Burghes et al., 1997; Neilson and Stanfors, 2014). This thesis highlighted the importance of paternal involvement in the household, benefits of paid employment of both parents, and the positive impact of egalitarian gender attitudes towards family and labour roles.

Mothers' and fathers' mental health and relationship satisfaction benefited from more equal divisions of domestic labour. Maternal employment was generally positive, except for those with attitudes strongly against maternal employment. This adds to the growing literature demonstrating needs for greater opportunities for sharing parental duties between partners. Although shared parental leave has recently become policy in the UK, there are still unfortunately limitations to the ability for parents to take and share leave. Even where leave is possible, fathers may not take leave due to workplace cultural practices. Policies that make paternal leave much more attractive could improve uptake greatly. For example, in Canada which

7. Discussion and conclusions

has had shared parental leave policies for a number of years, the take up and use of leave varies greatly. Across Canada take-up of parental leave by fathers was 30%, however, excluding Quebec that number was only 12%. This is because Quebec has additional benefits for fathers and families, including a father-only portion of leave with generous pay benefits in addition to the shared portion, this has allowed up to 83% of fathers in Quebec to take or intend to take parental leave (Lero, 2015). Many in the UK have called for similar policies or quotas for fathers which are also found in Scandinavian countries. This thesis would support these calls as gender equal work and domestic labour because they were found to have positive impacts on parental and family well-being.

Another important policy connection can be drawn from the results of gender attitudes on children. Positive parental gender attitudes to maternal work were associated with lower difficulty scores for children even after adjusting for parental mental health. Parental gender attitudes were also implicated in the gender gap in children's reading scores. Negative gender stereotypes remain in many academic areas (Retelsdorf et al., 2015; Wolter et al., 2015; Campbell, 2015), policies that challenge these stereotypes, particularly in schools when children are learning to read, could help reduce the long term consequences of later gender segregation in school subjects and academic and career pursuits. More research would be needed in this area to look at parental gender attitudes and adolescents. Nevertheless, parental gender attitudes have already been found to predict children's career outcomes later in life (Johnston et al., 2014), and now have been linked to reading, so it is an important area of research. Furthermore, there is strong evidence for the intergenerational transmission of gender attitudes (Cunningham, 2001; Johnston et al., 2014; Davis, 2007; Montañés et al., 2012), and as gender attitudes in this thesis were also linked to parental well-being measures, challenging negative gender attitudes and stereotypes could protect children from adopting attitudes which may negatively affect them later in life.

Future studies would benefit from acquiring more relevant measures of the gender home environment to clarify associations between potential forces of gender socialisation and children's socio-emotional well-being and cognitive development. More longitudinal cohort data with repeated measures on domestic labour and gender attitudes would also be beneficial so any effects of changes in domestic labour could be factored into future research.

7.4 Conclusions

This thesis aimed to synthesize the gendered division of paid work and unpaid domestic labour, parental gender attitudes and the combination of gendered attitudes and behaviours into the concept of a gender home environment and to test the effect of this environment with a variety of important family well-being and developmental outcomes. By exploring socio-demographic characteristics, the paid work of parents, and their gender beliefs in the context of the family unit, this study uncovered how the division of domestic labour is gendered by the beliefs of parents as well as socio-cultural paid work norms. Domestic labour has long been a subject of interest in many sociological fields but is under-represented in epidemiology and detailed quantitative data are rare. The effects of paid employment have been rigorously measured and studied, and by extending this knowledge to the variety of ways people spend their time when not in employment can enhance our knowledge of the impact of different modes of daily life on health across the life course. The gender home environment variables were linked to parental mental health measured by the Malaise Inventory, and relationship satisfaction with the GRIMS. Although these variables have been investigated in the literature before, this thesis is novel in bringing them together and highlighting the role of behaviour-attitude concordance within individuals, and attitude-attitude concordance within couples in a large UKrepresentative cohort study. This thesis also extended this research to children's

outcomes, focusing on their socio-emotional symptoms measured on the SDQ and cognitive outcomes at age 7. This research raises questions about the significance of gendered attitudes and behaviours in family health and well-being and could be extended with more longitudinal data and the inclusion of a greater range of gender attitudinal questions to improve family health and well-being, which will hopefully be taken up in further work by this author and indeed many others.

Appendix A

A.1 Analysis of missing data

The analysis of missing data table compares all potential couples in the first sweep of the MCS (n=12902) with the analytic sample used as the baseline sample for this thesis (n=12014). The difference between the sample size came from selecting only those individuals with the variables of interest measured as detailed in the sample flow chart in the main text. The vast majority of missingness between the two samples was due to people not completing the self completion section of the study which had several key variables and indicators including main exposures such as gender attitudes, as well as important outcomes such as mental health. This table shows that, on the whole, the potential sample and the selected sample are quite similar. There were no categories of any variable with percent differences over 3%, with most differences between the two samples at less than 1%.

	All pot	ential c	ouples N=12902	Baselir	ne couple	es N=12014	4 Baseline - all couples		
	N	%	Cu. %	Ν	%	Cu. %	% difference		
Main NS-SEC									
Not applicable/never worked **	1,126	8.73	8.73	712	5.93	5.93	n/a		
Manag & profl	4,118	31.92	40.64	4,011	33.39	39.62	1.47		
Intermediate	2,373	18.39	59.04	2,293	19.09	58.41	0.7		
Sm emp & s-emp	507	3.93	62.97	484	4.03	62.44	0.1		
Lo sup & tech	673	5.22	68.18	652	5.43	67.87	0.21		
Semi-rou & routine	4,105	31.82	100	3,862	32.15	100	0.33		
Partner NS-SEC									
Not applicable/never worked **	286	2.22	2.22	84	0.7	0.7	n/a		
Manag & profl	4,847	37.57	39.78	4,720	39.29	39.99	1.72		
Intermediate	664	5.15	44.93	632	5.26	45.25	0.11		
Sm emp & s-emp	1,648	12.77	57.7	1,540	12.82	58.07	0.05		
Lo sup & tech	2,003	15.52	73.23	1,910	15.9	73.97	0.38		
Semi-rou & routine	3,454	26.77	100	3,128	26.04	100	-0.73		
Main highest education/NVQ									
Don't know	3	0.02	0.02	0	0	0	-0.02		
Partial interview	1	0.01	0.03	0	0	0	-0.01		
NVQ level 1	882	6.84	6.87	822	6.84	6.84	0		
NVQ level 2	3,651	28.3	35.17	3,468	28.87	35.71	0.57		
NVQ level 3	1,884	14.6	49.77	1,796	14.95	50.66	0.35		
NVQ level 4	3,998	30.99	80.75	3,842	31.98	82.64	0.99		
NVQ level 5	532	4.12	84.88	511	4.25	86.89	0.13		
Overseas qual only	389	3.02	87.89	304	2.53	89.42	-0.49		
None of these	1,562	12.11	100	1,271	10.58	100	-1.53		

Table A.1: Sample missingness: all potential couples comared to those selected in the baseline couples

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	All pot	ential cou	ples N=12902	Baselin	ne couples	s N=12014	Baseline - all couples
	N	%	Cu. %	Ν	%	Cu. %	% difference
Partner highest educa-							
tion/NVQ							
Refusal	8	0.06	0.06	0	0	0	-0.06
Don't know	6	0.05	0.11	0	0	0	-0.05
Partial interview	6	0.05	0.16	0	0	0	-0.05
NVQ level 1	859	6.66	6.81	797	6.63	6.63	-0.03
NVQ level 2	3,484	27	33.82	3,321	27.64	34.28	0.64
NVQ level 3	1,969	15.26	49.08	1,891	15.74	50.02	0.48
NVQ level 4	3,685	28.56	77.64	3,516	29.27	79.28	0.71
NVQ level 5	736	5.7	83.34	691	5.75	85.03	0.05
Overseas qual only	458	3.55	86.89	367	3.05	88.09	-0.5
None of these	1,691	13.11	100	1,431	11.91	100	-1.2
OECD equivalized income							
Not applicable	15	0.12	0.12	0	0	0	-0.12
Lowest quintile	1,590	12.32	12.44	1,337	11.13	11.13	-1.19
Second quintile	2,914	22.59	35.03	2,606	21.69	32.82	-0.9
Third quintile	2,878	22.31	57.33	2,742	22.82	55.64	0.51
Fourth quintile	2,838	22	79.33	2,743	22.83	78.48	0.83
Highest quintile	2,667	20.67	100	2,586	21.52	100	0.85
Main any work hours							
0 hours	5.868	45.48	45.48	5.259	43.77	43.77	-1.71
Any work hours	7,034	54.52	100	6,755	56.23	100	1.71
Partner any work hours							
0 hours	1,598	12.39	12.39	1,386	11.54	11.54	-0.85
Any work hours	11,304	87.61	100	10,628	88.46	100	0.85
Main ethnicity							

Table A.1: Sample missingness: all potential couples comared to those selected in the baseline couples
	All pot	ential c	ouples N=12902	Baselin	e couple	es N=12014	Baseline - all couples
	N	%	Cu. %	Ν	%	Cu. %	% difference
Refusal	1	0.01	0.01	1	0.01	0.01	0
Don't know	21	0.16	0.17	21	0.17	0.18	0.01
Not applicable	3	0.02	0.19	2	0.02	0.2	0
White	11,052	85.66	85.85	10,630	88.48	88.68	2.82
Mixed	88	0.68	86.54	80	0.67	89.35	-0.01
Indian	358	2.77	89.31	290	2.41	91.76	-0.36
Pakistani and Bangladeshi	855	6.63	95.94	564	4.69	96.45	-1.94
Black or Black British	254	1.97	97.91	213	1.77	98.23	-0.2
Other group	270	2.09	100	213	1.77	100	-0.32
Partner ethnicity							
Refusal	3	0.02	0.02	1	0.01	0.01	-0.01
Don't know	21	0.16	0.19	21	0.17	0.18	0.01
Not applicable	1	0.01	0.19	1	0.01	0.19	0
White	10,998	85.24	85.44	10,589	88.14	88.33	2.9
Mixed	91	0.71	86.14	82	0.68	89.01	-0.03
Indian	365	2.83	88.97	299	2.49	91.5	-0.34
Pakistani and Bangladeshi	867	6.72	95.69	573	4.77	96.27	-1.95
Black or Black British	301	2.33	98.02	253	2.11	98.38	-0.22
Other group	255	1.98	100	195	1.62	100	-0.36
Main respondent							
Female	12,897	99.96	99.96	12,010	99.97	99.97	0.01
Male	5	0.04	100	4	0.03	100	-0.01

Table A.1: Sample missingness: all potential couples comared to those selected in the baseline couples

**In all couples= non applicable (i.e. refusals, never worked, not applicable other etc.), in Baseline = Never worked (including students) Therefore, I did not calculate a % difference as they are not really comparable groups "never worked" was a group I added based on additional NS-SEC details found in the expanded variables. N.B. Where the main respondent was male in all analyses variables were swapped so in thesis all headings are mothers and fathers. |P|

A.2 Reasons mothers return to work or stay home

Mothers work status	Ν	%
Mothers in work	6755	
Main reasons in work		
We/I needed the money	2144	31.7
Used up all maternity leave	1881	27.9
Maternity pay/allowance ended	623	9.2
No reason given*	622	9.2
Enjoy working/wanted to return	615	9.1
Employer wanted me to return	283	4.2
Wanted to get out of house	189	2.8
Other reasons*	388	5.7
Mothers not in work	5233	
Main reasons not looking for work		
N/A (looking for work & already decided to return)	1084	20.6
Prefer to look after child	3599	68.4
Prefer not to work	116	2.2
Poor health	106	2.0
Cannot earn enough for childcare	91	1.7
Other reasons*	263	5.0

Table A.2: Main reasons mothers return to work or stay home

*Other reasons to return to work included: it would hurt career not to return, had childcare arranged, and psycho-social reasons. Other reasons to not return to work included: in education, training, pregnant, can't find childcare and psycho-social and family reasons.

A.3 Supplementary descriptive graphs: distributions

of continuous exposures

Figure A.1: Maternal paid work hours









Figure A.3: Maternal gender attitudes





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Variable	Mother Work	Father Work	Mother Gender	Father Gender
	hours	hours	Att.	Att.
Maternal work hours	1.00			
Paternal work hours	0.11	1.00		
Maternal gender atti-	-0.42	-0.03	1.00	
tudes				
Paternal gender attitudes	-0.38	-0.01	0.42	1.00

Table A.3: Paid work and gender attitudes correlations

A.4 Full table of the predictors of the domestic division of labour

	Q1 -	mos	t egali	tarian	an Q2				Q3				Q4		
Variable	RRR		959	% CI	RRR		95%	% CI	RRR		95%	% CI	RRR	95%	6 CI
Mother's work hours	2.97	**	2.01	4.36	1.40		0.99	1.99	1.50	*	1.04	2.18	1.02	0.70	1.47
Father's work hours	0.48	**	0.37	0.59	0.70	*	0.55	0.90	0.83		0.63	1.09	1.12	0.84	1.48)
Parent's work hours interac- tion	0.99		0.99	1.00	1.00		0.99	1.00	1.00		0.99	1.00	1.00	1.00	1.00
Mother's work hours (squared)	0.99	*	0.98	1.00	1.00		0.99	1.00	0.99		0.99	1.00	1.00	0.99	1.00
Father's work hours (squared)	1.00	*	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Mother in work (binary) No Yes	1.00 0.50	*	0.31	0.79	1.00 0.94		0.65	1.36	1.00 0.95		0.62	1.45	1.00 1.29	0.89	1.87
Father in work (binary) No Yes	1.00 2.48	*	1.28	4.81	1.00 1.72		0.82	, 3.60	1.00 1.15		0.52	2.55	1.00 0.86	0.36	2.03
Mother's gender attitudes Father's gender attitudes	0.76 0.74	** **	0.69 0.68	0.84 0.82	0.84 0.83	** **	0.76 0.76	0.93 0.90	0.82 0.81	** **	0.74 0.74	0.91 0.89	1.03 0.99	0.93 0.90	1.15 1.10
Parent's gender attitudes (interaction)	1.02	*	1.01	, 1.04	1.02	*	1.00	1.03	1.03	**	1.01	1.04	1.00	0.98	1.01

Table A.4: Predictors of domestic division of labour

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	Q1 -	mos	t egali	tarian		(Q2				Q3			(Q4	
Variable	RRR		95%	6 CI	RRR		95%	6 CI	RRR		95%	6 CI	RRR		95%	6 CI
Mother's NS-SEC (social																
classs)																
Never worked	0.86		0.59	1.24	0.68	*	0.49	, 0.96	1.00		0.69	1.44	1.26	(0.89	1.78
Semi-routine and routine	1.00				1.00				1.00				1.00			
Low supervision and techni- cal	1.02		0.73	, 1.43	1.19		0.88	1.59	1.00		0.72	1.40	0.82	(0.56	1.19
Small employer and self employed	0.69	†	0.48	1.00	1.03		0.76	1.40	1.02		0.70	1.48	1.15	(0.83	1.59
Intermediate	0.96		0.77	1.19	1.13		0.91	1.41	1.17		0.94	1.46	1.33	*	1.05	1.68
Managerial and professional	1.03		0.82	1.29	1.26	*	1.02	1.54	1.09		0.88	1.35	1.21		0.97	1.51
Father's NS-SEC (social class)																
Never worked	1.34		0.53	3.35	1.70		0.72	4.01	1.11		0.45	2.70	1.56	(0.57	4.27
Semi-routine and routine	1.00				1.00				1.00				1.00			
Low supervision and techni- cal	0.90		0.72	1.11	0.97		0.78	1.20	0.99		0.80	1.24	0.97	0	0.78	1.20
Small employer and self employed	0.44	**	0.36	0.55	0.80	*	0.64	0.99	0.78	*	0.62	0.98	0.89	(0.70	1.13
Intermediate	0.82		0.59	1.15	0.97		0.69	1.36	0.76		0.51	1.14	0.99	(0.63	1.55
Managerial and professional	0.69	**	0.55	0.87	1.01		0.80	1.27	0.94		0.74	1.19	1.08	0	0.85	1.37
Mother's highest educational qualification																
NVQ level 1	1.00				1.00				1.00				1.00			
NVQ level 2	0.80		0.60	1.08	0.68	*	0.51	0.91	0.76		0.56	1.04	0.73	*	0.55	0.96
NVQ level 3	0.82		0.60	1.13	0.61	**	0.45	0.81	0.75		0.55	1.04	0.68	*	0.50	0.94
NVQ level 4	0.77		0.56	1.06	0.67	*	0.49	0.91	0.80		0.58	1.11	0.77	(0.57	1.06
NVQ level 5	0.88		0.53	1.48	1.04		0.62	1.75	0.80		0.46	1.41	1.11		0.68	1.82
Overseas qual only	1.21		0.74	1.99	1.21		0.75	1.97	0.94		0.52	1.71	1.01		0.56	1.82
None of these	1.22		0.88	1.67	0.99		0.71	1.39	1.02		0.71	1.46	1.11		0.80	1.54

| **P**

	Q1 -	mos	st egali	tarian		(Q2		Q3				Q4			
Variable	RRR		95%	6 CI	RRR		959	% CI	RRR		959	% CI	RRR		95%	6 CI
Father's highest educational qualification																
NVQ level 1	1.00				1.00				1.00				1.00			
NVQ level 2	1.33	*	1.01	1.74	1.19		0.90	1.58	1.07		0.82	1.40	1.19	(0.88	1.60
NVQ level 3	1.49	*	1.12	1.98	1.52	*	1.12	2.06	1.24		0.89	1.72	1.06	(0.75	1.49
NVQ level 4	1.47	*	1.08	2.00	1.37	*	1.01	1.86	1.20		0.89	1.63	1.34	(0.96	1.86
NVQ level 5	1.65	*	1.11	2.46	1.58	*	1.04	2.41	1.68	*	1.11	2.53	1.30	(0.80	2.11
Overseas qual only	1.34		0.85	2.12	1.26		0.80	1.96	0.88		0.53	1.48	0.98	(0.57	1.67
None of these	1.14		0.80	1.61	1.09		0.77	1.56	0.88		0.61	1.26	1.01	(0.71	1.43
OECD equivalised income 1st quintile (lowest income) 2nd quintile	1.00 1.03		0.77	1.38	1.00 1.18		0.90	1.55	1.00 1.39	*	1.04	1.86	1.00 0.96	(0.68	1.35
Ath quintile	0.87		0.04	1.10	1.12		0.05	1.47	1.20		0.91	1.75	1.07		J.73	1.32
5th quintile (highest income)	1.05		0.39	1.10	1.08		0.80	1.43	1.18		0.85	1.98	0.94	().62).65	1.43
Mother's age Father's Age	0.99 1.01		0.97 1.00	1.01 1.03	0.99 1.00		0.97 0.99	1.00 1.02	1.01 0.99		0.99 0.98	1.03 1.01	1.01 1.00	().99).98	1.03 1.01
Number of children in house- hold																
1 child	1.00				1.00				1.00				1.00			
2 children	0.66	**	0.57	0.77	0.79	*	0.68	, 0.91	0.82	*	0.70	0.96	0.90	(0.76	1.06n
3 or more	0.64	**	0.51	0.80	0.64	**	0.53	, 0.77	0.71	*	0.57	0.89	0.78	* ().64	0.95
Constant	73.69	**	27.49	197.6	16.82	**	6.86	41.2	5.19	**	1.93	14.00	0.55	(0.22	1.35

N.B. Reference category is domestic labour quintile 5, the least egalitarian quintile. All work hours variables are scaled so 1 unit=10 hours. ** $p \le 0.001 * p \le 0.05$

A.

A.5 Longitudinal extensions of analysis of divisions of paid labour and the relationship between gender attitudes and paid work

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Household labour	Swe	ep 1	Sw	eep 2	Sw	eep 3	Sw	eep 4	Sw	eep 5
(by parent work hours)	Child age	9 months	Child ag	ge 3 years	Child a	ge 5 years	Child ag	ge 7 years	Child ag	e 11 years
Woman 0/man 0	999	8.32	458	5.55	446	5.36	351	4.81	356	5.28
Woman 0/man FT	3,912	32.56	2,481	30.08	2,256	27.11	1,580	21.67	1,106	16.41
Woman 0/man PT	348	2.90	245	2.97	208	2.50	188	2.58	208	3.09
Woman FT/man 0	156	1.30	90	1.09	99	1.19	80	1.10	120	1.78
Woman FT/man FT	1,647	13.71	1,064	12.90	1,082	13.00	1,192	16.35	1,295	19.21
Woman FT/man PT	104	0.87	83	1.01	105	1.26	91	1.25	144	2.14
Woman PT/man 0	231	1.92	108	1.31	130	1.56	127	1.74	170	2.52
Woman PT/man FT	4,445	37.00	3,517	42.64	3,782	45.44	3,465	47.52	3,123	46.34
Woman PT/man PT	172	1.43	203	2.46	215	2.58	217	2.98	218	3.23
Total	12014	100.00	8,249	100.00	8,323	100.00	7,291	100.00	6740	100.00

1000013.5.100000000000000000000000000000
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*0= no hours/week, Part-time= 1-34hrs/week, full-time= 35+hrs/week N.B. This table excludes details from single parent families (who are included in analysis).





Figure A.6: Percentage of fathers in work by gender attitudes and study sweep

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Appendix B

B.1 Malaise Inventory and Golombok Rust Inventory of Marital State (GRIMS) questions

Malaise Inventory

- 1. Do you feel tired most of the time?
- 2. Do you often feel miserable or depressed?
- 3. Do you often get worried about things?
- 4. Do you often get into a violent rage?
- 5. Do you often suddenly become scared for no good reason?
- 6. Are you easily upset or irritated?
- 7. Are you constantly keyed up and jittery?
- 8. Does every little thing get on your nerves and wear you out?

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9. Does your heart often race like mad?

Golombok Rust Inventory of Marital State

- 1. My partner is usually sensitive to and aware of my needs.
- 2. My partner doesn't seem to listen to me.
- 3. I sometimes feel lonely even when I am with my partner.
- 4. Our relationship is full of joy and excitement.
- 5. I wish there was more warmth and affection between us.
- 6. I suspect we may be on the brink of separation.
- 7. We can always make up quickly after an argument.

B.2 Supplementary Tables: Malaise Inventory models with covariates

	Mode	1: Mai	n effects	Model	2: Con	cordance effects	Model	3: Fully	adjusted
Variable	OR	95	% CI	OR		95% CI	OR	95	% CI
Mother's gender Attitudes	1.09	1.06	1.13	1.04	0.99	1.08	1.06	1.01	1.10
Mother's work hours	1.11	1.02	1.22	0.81	0.72	0.94	1.02	0.88	1.19
Mother's gender attitudes and work hours interaction									
(individual concordance)				1.03	1.01	1.05	1.03	1.01	1.05
Mother in work binary (yes)	0.67	0.53	0.84	0.61	0.48	0.77	0.75	0.60	0.95
Father's work hours/week				0.96	0.92	1.02			
Father in work (yes)				0.98	0.71	1.36			
Fathers' gender attitudes				0.99	0.96	1.02			
Division of domestic labour quintiles									
1st (most egalitarian)							1.00		
2nd							1.10	0.91	1.32
3rd							0.97	0.76	1.24
4th							1.09	0.88	1.35
5th (least egalitarian)							1.33	1.09	1.62
Mother's NS-SEC									
Never worked							0.89	0.65	1.22
Semi-routine and routine							1.00		
Low supervision and technical							1.06	0.82	1.37

Table B.1: Odds ratios of maternal psychological distress by individual work and employment concordance

<u>в</u>.

	N	Model 1		Model 2		Model	3
Variable	OR	95% CI	OR	95% CI	OR	95	5% CI
Small employer and self					0.98	0.71	1.37
employed							
Intermediate					0.72	0.59	0.89
Managerial and professional					0.80	0.63	1.00
Mother's highest educational							
NVQ level							
NVQ level 1					1.12	0.84	1.49
NVQ level 2					0.94	0.77	1.16
NVQ level 3					1.10	0.90	1.36
NVQ level 4					1.00		
NVQ level 5					1.34	0.90	2.00
Overseas qual only					1.68	1.14	2.47
None of these					1.03	0.79	1.34
Father's NS-SEC							
Never worked					1.33	0.67	2.65
Semi-routine and routine					1.00		
Low supervision and technical					0.89	0.73	1.09
Small employer and self employed					0.85	0.68	1.06
Intermediate					0.83	0.61	1.12
Managerial and professional					0.76	0.61	0.94
Father's highest educational							
NVQ level							
NVQ level 1					1.11	0.86	1.43
NVQ level 2					1.11	0.89	1.37
NVQ level 3					0.94	0.75	1.16
NVQ level 4					1.00		
NVQ level 5					0.69	0.50	0.95

B.

		Model	1		Mo	del 2		Model	3
Variable	OR	95	% CI	OR		95% CI	OR	95	5% CI
Overseas qual only							1.29	0.92	1.82
None of these							1.14	0.89	1.46
OECD equivalised income									
1st quintile (least income)							1.42	1.10	1.84
2nd quintile							1.12	0.91	1.38
3rd quintile							1.00		
4th quintile							0.94	0.76	1.15
5th quintile (most income)							0.86	0.67	1.10
Mother's age							0.99	0.97	1.01
Father's age							0.98	0.97	0.99
Number of children in household (1 child ref)									
2 children							1.28	1.08	1.52
3 or more							1.52	1.25	1.84
Constant	0.08	0.06	0.10	0.12	0.09	0.17	0.26	0.14	0.51

	Mode	l 1: Mai	n effects	Mode	2: Con	cordance effects	Mode	3: Fully	adjusted
Variable	OR	95	% CI	OR		95% CI	OR	95	5% CI
Mother's work hours	0.98	0.88	1.08	0.63	0.53	0.75	0.79	0.65	0.95
Father's gender attitudes	1.08	1.04	1.11	1.00	0.96	1.04	1.04	0.99	1.08
Father's gender attitudes and work hours interaction (individual concordance)				1.06	1.04	1.09	1.05	1.02	1.07
Mother in work binary (yes)	0.82	0.63	1.07	0.75	0.58	0.97	1.01	0.78	1.31
Father's work hours							1.04	0.96	1.10
Father in work binary (yes)							0.42	0.29	0.60
Mother's gender attitudes							0.96	0.93	1.00
Division of domestic labour quintiles 1st (most egalitarian) 2nd 3rd							1.00 1.25 1.25	1.01 0.96	1.57 1.64
4th							1.36	1.05	1.75
5th (least egalitarian)							1.76	1.41	2.18
Father's NS-SEC									
Never worked Semi-routine and routine							1.72 1.00	0.83	3.59
Low supervision and technical							0.85	0.68	1.03
Small employer and self							0.96	0.75	1.23
Intermediate							0.72	0.48	1.08
Managerial and professional							0.79	0.60	1.03

Table B.2: Odds Ratios of paternal psychological distress by individual work and employment concordance

B.

	Model 1				Model 3		
Variable	OR	95% CI	OR	95% CI	OR	95	% CI
Father's highest educational					1.18	0.85	1.64
NVQ level NVQ level 1							
NVQ level 2					1.24	0.97	1.57
NVQ level 3					1.21	0.94	1.56
NVQ level 4					1.00		
NVQ level 5					1.04	0.68	1.57
Overseas qual only					1.28	0.84	1.96
None of these					1.73	1.29	2.32
Mother's NS-SEC							
Never worked					1.01	0.75	1.37
Semi-routine and routine					1.00		
Low supervision and technical					0.90	0.64	1.25
Small employer and self employed					0.69	0.45	1.07
Intermediate					0.99	0.80	1.22
Managerial and professional					0.94	0.72	1.22
Mother's highest educational							
NVQ level							
NVQ level 1					0.97	0.68	1.40
NVQ level 2					0.81	0.63	1.03
NVQ level 3					0.96	0.75	1.23
NVQ level 4					1.00		
NVQ level 5					1.27	0.82	1.96
Overseas qual only					1.04	0.60	1.81
None of these					0.98	0.71	1.34
OECD equivalised income							
1st quintile (least income)					1.33	1.02	1.75
2nd quintile					1.20	0.96	1.49

		Model	1	Model 2			Model 3		
Variable	OR	95	5% CI	OR		95% CI	OR	95	5% CI
3rd quintile							1.00		
4th quintile							0.84	0.66	1.07
5th quintile (most income)							0.86	0.65	1.15
Mother's age							0.98	0.96	1.00
Father's Age							0.99	0.97	1.01
Number of children in household (1 Child ref)									
2 children							1.27	1.04	1.55
3 or more							1.19	0.95	1.49
Constant	0.06	0.05	0.08	0.12	0.08	0.16	0.29	0.15	0.58

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	Model	1: Mair	n effects	Model	2: Con	cordance effects	Mode	l 3: Fully	adjusted
Variable	OR	959	% CI	OR		95% CI	OR	95	% CI
Mother's gender attitudes Father's gender attitudes	1.10 0.99	1.06 0.96	1.14 1.02	1.26 1.12	1.15 1.04	1.38 1.22	1.23 1.10	1.12 1.01	1.35 1.20
Gender attitudes (couples interaction)				0.98	0.97	0.99	0.98	0.97	1.00
Mother's work hours Father's work hours							1.15 0.94	1.01 0.88	1.31 1.00
Work hours (couples interaction)							1.00	1.00	1.00
Mother in work binary (yes) Father in work binary (yes)							0.79 1.01	0.63 0.72	1.00 1.41
Division of domestic labour quintiles 1st (most egalitarian) 2nd 3rd 4th 5th (least egalitarian)							1.00 1.09 0.98 1.10 1.33	0.91 0.77 0.89 1.09	1.33 1.24 1.35 1.62
Mother's NS-SEC Never worked Semi-routine and routine Low supervision and technical							0.87 1.00 1.07	0.64 0.82	1.20 1.38

Table B.3: Odds ratios of maternal psychological distress by couples' gender attitude concordance

	Model 1			Model 2		Model 3		
Variable	OR	95% CI	OR	95% CI	OR	95	% CI	
Small employer and self					1.00	0.72	1.38	
employed								
Intermediate					0.72	0.58	0.88	
Managerial and professional					0.79	0.63	0.99	
Father's NS-SEC								
Never worked					1.29	0.65	2.60	
Semi-routine and routine					1.00			
Low supervision and technical					0.89	0.73	1.09	
Small employer and self					0.85	0.68	1.05	
employed					0.02	0.61	1 10	
Intermediate					0.83	0.61	1.12	
Managerial and professional					0.76	0.61	0.95	
Mother's highest educational								
NVQ level								
NVQ level 1					1.13	0.85	1.51	
NVQ level 2					0.94	0.77	1.16	
NVQ level 3					1.10	0.90	1.35	
NVQ level 4					1.00			
NVQ level 5					1.35	0.91	2.03	
Overseas qual only					1.68	1.14	2.48	
None of these					1.02	0.79	1.32	
Father's highest educational								
NVO level								
NVQ level 1					1.11	0.86	1.43	
NVQ level 2					1.10	0.89	1.36	
NVQ level 3					0.93	0.75	1.15	
NVQ level 4					1.00			
NVQ level 5					0.69	0.51	0.96	

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	Model 1		Model 2			Model 3			
Variable	OR	959	% CI	OR		95% CI	OR	95	% CI
Overseas qual only							1.27	0.91	1.81
None of these							1.14	0.89	1.45
OECD equivalised income									
1st quintile (least income)							1.38	1.06	1.81
2nd quintile							1.12	0.91	1.38
3rd quintile							1.00		
4th quintile							0.93	0.76	1.14
5th quintile (most income)							0.85	0.66	1.09
Mother's age							0.99	0.97	1.01
Father's age							0.98	0.97	0.99
Number of children in									
1 abild							1.00		
2 abildran							1.00	1.07	1 5 1
2 crindren							1.27	1.07	1.31
5 01 11010							1.51	1.23	1.04
Constant	0.08	0.06	0.10	0.03	0.02	0.06	0.10	0.04	0.23

	Model	1: Mair	n effects	Model	2: Con	cordance effects	Model	3: Fully	adjusted
Variable	OR	959	% CI	OR		95% CI	OR	95	% CI
Mother's gender attitudes	0.98	0.94	1.02	1.12	1.01	1.24	1.05	0.94	1.16
Father's gender attitudes	1.11	1.07	1.15	1.24	1.13	1.37	1.18	1.07	1.30
Gender attitudes (couples interaction)				0.98	0.97	1.00	0.99	0.97	1.00
Mother's work hours							0.96	0.82	1.11
Father's work hours							1.00	0.92	1.08
Work hours (couples interaction)							1.00	1.00	1.00
Mother in work binary (yes)							1.08	0.83	1.39
Father in work binary (yes)							0.42	0.29	0.62
Division of domestic labour quintiles 1st (most egalitarian) 2nd 3rd 4th 5th (least egalitarian)							1.00 1.26 1.26 1.37 1.77	1.01 0.97 1.05 1.42	1.57 1.65 1.77 2.21
Mother's NS-SEC Never worked Semi-routine and routine Low supervision and technical Small employer and self employed							0.98 1.00 0.91 0.71	0.71 0.65 0.46	1.33 1.27 1.10

Table B.4: Odds ratios of paternal psychological distress by couples' gender attitude c

	Model 1			Model 2		Model 3			
Variable	OR	95% CI	OR	95% CI	OR	95	5% CI		
Intermediate					0.98	0.80	1.22		
Managerial and professional					0.93	0.72	1.21		
Father's NS-SEC									
Never worked					1.66	0.79	3.50		
Semi-routine and routine					1.00				
Low supervision and technical					0.85	0.69	1.05		
Small employer and self employed					0.88	0.68	1.14		
Intermediate					0.72	0.48	1.08		
Managerial and professional					0.79	0.60	1.03		
Mother's highest educational NVQ level									
NVQ level 1					0.97	0.68	1.39		
NVQ level 2					0.80	0.63	1.02		
NVQ level 3					0.96	0.75	1.23		
NVQ level 4					1.00				
NVQ level 5					1.26	0.81	1.96		
Overseas qual only					1.02	0.58	1.77		
None of these					0.97	0.70	1.34		
Father's highest educational NVQ level									
NVQ level 1					1.18	0.86	1.64		
NVQ level 2					1.24	0.97	1.57		
NVQ level 3					1.21	0.94	1.56		
NVQ level 4					1.00				
NVQ level 5					1.05	0.69	1.57		
Overseas qual only					1.27	0.83	1.94		
None of these					1.73	1.29	2.31		

	Model 1			Model 2			Model 3		
Variable	OR	95	% CI	OR		95% CI	OR	95	5% CI
OECD equivalised income									
1st quintile (least income)							1.28	0.96	1.69
2nd quintile							1.19	0.95	1.48
3rd quintile							1.00		
4th quintile							0.82	0.64	1.05
5th quintile (most income)							0.83	0.62	1.10
Mother's age							0.98	0.96	1.00
Father's age							0.99	0.97	1.01
C									
Number of children in									
household									
1 child							1.00		
2 children							1.27	1.04	1.55
3 or more							1.18	0.94	1.48
Constant	0.05	0.04	0.07	0.03	0.01	0.05	0.13	0.05	0.32

N.B. All work hours variables are scaled so 1 unit=10 hours.

B.

Descriptive tables and linear regression models for the division of labour, gen-

der attitudes and relationship	satisfaction	(GRIMS)
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		Mothers	Fathers
OECD income weighted quintiles*	N= 12014	GRIMS (mean)	GRIMS (mean)
Lowest quintile	1337	15.28	15.4
Second quintile	2606	14.75	14.85
Third quintile	2742	14.09	14.49
Fourth quintile	2743	13.52	14.13
Highest quintile	2586	13.22	13.72
Mother NS-SEC social class*	N= 12014	GRIMS (mean)	GRIMS (mean)
Never worked	712	15.05	14.79
Semi-routine and routine	3862	14.7	15.03
Lo sup and tech	652	14.08	14.65
Small employer and self-employed	484	13.46	13.94
Intermediate	2293	13.9	14.28
Managerial and professional	4011	13.39	13.88
Father NS-SEC social class*	N= 12014	GRIMS (mean)	GRIMS (mean)
Never worked	84	14.89	15.29
Semi-routine and routine	3128	14.71	14.98
Lo sup and tech	1910	14.32	14.63
Small employer and self-employed	1540	14.27	14.59
Intermediate	632	14.16	14.06
Managerial and professional	4720	13.4	13.96
Mother's highest NVQ level*	N= 12014	GRIMS (mean)	GRIMS (mean)
NVQ level 1	822	14.8	15.06
NVQ level 2	3467	14.25	14.61
NVQ level 3	1797	13.95	14.39
NVQ level 4	3842	13.49	13.96
NVQ level 5	511	13.33	13.83
Overseas qualifications only	304	14.77	14.5
None of these	1271	14.97	15.18
Father's highest NVQ level*	N= 12014	GRIMS (mean)	GRIMS (mean)

Mothers Fathers NVQ level 1 797 14.77 14.55 NVQ level 2 3322 14.27 14.64 NVQ level 3 1890 14.06 14.43 NVQ level 4 3516 13.44 13.99 NVQ level 5 691 13.17 13.48 Overseas qualifications only 367 14.79 14.88 None of these 1431 14.96 15.16 Division of domestic labour N= 12014 GRIMS (mean) GRIMS (mean) quintile 12.89 14.02 1st (most egalitarian) 3351 2nd 2778 13.54 14.25 3rd 1807 14.01 14.44 4th 1748 14.64 14.59 5th (least egalitarian) 2330 15.91 15.07 12014 Total 12014 12014

Table B.5: Parental GRIMS score by household characteristics

	N=	Mothers	Fathers
Household paid employment*	12014	GRIMS (mean)	GRIMS (mean)
Mother in work (no)	5259	14.40	14.63
Mother in work (yes)	6755	13.78	14.27
Father in work (no)	1386	15.13	15.28
Father in work (yes)	10628	13.91	14.31
Total	12014	14.05	14.43
Household paid work hours **	12014	GRIMS (r)	GRIMS (r)
Mother's work hours (in work)	6755	-0.04	-0.03
Total (% of sample)	56.23		
Father's work hours (in work)	10628	0.02	0.01
Total (% of sample)	88.46		
Gender attitudes (to maternal		GRIMS (r)	GRIMS (r)
employment)			
Mothers' attitudes (range 0-12)	12014	0.07	0.00
Fathers' attitudes (range 0-12)	12014	0.04	0.06

Table B.6: Work and gender attitudes with parental GRIMS score

B.3 Supplementary Tables: GRIMS models with covariates

	Model 1: Main effects			Model 2: Concordance effect			Model 3: Fully adjusted		
	B	95% C	[B	95% C	[B	95% C	I I
Mother's gender attitudes	-0.10	-0.15	-0.05	0.01	-0.06	0.09	0.02	-0.05	0.09
Mother's work hours	0.12	0.01	0.24	0.51	0.32	0.70	0.06	-0.14	0.26
Mother's gender attitudes and work hours interaction (individual concordance)				-0.08	-0.12	-0.04	-0.06	-0.09	-0.02
Mother in work binary (yes)	-0.02	-0.39	0.34	0.19	-0.19	0.58	-0.10	-0.48	0.29
Father's work hours Father in work binary (yes) Father's gender attitudes							0.04 1.07 0.07	-0.04 0.58 0.02	0.13 1.57 0.12
Division of domestic labour quintiles 1st (most egalitarian)									
2nd							-0.95	-1.19	-0.71
3rd							-1.53	-1.81	-1.24
4th							-2.10	-2.42	-1.77
5th (least egalitarian)							-3.36	-3.66	-3.05
Mother's NS-SEC social class Never worked Semi-routine and routine							-0.35 0.00	-0.90	0.20

Table B.7: Maternal relationship satisfaction by individual work and employment concordance

	Model	1: Main effects	Model	2: Concordance effects	Model	3: Fully	adjusted
	В	95% CI	В	95% CI	В	95% C	I
Low supervision and technical					0.37	-0.08	0.83
Small employer and self					0.93	0.46	1.40
employed							
Intermediate					0.50	0.19	0.81
Managerial and professional					0.56	0.24	0.88
Mother's highest educational							
NVQ level							
NVQ level 1					-0.37	-0.76	0.03
NVQ level 2					-0.12	-0.37	0.13
NVQ level 3					0.01	-0.30	0.32
NVQ level 4					0.00		
NVQ level 5					-0.34	-0.91	0.22
Overseas qual only					-0.19	-0.79	0.42
None of these					-0.25	-0.66	0.17
Father's NS-SEC social class							
Never worked					0.71	-0.09	1.02
Semi-routine and routine					0.00		
Low supervision and technical					0.29	-0.04	0.63
Small employer and self					0.45	0.09	0.82
Intermediate					0.00	0.37	0.55
Managerial and professional					0.09	-0.37	1.05
manageriai and professional					0.74	0.45	1.05
Father's highest educational							
NVQ level							
NVQ level 1					-0.09	-0.61	0.43
NVQ level 2					-0.04	-0.34	0.26

Table B.7: Maternal relationship satisfaction by individual work and employment concordance

	Model	1: Mair	n effects	Model	2: Conc	ordance effects	Model	3: Fully	adjusted
	В	95% C	Ι	В	95% C	Ι	В	95% C	Ι
NVQ level 3							-0.21	-0.51	0.09
NVQ level 4							0.00		
NVQ level 5							-0.00	-0.46	0.46
Overseas qual only							-0.44	-1.09	0.20
None of these							-0.25	-0.63	0.13
OECD equivalised income									
1st quintile (least income)							0.00		
2nd quintile							0.11	-0.31	0.54
3rd quintile							0.49	0.00	0.98
4th quintile							0.81	0.29	1.33
5th quintile (most income)							0.83	0.31	1.35
Mother's age							0.01	-0.02	0.03
Father's age							-0.03	-0.05	-0.02
Number of children in									
household									
1 child							0.00		
2 children							-0.45	-0.65	-0.25
3 or more							-0.24	-0.53	0.07
Constant	28.43	28.02	28.84	27.64	27.11	28.16	28.04	27.14	28.93

Table B.7: Maternal relationship satisfaction by individual work and employment concordance

	Model 1: Main effects		Model 2: Concordance effects			Model 3: Fully adjusted			
	В	95% C	[В	95% C	[В	95% C	[
Mother's work hours	0.12	0.01	0.23	0.08	0.06	0.10	0.49	0.31	0.67
Father's gender attitudes	-0.09	-0.13	-0.05	0.08	0.03	0.13	0.06	0.01	0.12
Father's gender attitudes and work hours interaction (individual concordance)				-0.12	-0.16	-0.09	-0.11	-0.14	-0.07
Mother in work binary (yes)	-0.17	-0.48	0.14	0.14	-0.20	0.48	-0.01	-0.33	0.31
Father's work hours							0.03	-0.05	0.11
Father in work binary (yes)							0.34	-0.13	0.81
Mother's gender attitudes							0.07	0.02	0.12
Division of domestic labour quintiles									
1st (most egalitarian)							ref		
2nd							-0.37	-0.61	-0.13
3rd							-0.56	-0.84	-0.27
4th							-0.68	-0.98	0.38
5th (least egalitarian)							-1.21	-1.51	-0.92
Father's NS-SEC social class									
Never worked							0.14	-1.03	1.32
Semi-routine and routine							0.00		
Low supervision and technical							0.16	-0.11	0.43
Small employer and self employed							0.16	-0.11	0.43
Intermediate							0.63	0.23	1.02
Managerial and professional							0.31	0.04	0.58

Table B.8: Paternal relationship satisfaction by individual work and employment concordance

	Model 1: Main effects		Model	2: Concordance effects	Model 3: Fully adjusted		
	В	95% CI	В	95% CI	В	95% C	Ι
Father's highest educational							
NVO level 1					-0.06	-0.45	0.32
NVO level 2					-0.12	-0.39	0.14
NVO level 3					-0.10	-0.37	0.17
NVO level 4					0.00		
NVO level 5					0.30	-0.05	0.66
Overseas qual only					-0.05	-0.59	0.48
None of these					-0.46	-0.83	-0.09
Mother's NS-SEC social class							
Never worked					0.22	-0.23	0.68
Semi-routine and routine					0.00		
Low supervision and technical					0.39	0.00	0.77
Small employer and self employed					0.96	0.51	1.40
Intermediate					0.38	0.09	0.67
Managerial and professional					0.51	0.22	0.80
Mother's highest educational NVQ level							
NVQ level 1					-0.32	-0.64	0.00
NVQ level 2					-0.16	-0.40	0.07
NVQ level 3					-0.13	-0.40	0.13
NVQ level 4					0.00		
NVQ level 5					-0.22	-0.61	0.17
Overseas qual only					-0.29	-0.85	0.26
None of these					-0.37	-0.74	-0.01

Table B.8: Paternal relationship satisfaction by individual work and employment concordance

	Model 1: Main effects		ts Model 2: Concordance effe			Model 3: Fully adjusted			
	В	95% C	[В	95% C	[В	95% C	[
OECD equivalised income									
1st quintile (least income)							0.30	-0.08	0.69
2nd quintile							0.40	-0.04	0.84
3rd quintile							0.00		
4th quintile							0.43	-0.01	0.88
5th quintile (most income)							0.50	0.02	0.98
Mother's age							0.02	-0.00	0.04
Father's age							0.00	-0.02	0.02
Number of children in									
household									
1 child							0.00		
2 children							-0.93	-1.11	-0.75
3 or more							-0.74	-0.98	-0.50
Constant	28.09	27.76	28.42	26.84	26.42	27.24	26.24	25.51	26.97

Table B.8: Paternal relationship satisfaction by individual work and employment concordance

В.

	Model	1: Cond	cordance effects	Mode	1 2: Full	v adjusted
Variable	Coef.		95% CI	Coef.	95	5% CI
Mother's gender attitudes	-0.54	-0.67	-0.42	-0.38	-0.50	-0.26
Father's gender attitudes	-0.40	-0.51	-0.28	-0.23	-0.35	-0.11
i aller 5 gender attrades	0.10	0.01	0.20	0.25	0.22	0.11
Mother's*father's gender	0.06	0.05	0.08	0.05	0.03	0.07
attitudes (couple concordance)	0.00	0.05	0.00	0.05	0.05	0.07
attitudes (coupie concordance)						
Mother's work hours/week				0.06	0.25	0.12
Father's work hours/week				-0.00	-0.23	0.12
Fauler's work hours/week				0.11	0.01	0.21
Mother's*Eather's work hours				0.00	0.01	0.00
Wother s Trainer's work hours				-0.00	-0.01	-0.00
Mother in work (vas)				0.16	0.52	0.20
Father in work (yes)				-0.10	-0.55	0.20
Father in Work (yes)				1.02	0.51	1.52
D:::: (1 /: 11						
Division of domestic labour						
Ist quintile (most egalitarian)						0.60
2nd				-0.93	-1.17	-0.69
3rd				-1.53	-1.81	-1.25
4th				-2.08	-2.40	-1.76
5th (least egalitarian)				-3.34	-3.65	-3.04
Mother's NS-SEC social class						
Never worked				-0.34	-0.89	0.21
Semi-routine and routine						
Low supervision and techinical				0.36	-0.09	0.82
Small employer and self				0.91	0.44	1.38
employed						
Intermediate				0.49	0.19	0.80
Managerial and professional				0.56	0.24	0.87
filanageriai ana protessionai				0.20	0.21	0.07
Father's NS-SEC social class						
Never worked				0.82	0.41	2.05
Somi routing and routing				0.82	-0.41	2.05
Low appendicion and tashiniaal				0.21	0.02	0.64
Low supervision and technical				0.51	-0.05	0.04
Small employer and self				0.45	0.08	0.81
employed				0.10		0.55
Intermediate				0.10	-0.37	0.57
Managerial and professional				0.74	0.43	1.06
Mother's education						
NVQ level 1				-0.40	-0.79	-0.00
NVQ level 2				-0.13	-0.38	0.13
NVQ level 3				0.00	-0.31	0.31
NVQ level 4						
NVQ level 5				-0.38	-0.95	0.19
Overseas qual only				-0.19	-0.80	0.41
None of these				-0.22	-0.63	0.20
						-
Father's education						
NVO level 1				-0.08	-0.60	0.43
NVO level ?				-0.02	-0.31	0.28
NVO level 3				-0.20	-0.50	0.11
	1			0.20	0.50	0.11

Table B.9: Maternal relationship satisfaction by couples' attitudes concordance

	Model	1: Conc	ordance effects	Mode	1 2: Full	y adjusted
Variable	Coef.		95% CI	Coef.	95	5% CI
NVQ level 4						
NVQ level 5				-0.01	-0.46	0.45
Overseas qual only				-0.41	-1.06	0.23
None of these				-0.21	-0.60	0.17
OECD equivalised income						
1st quintile (lowest income)						
2nd quintile				0.02	-0.42	0.45
3rd quintile				0.37	-0.13	0.87
4th quintile				0.71	0.18	1.23
5th quintile (highest income)				0.74	0.21	1.27
Mother's age				0.01	-0.02	0.03
Father's age				-0.03	-0.05	-0.02
Number of children in						
household						
1 (CM only)						
2				-0.44	-0.65	-0.24
3 or more				-0.25	-0.55	0.05
Constant	31.23	(30.52	to 31.95)	30.38	29.16	31.60

Table B.9: Maternal relationship satisfaction by couples' attitudes concordance

Table R 10. Daternal	relationshin	satisfaction h	av couples'	attitudae	concordance
Table D.IU. I aleman	relationship	satisfaction	by couples	attitudes	concordance

	Model	1: Cond	cordance effects	Mode	l 2: Full	2: Fully adjusted		
Variable	Coef.		95% CI	Coef.	9:	5% CI		
Mother's gender attitudes	-0.42	-0.53	-0.31	-0.34	-0.45	-0.22		
Father's gender attitudes	-0.55	-0.67	-0.44	-0.46	-0.57	-0.35		
Mother's*Father's gender attitudes (couple concordance)	0.07	0.05	0.09	0.06	0.04	0.08		
Mother's work hours/week				-0.05	-0.22	0.12		
Father's work hours/week				0.06	-0.03	0.15		
Mother's*Father's work hours				-0.00	-0.00	0.00		
Mother in work (yes)				-0.17	-0.47	0.13		
Father in work (yes)				0.33	-0.14	0.80		
Division of domestic labour 1st quintile (most egalitarian) 2nd 3rd 4th 5th (least egalitarian)				-0.38 -0.57 -0.67 -1.21	-0.62 -0.86 -0.97 -1.50	-0.14 -0.29 -0.37 -0.92		
Mothers' NS-SEC social class Never worked Semi-routine and routine Low supervision and technical				0.23 0.36	-0.23	0.69 0.74		
	Model	1: Conce	ordance effects	Mode	2: Full	y adjusted		
--------------------------------	-------	----------	-----------------	-------	---------	------------		
Variable	Coef.		95% CI	Coef.	95	5% CI		
Small employer and self				0.89	0.45	1.32		
employed								
Intermediate				0 39	0.10	0.68		
Managerial and professional				0.53	0.10	0.82		
Munugeriai and professional				0.55	0.21	0.02		
Fathers' NS-SEC social class								
Never worked				0.23	0.06	1 /1		
Sami routing and routing				0.23	-0.90	1.41		
Low supervision and technical				0.18	0.00	0.45		
Small employer and self				0.10	-0.09	0.45		
smalleved				0.16	-0.09	0.45		
Intermediate				0.64	0.25	1.04		
Interineutate				0.04	0.23	1.04		
Managerial and professional				0.34	0.07	0.01		
Mother's highest education								
NVQ level				0.04	0.00	0.00		
NVQ level I				-0.34	-0.66	-0.02		
NVQ level 2				-0.15	-0.39	0.09		
NVQ level 3				-0.15	-0.41	0.11		
NVQ level 4								
NVQ level 5				-0.24	-0.63	0.15		
Overseas qual only				-0.28	-0.82	0.26		
None of these				-0.34	-0.71	0.02		
Father's highest education NVQ								
level								
NVQ level 1				-0.05	-0.44	0.34		
NVQ level 2				-0.10	-0.36	0.17		
NVQ level 3				-0.09	-0.36	0.17		
NVQ level 4								
NVQ level 5				0.28	-0.06	0.63		
Overseas qual only				0.00	-0.54	0.54		
None of these				-0.44	-0.81	-0.06		
OECD equivalised income								
1st quintile (lowest income)								
2nd quintile				0.29	-0.10	0.68		
3rd quintile				0.37	-0.07	0.82		
4th quintile				0.42	-0.02	0.87		
5th quintile (highest income)				0.52	0.04	1.00		
Mother's age				0.02	-0.01	0.04		
Father's age				0.00	-0.02	0.02		
i unior 5 ugo				0.00	0.02	0.02		
Number of children in								
household								
1 (CM only)								
2				_0.04	_1 12	-0.75		
2 3 or more				0.75	-1.12	0.75		
				-0.75	-0.99	-0.51		
Constant	20.91	(20.12	to 31 19)	20 55	28 61	30.40		
Constant	10.01	(30.13)	w 51.40)	27.33	20.01	50.49		

Table B.10: Paternal relationship satisfaction by couples' attitudes concordance

Appendix C

C.1 Additional variable information

C.1.1 Strengths and Difficulties Questionnaire

- Considerate of other people's feelings
- Restless, over-active, cannot stay still for long
- Often complains of headaches, stomach-aches or sickness
- Shares readily with other children (treats, toys, pencils etc.)
- Often has temper tantrums or hot tempers
- Rather solitary, tends to play alone
- Generally obedient, usually does what adults request
- Many worries, often seems worried
- Helpful if someone is hurt, upset or feeling ill
- Constantly fidgeting or squirming
- Has at least one good friend
- Often fights with other children or bullies them
- Often unhappy, down-hearted or tearful
- Generally liked by other children
- Easily distracted, concentration wanders
- Nervous or clingy in new situations, easily loses confidence
- Kind to younger children

C.

- Often argumentative with adults
- Picked on or bullied by other children
- Often volunteers to help others (parents, teachers, other children)
- Can stop and think things out before acting
- Can be spiteful to others
- Gets on better with adults than with other children
- Many fears, easily scared
- Sees tasks through to the end, good attention span

C.1.2 Stable family variable by parent characteristics

	Changes		Stable		Total
Mothers gender attitudes grouped					
Most egalitarian	2670	54.9	2191	45.1	4861
Average	3073	56.8	2336	43.2	5409
Least egalitarian	1043	59.8	701	40.2	1744
Fathers gender attitudes grouped					
Most egalitarian	2447	54.7	2025	45.3	4472
Average	3044	57.3	2271	42.7	5315
Least egalitarian	1295	58.1	932	41.9	2227
Domestic labour quintile					
O1 -most egalitarian	1982	591	1369	40 9	3351
Ω^2	1520	54 7	1258	45.3	2778
Q^2	1006	557	801	44.3	1807
04	944	54.0	804	46.0	1748
Q5 - least egalitarian	1334	57.3	996	42.7	2330
Mother in work (ago 0 months)					
Not in work	2225	62.2	1024	260	5250
	3323 2461	05.2 51.2	1934	30.0 40.0	5259
In work	3401	51.2	3294	48.8	0/33
Father in work (age 9 months)					
Not in work	1058	76.3	328	23.7	1386
In work	5728	53.9	4900	46.1	10628

Table C.1: Family stability across all sweeps

Chi squared test for significance, all associations are $p \le 0.01$

C.2 Supplementary tables - externalising and internalising division of labour and gender attitudes models

- Externalising difficulties and parental gender attitudes
- Internalising difficulties and parental gender attitudes
- Externalising difficulties and the division of labour
- Internalising difficulties and the division of labour

Section 1: Externalising and internalizing difficulties by parental gender attitudes and division of labour

	Bo	ys (no intera	ctions)	Boy	ys (w	ith inter	actions)	Girls (no intera	ctions)	Gir	ls (w	ith inter	actions)
Variables	Coef.	•	95%	CI	Coef.		95%	CI	Coef.	95%	CI	Coef.		95%	CI
Sweep															
2nd (age 3)	Ref.														
3rd (age 5)	-1.84	**	(-1.95	to -1.74)	-0.37		(-1.15	to 0.41)	-1.96 **	(-2.06	to -1.87)	-1.68	**	(-2.48	to -0.89)
4th (age 7)	-1.74	**	(-1.86	to -1.63)	-0.94	*	(-1.84	to -0.05)	-2.10 **	(-2.21	to -1.99)	-1.97	**	(-2.81	to -1.12)
5th (age 11)	-2.04	**	(-2.18	to -1.91)	-0.89		(-1.85	to 0.07)	-2.39 **	(-2.51	to -2.27)	-1.72	**	(-2.65	to -0.80)
Mother's gender attitudes	0.07	*	(0.03	to 0.12)	0.30	**	(0.15	to 0.45)	-0.01	(-0.06	to 0.03)	0.26	**	(0.11	to 0.41)
Sweep*mother's gender atts															
2nd (age 3)*gend atts	Ref.														
3rd (age 5)*gend atts					-0.21	*	(-0.35	to -0.07)				-0.06		(-0.20	to 0.07)
4th (age 7)*gend atts					-0.09		(-0.24	to 0.07)				-0.01		(-0.15	to 0.13)
5th (age 11)*gend atts					-0.11		(-0.28	to 0.06)				-0.09		(-0.25	to 0.07)
Father's gender attitudes	-0.03		(-0.07	to 0.02)	0.22	**	(0.08	to 0.35)	0.02	(-0.02	to 0.06)	0.26	**	(0.12	to 0.40)
Sweep*father's gender atts															
2nd (age 3)*gend atts					Ref.										
3rd (age 5)*gend atts					-0.22	*	(-0.35	to -0.10)				0.00		(-0.12	to 0.13)
4th (age 7)*gend atts					-0.13		(-0.28	to 0.01)				-0.01		(-0.14	to 0.13)
5th (age 11)*gend atts					-0.18	*	(-0.34	to -0.02)				-0.09		(-0.23	to 0.06)
Mother's*Father's gend atts					-0.03	**	(-0.06	to -0.01)				-0.04	**	(-0.06	to -0.02)
Sweep*Mother's*Father's gend atts					wt*								wt*	:	
2nd (age 3)*M*F gend atts					Ref.										
3rd (age 5)*M*F gend atts					0.03	*	(0.01	to 0.05)				0.00		(-0.02	to 0.02)

Table C.2: Parental gender attitudes and children's externalising difficulties over time by child gender

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	Bo	oys (n	io intera	ctions)	Boy	ys (w	ith inter	actions)	Gi	irls (1	10 intera	ctions)	Gir	ls (w	ith inter	actions)
Variables	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI
4th (age 7)*M*F gend atts					0.01		(-0.01	to 0.04)					0.00		(-0.02	to 0.02)
5th (age 11)*M*F gend atts					0.02		(-0.01	to 0.04)					0.01		(-0.01	to 0.03)
Model constant	6.46	**	(6.13	to 6.79)	4.90	**	(4.02	to 5.78)	5.82	**	(5.53	to 6.11)	4.19	**	(3.29	to 5.08)
Random-effects parameters	Est.	SE	95%	CI	Est.	SE	95%	CI	Est.	SE	95%	CI	Est.	SE	95%	CI
sd(sweep)	0.84	0.03	6 (0.78	to 0.90)	0.84	0.03	8 (0.78	to 0.90)	0.73	0.03	3 (0.68	to 0.79)	0.73	0.03	(0.68	to 0.79)
sd(constant)	4.00	0.10) (3.82	to 4.19)	4.00	0.10) (3.81	to 4.19)	3.69	0.08	3 (3.54	to 3.86)	3.69	0.08	(3.53	to 3.85)
corr(sweep, constant)	-0.70	0.02	2 (-0.74	to -0.67)	-0.70	0.02	2 (-0.74	to -0.67)	-0.75	0.02	2 (-0.78	to -0.72)	-0.75	0.02	(-0.78	to -0.72)
sd(residual)	1.94	0.02	2 (1.89	to 1.98)	1.94	0.02	2 (1.89	to 1.98)	1.80	0.02	2 (1.76	to 1.84)	1.80	0.02	(1.75	to 1.84)

	Boys	s (no	interac	ctions)	Boys	(witl	n intera	ctions)	Girl	s (no	intera	ctions)	Girls	(wit]	h intera	ctions)
Variables	Coef.	,	95%	CI	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI
Sweep																
2nd (age 3)	Ref.															
3rd (age 5)	-0.44	**	-0.52	-0.36	-0.18		-0.82	0.46	-0.29	**	-0.37	-0.21	-0.20		-0.77	0.36
4th (age 7)	-0.22	**	-0.32	-0.13	-0.54		-1.24	0.15	-0.12	*	-0.21	-0.04	0.16		-0.49	0.81
5th (age 11)	0.16	*	0.04	0.28	-0.21		-1.08	0.66	0.35	**	0.24	0.47	-0.13		-1.00	0.73
Mother's gender attitudes	0.10	**	0.07	0.13	0.14	*	0.03	0.24	0.06	**	0.03	0.09	0.21	**	0.12	0.31
Sweep*mother's gender atts																
2nd (age 3)*gend atts					Ref.											
3rd (age 5)*gend atts					-0.03		-0.14	0.08)					-0.02		-0.12	0.08
4th (age 7)*gend atts					0.08		-0.05	0.20					-0.04		-0.15	0.07
5th (age 11)*gend atts					0.09		-0.06	0.25					0.07		-0.08	0.21
Father's gender attitudes	-0.02		-0.05	0.01	0.03		-0.06	0.13	0.00		-0.03	0.03	0.13	*	0.04	0.22
Sweep*father's gender atts																
2nd (age 3)*gend atts					Ref.											
3rd (age 5)*gend atts					-0.04		-0.14	0.06					0.01		-0.08	0.11
4th (age 7)*gend atts					0.01		-0.09	0.12					-0.01		-0.13	0.10
5th (age 11)*gend atts					0.06		-0.08	0.20					0.04		-0.10	0.18
Mother's*Father's gend atts					-0.01		-0.02	0.01					-0.02	*	-0.03	to -0.01
Sween*mother's*father's																
gend atts																
2nd (age 3)*M*F gend atte					Ref											
3rd (age 5)*M*E gend atts					0.00		0.01	0.02					0.00		0.02	0.01
Ath (age 7)*M*E gend atts					0.00		-0.01	0.02					0.00		-0.02	0.01
Hun (age 7) M r genu alls					-0.01		-0.02	0.01					0.00		-0.02	0.02

Table C.3: Parental	gender attitudes	and children's	internalising	difficulties of	over time by	v child gender
	4)					4)

	Boys	s (no i	interac	tions)	Boys	(with	intera	ctions)	Girls	s (no	interac	tions)	Girls	(with	intera	ctions)
Variables	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI
5th (age 11)*M*F gend atts					-0.01		-0.04	0.01					0.00		-0.03	0.02
Model constant	2.24	**	2.02	2.45	1.95	**	1.34	2.56	2.13	**	1.93	2.33	1.28	**	0.74	1.82
Random-effects parameters	Est.	SE	95%	CI	Est.	SE	95%	CI	Est.	SE	95%	CI	Est.	SE	95%	CI
sd(sweep)	0.71	0.03	0.65	0.76	0.70	0.03	3 0.65	0.76	0.64	0.03	0.59	0.70	0.65	0.03	0.59	0.70
sd(constant)	2.38	0.09	2.21	2.57	2.38	0.09	2.21	2.57	2.19	0.09	2.01	2.37	2.18	0.09	2.01	2.37
corr(sweep, constant)	-0.69	0.02	2 -0.73	-0.64	-0.69	0.02	2 -0.73	-0.64	-0.70	0.03	-0.74	-0.65	-0.70	0.03	-0.74	-0.65
sd(residual)	1.65	0.02	2 1.61	1.70	1.65	0.02	2 1.61	1.70	1.61	0.02	1.56	1.66	1.61	0.02	1.56	1.65

	Boys	oys (no interactions) Bo ef 95% CI Co				(with	intera	ctions)	Girls	s (no	interac	tions)	Girls	(with	ı intera	ctions)
Variables	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI
Sweep																
2nd (age 3)	Ref.															
3rd (age 5)	-1.86	**	-1.97	-1.75	-1.99	**	-2.31	-1.68	-1.99	**	-2.09	-1.89	-2.26	**	-2.58	-1.95
4th (age 7)	-1.75	**	-1.88	-1.63	-1.65	**	-1.99	-1.31	-2.12	**	-2.23	-2.00	-2.35	**	-2.68	-2.01
5th (age 11)	-2.00	**	-2.14	-1.87	-1.51	**	-2.03	-0.99	-2.35	**	-2.47	-2.22	-2.51	**	-2.93	-2.08
Father work hours	0.00		-0.01	0.00	0.00		-0.01	0.00	0.00	*	-0.01	-0.00	0.00	*	-0.01	-0.00
Mother work hours	0.00		-0.01	0.00	0.00		-0.01	0.00	0.00		-0.00	0.00	0.00		-0.01	0.00
Division of domestic labour quintiles																
1st (most egalitarian)	Ref.															
2nd	-0.22		-0.49	0.04	-0.49	*	-0.87	-0.11	-0.16		-0.39	0.07	-0.16		-0.50	0.18
3rd	0.09		-0.22	0.41	-0.28		-0.70	0.15	-0.07		-0.34	0.21	-0.25		-0.65	0.15
4th	0.19		-0.12	0.50	-0.11		-0.53	0.30	-0.19		-0.46	0.08	-0.58	*	-0.96	-0.20
5th (least egalitarian)	0.10		-0.19	0.40	-0.13		-0.52	0.26	-0.03		-0.28	0.22	-0.14		-0.49	0.21
Mother in work	-0.20	*	-0.35	-0.04	-0.81	**	-1.20	-0.42	-0.37	**	-0.51	-0.23	-0.97	**	-1.33	-0.62
Domestic labour*mother																
work																
1st*in work					0.37		-0.00	0.74					-0.02		-0.35	0.31
2nd*in work					0.53	*	0.11	0.95					0.24		-0.14	0.62
3rd*in work					0.43	*	0.04	0.82					0.57	*	0.19	0.95
4th*in work					0.33		-0.05	0.70)					0.13		-0.21	0.48
5th*in work								,								
Father in work	-0.22	*	-0.42	-0.02	-0.26		-0.57	0.05	-0.13		-0.30	0.04	-0.31	*	-0.58	-0.04

Table C.4: Parental division of labour and children's externalising difficulties over time by child gender

Father*mother work status

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	Boys	ys (no interactions) Boy F 95% CI Coe				(with	intera	ctions)	Girls	s (no i	interac	tions)	Girls	(with	intera	ctions)
Variables	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI
In work*in work					0.23		-0.06	0.51					0.30	*	0.05	0.54
Sweep*father in work																
2nd (age 3)*in work																
3rd (age 5)*in work					-0.06		-0.38	0.26					0.05		-0.26	0.37
4th (age 7)*in work					-0.18		-0.52	0.16					0.02		-0.31	0.36
5th (age 11)*in work					-0.60		-1.11	-0.10					-0.02		-0.44	0.40
Sweep*mother in work																
2nd (age 3)*in work																
3rd (age 5)*in work					0.30	*	0.06	0.53					0.35	*	0.13	0.57
4th (age 7)*in work					0.09		-0.18	0.35					0.30	*	0.06	0.55
5th (age 11)*in work					0.08		-0.25	0.41					0.27		-0.02	0.56
Constant	7.16	**	6.91	7.42	7.45	**	7.06	7.84	6.47	**	6.24	6.69	6.90	**	6.52	7.28
Random-effects parameters	Est.	SE	95%	CI	Est.	SE	95%	CI	Est.	SE	95%	CI	Est.	SE	95%	CI
sd(sweep)	0.83	0.03	0.77	0.90	0.83	0.03	0.78	0.90	0.73	0.03	0.67	0.78	0.73	0.03	0.67	0.79
sd(constant)	3.97	0.10	3.79	4.16	3.98	0.10	3.80	to	3.72	0.08	3.56	3.89	3.65	0.08	3.49	3.81
								4.17								
corr(sweep,constant)	-0.71	0.02	-0.74	-0.67	-0.71	0.02	-0.74	-0.67	-0.76	0.02	-0.79	-0.73	-0.75	0.02	-0.78	-0.72
sd(residual)	1.94	0.02	1.90	1.99	1.94	0.02	1.90	1.99	1.77	0.02	1.72	1.81	1.80	0.02	1.76	1.84

Table C.5: Parental	division of labour	and children's	internalising	difficulties	over time bv	child gender

	Boys	Boys (no interactions) Boy					ı intera	ctions)	Girls	(no	interac	tions)	Girls	(with	intera	ctions)
Variables	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI
Sweep																
2nd (age 3)	Ref.															
3rd (age 5)	-0.47	**	-0.56	-0.39	-0.67	**	-0.93	-0.42	-0.34	**	-0.42	-0.25	-0.45	**	-0.69	-0.21
4th (age 7)	-0.25	**	-0.35	-0.15	-0.19		-0.47	0.09	-0.16	*	-0.25	-0.07	-0.38	*	-0.63	-0.13
5th (age 11)	0.18	*	0.06	0.30	0.80	*	0.34	1.26	0.37	**	0.26	0.49	0.27		-0.17	0.72
Father work hours	-0.01	**	-0.01	-0.00	-0.01	*	-0.01	-0.00	-0.01		-0.01	-0.00	-0.01	**	-0.01	-0.00
Mother work hours	0.00	*	-0.01	-0.00	0.00		-0.01	0.00	0.00	*	-0.01	0.00	0.00		-0.01	0.00
Division of domestic labour quintiles																
1st (most egalitarian)	Ref.															
2nd	-0.08		-0.25	0.10	-0.31	*	-0.60	-0.02	-0.17	*	-0.34	-0.01	-0.06		-0.33	0.20
3rd	0.06		-0.15	0.27	-0.11		-0.45	0.22	-0.12		-0.31	0.07	-0.09		-0.37	0.20
4th	0.06		-0.14	0.26	-0.13		-0.44	0.18	-0.16		-0.35	0.03	-0.29		-0.58	0.01
5th (least egalitarian)	-0.01		-0.20	0.18	-0.24		-0.53	0.05	0.01		-0.17	0.19	-0.01		-0.28	0.26
Mother in work	-0.26	**	-0.38	-0.14	-0.81	**	-1.11	-0.50	-0.29	*	-0.41	-0.18	-0.41	*	-0.70	-0.13
Domestic labour*mother work lst*in work																
2nd*in work					0 34	*	0.03	0.64					-0.15		-0.43	0.13
3rd*in work					0.26		-0.08	0.60					-0.04		-0.34	0.15
4th*in work					0.20		-0.04	0.60					0.23		-0.08	0.20
5th*in work					0.37	*	0.04	0.68					0.05		-0.23	0.33
Father in work	-0.07		-0.21	0.06	-0.26	*	-0.47	-0.04	0.03		-0.10	0.16	-0.12		-0.31	0.07

Father*mother work status

	Boys	s (no	interac	tions)	Boys	(with	ı intera	ctions)	Girl	s (no i	interac	tions)	Girls	(with	intera	(ictions)
Variables	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI	Coef.		95%	CI
In work*in work					0.33	*	0.12	0.54					0.13		-0.07	0.33
Sweep*father in work																
2nd (age 3)*in work																
3rd (age 5)*in work					0.11		-0.15	0.36					0.14		-0.09	0.38
4th (age 7)*in work					-0.01		-0.28	0.26					0.20		-0.05	0.45
5th (age 11)*in work					-0.58	*	-1.03	-0.14					0.15		-0.29	0.59
Sweep*mother in work																
2nd (age 3)*in work																
3rd (age 5)*in work					0.17		-0.01	0.36					-0.02		-0.20	0.15
4th (age 7)*in work					-0.08		-0.29	0.13					0.07		-0.12	0.27
5th (age 11)*in work					-0.10		-0.38	0.17					-0.04		-0.33	0.25
Constant	3.22	**	3.04	3.40	3.55	**	3.24	3.85	3.07	**	2.89	3.24	3.24	**	2.96	3.53
Random-effects parameters	Est.	SE	95%	CI	Est.	SE	95%	CI	Est.	SE	95%	CI	Est.	SE	95%	CI
sd(sweep)	0.70	0.03	0.65	0.76	0.69	0.03	3 0.64	0.75	0.64	0.03	0.59	0.70	0.64	0.03	0.59	0.70
sd(_cons)	2.36	0.09	2.19	2.55	2.36	0.0	9 2.18	2.55	2.16	0.09	1.98	2.35	2.16	0.09	1.98	2.35
corr(sweep,_cons)	-0.70	0.02	2 -0.74	-0.65	-0.70	0.02	2 -0.74	-0.65	-0.70	0.03	-0.75	-0.65	-0.70	0.03	3 -0.75	-0.65
sd(residual)	1.66	0.02	2 1.61	1.71	1.66	0.02	2 1.61	1.70	1.61	0.02	1.57	1.66	1.61	0.02	2 1.57	1.66

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C.3 Supplementary Tables - externalising and internalising family context and mental health adjusted models

- Externalising difficulties with parental socio-economic context added models
- Internalising difficulties withparental socio-economic context added models
- Externalising difficulties with parental mental health mediation
- Internalising difficulties with parental mental health mediation

Table C.6: Family context adjusted models of children's externalising difficulties over time by child gender

		I	Boys					
Variables	Coef.		95%	CI	Coef.		95%	CI
Sweep (2)								
Sweep 3	-1.99	**	-2.31	-1.68	-2.24	**	-2.56	-1.93
Sweep 4	-1.63	**	-1.97	-1.29	-2.31	**	-2.64	-1.97
Sweep 5	-1.46	**	-1.98	-0.95	-2.47	**	-2.89	-2.04
Mother's gender attitudes	0.10		-0.03	0.22	0.12	*	0.02	0.23
Father's gender attitudes	0.00		-0.11	0.10	0.14	*	0.03	0.24
Parent's gender attitudes interaction	-0.01		-0.03	0.01	-0.03	**	-0.04	-0.01
Mother's work hours	0.00		-0.01	0.00	0.00		-0.00	0.01
Father's work hours	0.00		-0.00	0.00	0.00		-0.01	0.00
Sweep/father's work interaction								
Sweep 3 / in work	-0.08		-0.39	0.24	0.04		-0.28	0.35
Sweep 4 / in work	-0.20		-0.54	0.14	0.01		-0.32	0.34
Sweep 5 / in work	-0.64	*	-1.14	-0.14	-0.04		-0.46	0.39
Father in work (yes)	-0.01		-0.32	0.30	-0.13		-0.40	0.14
Mother in work (yes)	-0.50	*	-0.88	-0.11	-0.67	**	-1.03	-0.32
Parents in work interaction								

]	Boys			Girls		
Variables	Coef.		<u> </u>	CI	Coef.		95%	CI
both in work	0.08		-0.20	0.36	0.22		-0.03	0.46
~ /								
Sweep/mother's work								
interaction	0.00	*	0.05	0.50		*	0.10	0.54
Sweep 3 / in work	0.29	*	0.05	0.52	0.32	*	0.10	0.54
Sweep 4 / III work	0.05		-0.22	0.32	0.23		0.01	0.50
Sweep 57 III work	0.00		-0.27	0.39	0.24		-0.03	0.32
Division of domestic								
labour quintiles (1st most								
egalitarian)								
2nd quintile	-0.41	*	-0.78	-0.04	0.00		-0.33	0.34
3rd quintile	-0.17		-0.59	0.25	-0.06		-0.45	0.33
4th quintile	0.00		-0.41	0.40	-0.30		-0.68	0.08
5th quintile (least	-0.12		-0.49	0.26	-0.02		-0.37	0.33
egalitarian)								
Mother in work / domestic								
labour interaction	0.22		0.02	0.00	0.14		0.46	0.10
in work (2nd dl quintile)	0.33		-0.03	0.69	-0.14		-0.46	0.19
in work (3rd di quintile)	0.40		-0.01	0.82	0.11	*	-0.20	0.49
in work (5th dl quintile)	0.52		-0.07	0.71	0.40		0.05	0.78
in work (Sui di quintile)	0.23		-0.15	0.00	0.00		-0.54	0.55
Mother's education (NVQ1	1.30	**	0.88	1.72	1.05	**	0.64	1.46
or equivalent)								
NVQ 2 or equivalent	0.82	**	0.57	1.07	0.59	**	0.37	0.81
NVQ 3 or equivalent	0.62	**	0.34	0.90	0.25	*	0.01	0.49
NVQ 4 or equivalent								
NVQ 5 or equivalent	-0.06		-0.49	0.36	-0.10		-0.44	0.23
Overseas qualification only	1.10	*	0.30	1.89	0.69	*	0.21	1.16
None of these	1.79	**	1.34	2.24	1.26	**	0.86	1.65
Father's advention (NVO)	0.64	*	0.22	1.06	0.75	**	0.27	1 1 2
or equivalent)	0.04		0.22	1.00	0.75		0.57	1.15
NVO 2 or equivalent	0.31	*	0.05	0.56	0 34	*	0.12	0.55
NVO 3 or equivalent	0.31	*	0.02	0.50	0.34	*	0.12	0.55
NVO 4 or equivalent	0.20		0.02	0.00	0.12		0.17	0.00
NVO 5 or equivalent	-0.52	*	-0.91	-0.13	-0.44	*	-0.74	-0.15
Overseas qualification only	0.48		-0.07	1.04	0.73	*	0.13	1.32
None of these	0.81	**	0.40	1.22	0.82	**	0.48	1.17
OECD equivalised income	0.18		-0.04	0.41	0.01		-0.20	0.22
(1st quintile - least income)			0					
2nd quintile	0.15		-0.00	0.31	0.11		-0.04	0.26
3rd quintile			0.15	0.00	0.10	. !e	0.00	0.07
4th quintile	-0.04		-0.17	0.09	-0.19	*	-0.32	-0.07

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Variables	Coef.		95%	CI	Coef.		95%	CI
5th quintile (most income)	-0.02		-0.18	0.14	-0.30	**	-0.44	-0.16
Stable family response								
Yes	-0.45	**	-0.64	-0.26	-0.36	**	-0.53	-0.19
Number of children in								
household								
1 (CM only)								
2	0.18		-0.01	0.37	0.16		-0.01	0.34
3	0.27	*	0.03	0.50	0.26	*	0.05	0.47
4 or more	0.13		-0.18	0.44	0.05		-0.23	0.34
Constant	6.15	**	5.32	6.99	5.37	**	4.59	6.14
Random-effects	Est.	SE	95%	CI	Est.	SE	95%	CI
parameters								
sd(sweep)	0.83	0.03	0.78	0.90	0.73	0.03	0.67	0.78
sd(constant)	3.89	0.10	3.70	4.08	3.56	0.08	3.40	3.72
corr(sweep,constant)	-0.72	0.02	-0.75	-0.68	-0.76	0.02	-0.79	-0.73
sd(residual)	1.94	0.02	1.89	1.98	1.79	0.02	1.75	1.84

successional)1.940.021.891.981.790.021.751.84Table C.7: Family context adjusted models of children's internalising difficultiesover time by child gender

]	Boys		Girls			
Variables	Coef.		95%	CI	Coef.		95%	CI
Sweep (2)								
Sweep 3	-0.61	**	-0.87	-0.35	-0.38	**	-0.62	-0.15
Sweep 4	-0.07		-0.35	0.21	-0.27	*	-0.52	-0.02
Sweep 5	0.94	**	0.48	1.40	0.39		-0.05	0.83
Mother's gender attitudes	0.09	*	0.00	0.17	0.15	**	0.07	0.22
Father's gender attitudes	-0.02		-0.09	0.05	0.08	*	0.01	0.15
Parent's gender attitudes interaction	0.00		-0.01	0.01	-0.02	*	-0.03	-0.01
Mother's work hours	0.00		-0.00	0.00	0.00		-0.00	0.00
Father's work hours	0.00		-0.01	0.00	-0.01	**	-0.01	-0.00
Sweep/Father's work interaction								
Sweep 3 / in work	0.07		-0.19	0.32	0.10		-0.13	0.34
Sweep 4 / in work	-0.07		-0.34	0.20	0.14		-0.11	0.39
Sweep 5 / in work	-0.70	*	-1.15	-0.25	0.07		-0.36	0.51
Father in work (yes)	-0.01		-0.23	0.21	0.07		-0.12	0.26
2(0)	i.							

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		B	Boys			Girls			
Variables	Coef.		95%	CI	Coef.		95%	CI	
Mother in work (yes)	-0.52	**	-0.82	-0.21	-0.14		-0.42	0.15	
Parents in work interaction									
both in work	0.21		-0.01	0.42	0.03		-0.17	0.24	
	0.21		0101	01.2			0117	0.2	
Sweep/Mother's work									
interaction									
Sweep 3 / in work	0.15		-0.04	0.33	-0.04		-0.21	0.13	
Sweep 4 / in work	-0.14		-0.36	0.07	0.03		-0.17	0.23	
Sweep 5 / in work	-0.15		-0.42	0.13	-0.08		-0.37	0.21	
Division of domestic									
labour quintiles (1st most									
egalitarian)									
2nd quintile	-0.27		-0.56	0.02	0.02		-0.24	0.29	
3rd quintile	-0.07		-0.39	0.26	-0.01		-0.29	0.27	
								4th	
								quin-	
								tile	
-0.08		-	0.22	-0.17		-	0.12		
		0.38				0.45			
5th quintile (least	-0.23		-0.51	0.05	0.05		-0.22	0.32	
egalitarian)									
Mathanin mark / damaatia									
Mother in Work / domestic									
in work (2nd dl quintile)	0.20		0.02	0.59	0.25		0.52	0.02	
in work (3rd dl quintile)	0.20		-0.02	0.58	-0.23		-0.52	0.05	
in work (4th dl quintile)	0.17		-0.17	0.50	0.10		-0.45	0.10	
in work (5th dl quintile)	0.17		-0.03	0.51	-0.06		-0.21	0.40	
in work (5th di quintite)	0.27		-0.05	0.50	-0.00		-0.54	0.22	
Mother's education (NVQ1	0.61	**	0.34	0.89	0.55	**	0.27	0.83	
or equivalent)									
NVQ 2 or equivalent	0.28	**	0.12	0.44	0.21	*	0.06	0.36	
NVQ 3 or equivalent	0.17		-0.01	0.35	0.03		-0.15	0.20	
NVQ 4 or equivalent									
NVQ 5 or equivalent	0.34	*	0.04	0.64	0.17		-0.09	0.42	
Overseas qualification only	0.70	*	0.24	1.15	0.63	*	0.16	1.10	
None of these	1.30	**	0.98	1.62	0.96	**	0.66	1.25	
Father's education (NVO)	0.15		-0.13	0.43	0.23		-0.06	0.52	
or equivalent)									
NVQ 2 or equivalent	0.06		-0.11	0.23	0.05		-0.10	0.20	
								NVQ	
								3 or	
								equiv-	
								alent	

	Boys			Girls				
Variables	Coef.		95%	CI	Coef.		95%	CI
0.16		-	0.34	0.12		-	0.29	
		0.03				0.05		
NVQ 4 or equivalent								
NVQ 5 or equivalent	-0.19		-0.43	0.04	-0.16		-0.37	0.05
Overseas qualification only	0.25		-0.20	0.69	0.56	*	0.14	0.98
None of these	0.41	*	0.13	0.70	0.30	*	0.04	0.56
OECD equivalised income	0.19	*	-0.00	0.38	0.13		-0.05	0.31
(1st quintile - least income)								
2nd quintile	0.21	*	0.07	0.35	0.10		-0.03	0.23
3rd quintile								
4th quintile	-0.04		-0.15	0.07	-0.07		-0.18	0.04
5th quintile (most income)	-0.21	**	-0.33	-0.08	-0.25	**	-0.37	-0.14
Stable family response								
Vac	0.20	*	0.22	0.07	0.12	*	0.24	0.00
105	-0.20		-0.55	-0.07	-0.12		-0.24	-0.00
Number of kids in HH								
1 (CM only)								
2	-0.13		-0.27	0.01	-0.25	**	-0.39	-0.12
3	-0.14		-0.31	0.03	-0.19	*	-0.36	-0.03
4 or more	-0.08		-0.30	0.15	-0.20		-0.44	0.03
	0.70	.11.	0.10	2.24			1	2 ((
Constant	2.73	**	2.12	3.34	2.12	**	1.57	2.66
Random-effects	Est.	SE	95%	CI	Est.	SE	95%	CI
parameters								
sd(sweep)	0.69	0.03	0.64	0.75	0.65	0.03	0.59	0.70
sd(constant)	2.30	0.09	2.13	2.49	2.13	0.09	1.96	2.32
corr(sweep,constant)	-0.71	0.02	-0.75	-0.66	-0.72	0.02	-0.76	-0.67
sd(residual)	1.65	0.02	1.61	1.70	1.61	0.02	1.56	1.66

 Table C.8: Family context and parental mental health adjusted models and children's externalising difficulties over time by child gender

			Boys		Girls			
Variables	Coef.		95%	CI	Coef.		95%	CI
Sweep (2)								
Sweep 3	-2.53	**	-3.09	-1.98	-2.20	**	-2.81	-1.60
Sweep 4	-2.03	**	-2.61	-1.44	-2.24	**	-2.92	-1.57
Sweep 5	-1.77	**	-2.42	-1.13	-2.88	**	-3.51	-2.25
Mother's gender attitudes	0.07		-0.06	0.20	0.05		-0.05	0.16
Father's gender attitudes	0.00		-0.11	0.10	0.10		-0.00	0.21
Parent's gender attitudes interaction	-0.01		-0.03	0.01	-0.02	*	-0.04	-0.00

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]	Boys		Girls			
Variables	Coef.		95%	CI	Coef.		95%	CI
Mother's work hours	0.00		-0.01	0.00	0.00		-0.00	0.01
Father's work hours	0.00		-0.00	0.00	0.00		-0.00	0.01
Father in work (yes)	-0.07		-0.60	0.46	-0.52		-1.06	0.02
Sweep/father's work								
interaction								
Sweep 3 / in work	0.58	*	0.02	1.14	0.13		-0.48	0.74
Sweep 4 / in work	0.24		-0.36	0.83	0.10		-0.58	0.79
Sweep 5 / in work	-0.27		-0.91	0.38	0.45		-0.18	1.09
Sweep/mother's work								
Sween 3 / in work	0.14		0.12	0.41	0.15		0.00	0.20
Sween A / in work	0.14		-0.12	0.41	0.15		-0.09	0.39
Sweep 4 / III WOIK	0.05		-0.27	0.33	0.10		-0.10	0.39
Sweep 5 / III WORK	-0.03		-0.39	0.33	0.13		-0.18	0.43
Division of domestic								
labour quintiles (1st most								
egalitarian)								
2nd quintile	-0.47	*	-0.86	-0.08	0.21		-0.15	0.57
3rd quintile	-0.27		-0.72	0.18	0.03		-0.38	0.45
4th quintile	-0.13		-0.57	0.31	-0.21		-0.61	0.19
5th quintile (least	-0.31		-0.71	0.09	0.01		-0.37	0.38
egalitarian)								
Mother in work (yes)	-0.38	*	-0.74	-0.02	-0.27		-0.60	0.06
Mother in work / domestic								
labour interaction								
in work (2nd dl quintile)	0.45	*	0.06	0.83	-0.33		-0.69	0.02
in work (3rd dl quintile)	0.41		-0.04	0.86	0.03		-0.39	0.45
in work (4th dl quintile)	0.40		-0.03	0.83	0.31		-0.09	0.72
in work (5th dl quintile)	0.36		-0.04	0.76	-0.01		-0.39	0.36
Mother's education (NVQ1	1.32	**	0.89	1.75	0.87	**	0.46	1.28
or equivalent)								
NVQ 2 or equivalent	0.74	**	0.49	0.99	0.51	**	0.29	0.73
NVQ 3 or equivalent	0.62	**	0.34	0.90	0.25	*	0.00	0.50
NVQ 4 or equivalent								
NVQ 5 or equivalent	-0.27		-0.69	0.15	-0.25		-0.60	0.09
Overseas qualification only	0.71		-0.15	1.57	0.30		-0.21	0.80
None of these	1.65	**	1.17	2.14	1.01	**	0.57	1.46
Father's education (NVO)	0.60	*	0.16	1.04	0.63	*	0.23	1.02
or equivalent)	0.00		0.10	1.04	0.05		0.23	1.03
NVO 2 or equivalent	0.23		-0.03	0.49	0.31	*	0.09	0.53

	Boys					G	irls	
Variables	Coef.		95%	CI	Coef.		95%	CI
NVQ 3 or equivalent	0.27		-0.02	0.55	0.37	*	0.10	0.63
NVQ 4 or equivalent								
NVQ 5 or equivalent	-0.49	*	-0.85	-0.12	-0.40	*	-0.71	-0.10
Overseas qualification only	0.57		-0.05	1.18	0.72	*	0.05	1.40
None of these	0.56	*	0.13	0.98	0.75	**	0.38	1.12
OECD equivalised income	0.11		-0.17	0.39	-0.04		-0.31	0.23
(1st quintile - least income)								
2nd quintile	0.11		-0.07	0.29	0.15		-0.02	0.32
3rd quintile								
4th quintile	-0.04		-0.18	0.10	-0.16	*	-0.29	-0.02
5th quintile (most income)	0.03		-0.14	0.19	-0.28	**	-0.42	-0.13
Stable family response								
Yes	-0.26	*	-0.45	-0.06	-0.33	**	-0.51	-0.16
NT 1 C 1'11 '								
Number of children in								
household								
l (CM only)			0.07	o 1 -			0.04	
2	0.27	*	0.06	0.47	0.14		-0.04	0.32
3	0.32	*	0.07	0.57	0.20		-0.02	0.43
4 or more	0.30		-0.03	0.64	-0.05		-0.35	0.25
Mother Malaise Inventory								
High malaise	0.97	**	0.65	1 29	0.68	**	0 39	0.98
ingn malaise	0.57		0.05	1.27	0.00		0.07	0.70
Father Malaise Inventory								
High malaise	0.56	**	0.20	0.92	0.26		-0.09	0.61
Mother Kessler (s2-5)	0.16	**	0.14	0.19	0.15	**	0.13	0.17
Father Kessler (s2-5)	0.04	**	0.02	0.06	0.01		-0.01	0.03
Constant	5.52	**	4.59	6.44	5.35	**	4.44	6.27
Random-effects parameters	Est.	SE	95%	CI	Est.	SE	95%	CI
sd(sweep)	0.75	0.03	0.69	0.81	0.72	0.03	0.66	0.78
sd(constant)	3.60	0.10	3.41	3.80	3.47	0.09	3.30	3.66
corr(sweep,constant)	-0.71	0.02	-0.75	-0.67	-0.78	0.02	-0.81	-0.74
sd(residual)	1.87	0.02	1.82	1.92	1.73	0.02	1.69	1.78
 (1st quintile - least income) 2nd quintile 3rd quintile 4th quintile (most income) Stable family response Yes Number of children in household 1 (CM only) 2 3 4 or more Mother Malaise Inventory High malaise Father Malaise Inventory High malaise Mother Kessler (s2-5) Father Kessler (s2-5) Constant Random-effects parameters sd(sweep) sd(constant) corr(sweep,constant) sd(residual) 	0.11 -0.04 0.03 -0.26 0.27 0.32 0.30 0.97 0.56 0.16 0.04 5.52 Est. 0.75 3.60 -0.71 1.87	* * * * * * * * * * * * * * * * * * *	$\begin{array}{c} -0.17\\ -0.07\\ -0.18\\ -0.14\\ -0.45\\ \end{array}$ $\begin{array}{c} 0.06\\ 0.07\\ -0.03\\ \end{array}$ $\begin{array}{c} 0.65\\ 0.20\\ 0.14\\ 0.02\\ 4.59\\ \end{array}$ $\begin{array}{c} 95\%\\ \end{array}$ $\begin{array}{c} 0.69\\ 3.41\\ -0.75\\ 1.82\\ \end{array}$	0.39 0.29 0.10 0.19 -0.06 0.47 0.57 0.64 1.29 0.92 0.19 0.06 6.44 CI 0.81 3.80 -0.67 1.92	-0.04 0.15 -0.16 -0.28 -0.33 0.14 0.20 -0.05 0.68 0.26 0.15 0.01 5.35 Est. 0.72 3.47 -0.78 1.73	* ** ** ** ** SE 0.03 0.09 0.02 0.02	-0.02 -0.29 -0.42 -0.51 -0.04 -0.02 -0.35 0.39 -0.09 0.13 -0.01 4.44 95% 0.66 3.30 -0.81 1.69	0.23 0.32 -0.02 -0.13 -0.16 0.32 0.43 0.25 0.98 0.61 0.17 0.03 6.27 CI 0.78 3.66 -0.74 1.78

 Table C.9: Family context and parental mental health adjusted models and children's internalising difficulties over time by child gender

]	Boys				
Variables	Coef.	95%	CI	Coef.	95%	CI
Sweep (2)						
Sweep 3	-0.86 **	-1.35	-0.37	-0.39	-0.80	0.01
Sweep 4	-0.02	-0.54	0.51	-0.30	-0.74	0.13
Sweep 5	0.92 *	0.32	1.51	0.22	-0.32	0.77

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		Boys			Girls	
Variables	Coef.	95%	CI	Coef.	95%	CI
Mother's gender	0.08	-0.01	0.17	0.11 *	0.03	0.19
attitudes	0.02	0.00	0.06	0.07	0.01	0.15
rather's gender	-0.02	-0.09	0.00	0.07	-0.01	0.15
attitudes						
Parent's gender	0.00	-0.02	0.01	-0.01 *	-0.03	-0.00
attitudes interaction						
Mother's work hours	0.00	-0.01	0.00	0.00	-0.00	0.00
Father's work hours	0.00	-0.01	0.00	0.00	-0.00	0.00
Father in work (ves)	-0.02	-0.44	0.00	-0.05	-0.39	0.00
runer in work (965)	0.02	0.11	0.07	0.05	0.57	0.27
Sweep/father's work						
interaction						
Sweep 3 / in work	0.31	-0.18	0.80	0.13	-0.28	0.55
Sweep 4 / in work	-0.08	-0.61	0.44	0.19	-0.25	0.63
Sweep 5 / in work	-0.63 *	-1.23	-0.04	0.27	-0.27	0.81
Sween/mother's work						
interaction						
Sweep 3 / in work	0.19	-0.02	0.40	-0.04	-0.24	0.15
Sweep 4 / in work	-0.13	-0.37	0.11	0.05	-0.18	0.27
Sweep 5 / in work	-0.18	-0.48	0.11	-0.11	-0.41	0.20
Division of domostic						
Labour quintilog (1 st						
most egalitarian)						
2nd quintile	-0.23	-0 54	0.07	0.24	-0.04	0.52
3rd quintile	-0.13	-0.47	0.07	0.24	-0.18	0.32
4th quintile	-0.01	-0.34	0.31	-0.03	-0.35	0.28
5th quintile (least	-0.27	-0.58	0.04	0.13	-0.16	0.42
egalitarian)						
Mother in work (yes)	-0.29 *	-0.56	-0.02	0.02	-0.24	0.28
work (yes)	0.27	0.50	0.02	0.02	0.24	0.20
Mother in work /						
domestic labour						
interaction						
in work (2nd dl	0.29	-0.02	0.60	-0.44 *	-0.73	-0.15
quintile)						
in work (3rd dl	0.27	-0.08	0.62	-0.24	-0.57	0.09
quintile)						
in work (4th dl	0.13	-0.22	0.48	-0.02	-0.35	0.32
quintile)	0.22	0.00	0.65	0.09	0.20	0.22
m work (5th al	0.32	-0.00	0.05	-0.08	-0.38	0.22
quintile)						

		B	ove		Girls			
Variables	Coef	D	95%	CI	Coef		95%	CI
			<i>)</i> 5 <i>i</i> 0	CI	Coci.		15 10	
Mother's education	0.61 *	*	0.32	0.91	0.38	*	0.07	0.68
(NVQ1 or equivalent)								
NVQ 2 or equivalent	0.25 *	<	0.09	0.42	0.14		-0.02	0.30
NVQ 3 or equivalent	0.16		-0.03	0.34	0.01		-0.17	0.19
NVQ 4 or equivalent								
NVQ 5 or equivalent	0.17		-0.14	0.48	0.05		-0.22	0.31
Overseas qualification	0.45		-0.01	0.92	0.30		-0.20	0.81
only								
None of these	1.09 *	<*	0.73	1.45	0.65	*	0.32	0.97
Father's education (NVO1 or equivalent)	0.15		-0.14	0.44	0.32	*	0.00	0.64
NVO 2 or equivalent	0.03		-0.15	0.20	0.04		-0.12	0.19
NVO 3 or equivalent	0.09		-0.10	0.27	0.10		-0.07	0.27
NVO 4 or equivalent								•
NVO 5 or equivalent	-0.13		-0.37	0.11	-0.16		-0.38	0.06
Overseas qualification	0.25		-0.24	0.74	0.41		-0.06	0.88
only								
None of these	0.15		-0.16	0.46	0.41	*	0.10	0.73
OECD equivalised	0.13		-0.11	0.37	0.17		-0.03	0.38
income (1st quintile -								
least income)								
2nd quintile	0.15		-0.01	0.30	0.09		-0.06	0.24
3rd quintile								
4th quintile	-0.04		-0.16	0.08	-0.03		-0.15	0.09
5th quintile (most	-0.19 *	<	-0.32	-0.05	-0.18	*	-0.30	-0.05
income)								
Stable family response								
Yes	-0.13 *	<	-0.27	0.00	-0.09		-0.21	0.04
Number of children in								
household								
1 (CM only)								
2	-0.13		-0.28	0.02	-0.28	**	-0.43	-0.13
3	-0.16		-0.35	0.03	-0.29	*	-0.47	-0.11
4 or more	-0.06		-0.31	0.19	-0.29	*	-0.54	-0.03
Mother Malaise								
Inventory								
High malaise	0.56 *	*	0.29	0.83	0.48	**	0.24	0.71
Father Malaise								
Inventory								
High malaise	0.07		-0.20	0.33	0.14		-0.09	0.38
None of these OECD equivalised income (1st quintile - least income) 2nd quintile 3rd quintile 4th quintile (most income) Stable family response Yes Number of children in household 1 (CM only) 2 3 4 or more Mother Malaise Inventory High malaise Stable family response Yes	0.15 0.13 0.15 -0.04 -0.19 * -0.13 * -0.13 -0.16 -0.06 0.56 * 0.07		-0.16 -0.11 -0.01 -0.16 -0.32 -0.27 -0.27 -0.28 -0.35 -0.31 0.29 -0.20	0.46 0.37 0.30 0.08 -0.05 0.00 0.00 0.02 0.03 0.19 0.83 0.33	0.41 0.17 0.09 -0.03 -0.18 -0.09 -0.29 -0.29 0.48 0.14	* * * *	0.10 -0.03 -0.06 -0.15 -0.30 -0.21 -0.43 -0.47 -0.54 0.24 -0.24	0.7 0.3 0.2 0.0 -0.0 -0.0 -0.0 -0.0 -0.0 -0.0 -

		F	Boys			(Firls	
Variables	Coef.		95%	CI	Coef.		95%	CI
Mother Kessler (s2-5)	0.13	**	0.11	0.15	0.12	**	0.10	0.14
Father Kessler (s2-5)	0.03	*	0.01	0.04	-0.01		-0.02	0.01
Constant	2.23	**	1.54	2.91	1.88	**	1.24	2.53
Random-effects	Est.	SE	95%	CI	Est.	SE	95%	CI
parameters								
sd(sweep)	0.66	0.03	0.61	0.72	0.65	0.03	0.60	0.72
sd(constant)	2.25	0.10	2.06	2.46	2.17	0.10	1.98	2.37
corr(sweep,constant)	-0.73	0.03	-0.78	-0.68	-0.76	0.02	-0.80	-0.71
sd(residual)	1.60	0.03	1.55	1.65	1.56	0.03	1.51	1.61

C.4 Breastfeeding sensitivity analysis

Breastfeeding was not included in the main thesis analyses, however, a sensitivity analysis was run to confirm that it's absence in the main text was not biasing the results. The following tables show that while breastfeeding is a significant factor in children's socio-emotional development, it's absence from the analysis presented in this text does not affect the exposures of interest in the models. The breastfeeding analysis tables present boys and girls total difficulties scores in a simplified form from the main text, they include the context variables of interest as well as the main exposures of the division of labour and gender attitudes, but do not include the interactions explored in the main text.

	Withou	ıt bre	astfeeding	3	With b	oreastf	eeding	
	Coef.	P=	959	% CI	Coef.	P=	959	% CI
Sweep								
2nd	ref.							
3rd	-2.33	**	-2.49	-2.18	-2.34	**	-2.49	-2.18
4th	-1.99	**	-2.17	-1.81	-1.99	**	-2.17	-1.81
5th	-1.83	**	-2.04	-1.62	-1.84	**	-2.05	-1.62
Mother's gender attitudes	0.20	*	0.01	0.38	0.19	*	0.01	0.38

Table C.10: Boys total difficulties scores simple models without and with breast-feeding

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	Witho	ut breas	stfeedin	g	With b	oreastfe	eding	
	Coef.	P=	959	% CI	Coef.	P=	959	% CI
Father's gender attitudes	-0.01		-0.16	0.14	-0.01		-0.16	0.14
Mother's X Father's								
gender attitudes	-0.01		-0.04	0.01	-0.01		-0.04	0.01
Mother's work hours	0.00		-0.01	0.01	0.00		-0.01	0.01
Father's work hours	-0.01	*	-0.01	0.00	-0.01	*	-0.01	0.00
Father in work	-0.16		-0.54	0.23	-0.15		-0.54	0.23
Mother in work	-0.45	*	-0.85	-0.06	-0.45	*	-0.85	-0.06
Parent's in work interaction	0.32		-0.08	0.72	0.32		-0.08	0.71
Division of domestic								
labour								
1st quintile (most	ref.							
egalitarian)								
2nd quintile	-0.22		-0.58	0.14	-0.22		-0.58	0.14
3rd quintile	0.18		-0.26	0.63	0.19		-0.25	0.64
4th quintile	0.26		-0.17	0.69	0.27		-0.16	0.70
5th quintile (least egalitarian)	0.05		-0.35	0.46	0.09		-0.32	0.49
Mother's education								
NVO1 or equivalent	2.00	**	1.39	2.60	1.94	**	1.33	2.54
NVO 2 or equivalent	1.12	**	0.78	1.46	1.08	**	0.74	1.42
NVO 3 or equivalent	0.85	**	0.45	1.24	0.82	**	0.43	1.21
NVO 4 or equivalent								
NVO 5 or equivalent	0.31		-0.29	0.92	0.39		-0.21	1.00
Overseas qualification	1.84	*	0.76	2.92	1.84	**	0.76	2.92
None of these	3.22	**	2.55	3.89	3.16	**	2.50	3.83
Father's education								
NVO1 or equivalent	0.78	*	0.17	1 30	0.74	*	0.13	1 35
NVO 2 or equivalent	0.70	*	0.17	0.74	0.74		-0.01	0.70
NVO 3 or equivalent	0.50	*	0.05	0.74	0.55	*	0.01	0.70
NVO 4 or equivalent	013		0.00	0.05	0.70		0.00	0.00
NVO 5 or equivalent	_0.71	*	-1.24	-0.17	-0.67	*	_1 21	-0.13
Overseas qualification	0.71		-1.24	1 57	0.67		-1.21 _0.10	1 53
only	0.71		-0.15	1.57	0.07		-0.17	1.55
None of these	1.15	**	0.55	1.74	1.10	**	0.50	1.70
OECD income quintiles								

	Withou	it breas	tfeeding	5	With b	reastfee	ding	
	Coef.	P=	95%	6 CI	Coef.	P=	95%	6 CI
1st	0.34	*	0.00	0.69	0.34		0.00	0.68
2nd	0.31	*	0.07	0.55	0.31	*	0.07	0.55
3rd	ref.							
4th	-0.07		-0.26	0.12	-0.07		-0.26	0.12
5th	-0.22		-0.45	0.01	-0.23		-0.46	0.00
Stable family	0.63	**	0.80	0.36	0.63	**	0.00	0.36
	-0.05		-0.89	-0.50	-0.05		-0.90	-0.30
Number of children in								
household								
1 (cohort member	ref.							
only)								
2	0.09		-0.17	0.35	0.10		-0.16	0.36
3	0.15		-0.18	0.48	0.17		-0.15	0.50
4 or more	0.04		-0.39	0.48	0.08		-0.36	0.51
Still breastfeeding at 9					-0.58	*	-0.96	-0.20
months								
Constant	8.43	**	7.29	9.57	8.50	**	7.36	9.64

Table C.11: Girls total difficulties scores simple models without and with breast-feeding

	Withou	Without breastfeeding Coef. P= 95% CI ref. -2.31 ** -2.46 -2.17 -2.26 ** -2.42 -2.09 -1.96 ** -2.15 -1.76 0.29 ** 0.14 0.44 0.23 * 0.08 0.38 -0.04 ** -0.07 -0.02 0.20 0.01				reastfee	ding 95% CI -2.46 -2.17 -2.42 -2.10 -2.16 -1.77 0.14 0.45 0.08 0.38		
	Coef.	P=	95%	% CI	Coef.	P=	95%	6 CI	
Sweep									
2nd	ref.								
3rd	-2.31	**	-2.46	-2.17	-2.32	**	-2.46	-2.17	
4th	-2.26	**	-2.42	-2.09	-2.26	**	-2.42	-2.10	
5th	-1.96	**	-2.15	-1.76	-1.96	**	-2.16	-1.77	
Mother's gender attitudes	0.29	**	0.14	0.44	0.30	**	0.14	0.45	
Father's gender attitudes	0.23	*	0.08	0.38	0.23	*	0.08	0.38	
Mother's X Father's gender attitudes									
	-0.04	**	-0.07	-0.02	-0.04	**	-0.06	-0.02	
Mother's work hours	0.00		0.00	0.01	0.00		0.00	0.01	
Father's work hours	-0.01	*	-0.01	0.00	-0.01	*	-0.01	0.00	
Father in work	-0.02		-0.35	0.31	-0.02		-0.35	0.31	
Mother in work	-0.64	**	-1.00	-0.28	-0.64	**	-1.00	-0.28	

	Witho	ut breas	stfeeding	g	With breastfeeding				
	Coef.	P=	959	% CI	Coef.	P=	959	% CI	
Parent's in work interaction	0.25		-0.11	0.62	0.25		-0.11	0.61	
Division of domestic									
labour 1st quintile (most	ref.								
egalitarian)	0.05		o - 0	0.00	0.04			0.00	
2nd quintile	-0.25		-0.58	0.08	-0.24		-0.57	0.09	
3rd quintile	-0.09		-0.49	0.30	-0.05		-0.45	0.34	
4th quintile	-0.18		-0.56	0.21	-0.12		-0.51	0.27	
5th quintile (least egalitarian)	-0.02		-0.39	0.36	0.05		-0.33	0.42	
Mother's education									
NVQ1 or equivalent	1.59	**	1.00	2.18	1.48	**	0.89	2.07	
NVQ 2 or equivalent	0.84	**	0.52	1.15	0.75	**	0.44	1.06	
NVQ 3 or equivalent NVQ 4 or equivalent	0.27 ref.		-0.07	0.62	0.23		-0.11	0.58	
NVQ 5 or equivalent	0.03		-0.48	0.53	0.10		-0.41	0.61	
Overseas qualification only	1.35	**	0.58	2.13	1.32	**	0.55	2.10	
None of these	2.32	**	1.72	2.91	2.23	**	1.64	2.83	
Father's education									
NVQ1 or equivalent	1.02	**	0.46	1.57	0.95	**	0.40	1.50	
NVQ 2 or equivalent	0.40	*	0.09	0.71	0.35	*	0.04	0.66	
NVQ 3 or equivalent	0.54	*	0.18	0.90	0.55	*	0.19	0.91	
NVQ 4 or equivalent	ref.								
NVQ 5 or equivalent	-0.62	*	-1.04	-0.20	-0.59	*	-1.01	-0.17	
Overseas qualification only	1.26	*	0.37	2.14	1.24	*	0.35	2.13	
None of these	1.16	**	0.64	1.67	1.12	**	0.60	1.63	
OECD income									
1st	0.10		-0.21	0.41	0.10		-0.21	0.41	
2nd	0.19		-0.03	0.41	0.19		-0.03	0.41	
3rd	ref		0.05	0.11	0.17		0.05	0.11	
4th	-0.27	*	-0.45	-0.08	-0.27	*	-0.45	-0.08	
5th	-0.53	**	-0.74	-0.33	-0.54	**	-0.74	-0.33	
Stable family									
	-0.46	**	-0.71	-0.22	-0.42	**	-0.66	-0.18	
Number of children in household									

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	Witho	ut breas	tfeeding	g	With b	reastfe	eding	
	Coef.	P=	959	% CI	Coef.	P=	959	% CI
1 (cohort member only)	ref.							
2	-0.06		-0.31	0.19	-0.06		-0.31	0.19
3	0.12		-0.19	0.43	0.14		-0.17	0.45
4 or more	-0.15		-0.58	0.29	-0.11		-0.55	0.33
Still breastfeeding at 9 months					-0.86	**	-1.18	-0.55
Constant	7.09	**	6.07	8.11	7.14	**	6.12	8.15

Appendix D

D.1 Analysis of missing data

Exposures at age 9	Baselin	e couples	5		Word F	Reading S	ample**		Difference be-
monuis	N=120	14			N=901	8			tween samples
	N	%	Cu. %	weighted	N	%	Cu. %	weighted	difference in
				proportion				proportion	proportions
Main NS-SEC									
Never worked	712	5.93	5.93	.04	437	4.85	4.85	.04	.00
Manag & profl	4,011	33.39	100	.37	3,273	36.29	100	.36	02
Intermediate	2,293	19.09	66.61	.20	1,750	19.41	63.71	.20	.00
Sm emp & s-emp	484	4.03	47.53	.05	379	4.2	44.3	.05	.00
Lo sup & tech	652	5.43	43.5	.05	481	5.33	40.1	.05	.00
Semi-rou & routine	3,862	32.15	38.07	.29	2,698	29.92	34.76	.31	.01
Partner NS-SEC									
Never worked	84	0.7	0.7	<.00	38	0.42	0.42	<.00	.00
Manag & profl	4,720	39.29	100	.45	3,778	41.89	100	.44	02
Intermediate	632	5.26	60.71	.05	496	5.5	58.11	.05	.00
Sm emp & s-emp	1,540	12.82	55.45	.13	1,129	12.52	52.61	.13	.00
Lo sup & tech	1,910	15.9	42.63	.15	1,386	15.37	40.09	.15	.00
Semi-rou & routine	3,128	26.04	26.74	.21	2,191	24.3	24.72	.23	.01

Table D.1: Sample missingness: Baseline sample couples compared to those avaiable and selected for sweep 4 cognitive analyses

Main highest									
education/NVQ									
NVQ level 1	822	6.84	6.84	.07	568	6.3	6.3	.07	.00
NVQ level 2	3,468	28.87	35.71	.30	2,563	28.42	34.72	.30	.01
NVQ level 3	1,796	14.95	50.66	.15	1,391	15.42	50.14	.15	.00
NVQ level 4	3,842	31.98	82.64	.35	3,097	34.34	84.49	.33	02
NVQ level 5	511	4.25	86.89	.04	407	4.51	89	.04	.00
Overseas qual only	304	2.53	89.42	.02	192	2.13	91.13	.02	.00
None of these	1,271	10.58	100	.08	800	8.87	100	.08	.01
Partner highest									
education/NVQ									
NVQ level 1	797	6.63	6.63	.07	573	6.35	6.35	.07	.00
NVQ level 2	3,321	27.64	34.28	.27	2,485	27.56	33.91	.28	.01
NVQ level 3	1,891	15.74	50.02	.16	1,421	15.76	49.67	.16	.00
NVQ level 4	3,516	29.27	79.28	.32	2,832	31.4	81.07	.31	01
NVQ level 5	691	5.75	85.03	.06	546	6.05	87.13	.06	01
Overseas qual only	367	3.05	88.09	.02	248	2.75	89.88	.02	.00
None of these	1,431	11.91	100	.09	913	10.12	100	.09	.00
OECD equivalized									
income									
Lowest quintile	1,337	11.13	11.13	.08	858	9.51	9.51	.09	.01
Second quintile	2,606	21.69	32.82	.18	1,804	20	29.52	.19	.01
Third quintile	2,742	22.82	55.64	.23	2,054	22.78	52.3	.23	.00
Fourth quintile	2,743	22.83	78.48	.25	2,187	24.25	76.55	.25	01
Highest quintile	2,586	21.52	100	.26	2,115	23.45	100	.25	02

Main any work hours									
0 hours	5,259	43.77	43.77	.42	3,709	41.13	41.13	.42	.01
Any work hours	6,755	56.23	100	.58	5,309	58.87	100	.58	01
Partner any work									
hours									
0 hours	1,386	11.54	11.54	.09	880	9.76	9.76	.09	.00
Any work hours	10,628	88.46	100	.91	8,138	90.24	100	.91	.00
Main ethnicity									
Refusal	1	0.01	0.01	<.00	1	0.01	0.01	<.00	.00
Don't Know	21	0.17	0.18	<.00	19	0.21	0.22	<.00	.00
Not applicable	2	0.02	0.2	<.00	2	0.02	0.24	<.00	.00
White	10,630	88.48	88.68	.92	8,098	89.8	90.04	.91	.00
Mixed	80	0.67	89.35	.01	47	0.52	90.56	.01	.00
Indian	290	2.41	91.76	.02	209	2.32	92.88	.02	.00
Pakistani and	564	4.69	96.45	.03	365	4.05	96.93	.03	.00
Bangladeshi									
Black or Black	213	1.77	98.23	.01	150	1.66	98.59	.02	.00
British									
Other group	213	1.77	100	.01	127	1.41	100	.01	.00
Partner ethnicity									
Refusal	1	0.01	0.01	<.00	1	0.01	0.01	<.00	.00
Don't Know	21	0.17	0.18	<.00	19	0.21	0.22	<.00	.00
Not applicable	1	0.01	0.19	<.00	1	0.01	0.23	<.00	.00

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White	10,589	88.14	88.33	.92	8,056	89.33	89.57	.91	01
Mixed	82	0.68	89.01	.01	62	0.69	90.25	.01	.00
Indian	299	2.49	91.5	.02	216	2.4	92.65	.02	.00
Pakistani and	573	4.77	96.27	.03	371	4.11	96.76	.03	.00
Bangladeshi									
Black or Black	253	2.11	98.38	.02	176	1.95	98.71	.02	.00
British									
Other group	195	1.62	100	.01	116	1.29	100	.01	.00
Main respondent									
Female	12,010	99.97	99.97	<.00	9,015	99.97	100	<.00	.00
Male	4	0.03	100	1.00	3	0.03	0.03	1.00	.00

N.B. Sample size varies marginally between Word Reading, Pattern Construction and Progress in Maths, but Word Reading was chosen for this missing analysis because it had the smallest sample of all three outcomes. Also, the weighted proportion for baseline is using sampling weights, for the Word Reading from sweep 4 it is a sampling and attrition weight.

D.2 Maths, word reading and pattern construction models with family context covariates

												N 110									
			Mc	del 1				Model 2							Model 3						
Variable		boys			girls			boys			girls			boys			girls				
	coef.	95	% CI	В	B 95% CI B		В	B 95%CI		В	95% CI		В	95% CI		В		95% CI			
Mother in work (yes)	1.07	-0.67	2.82	0.69	-1.04	2.41	3.20	-0.07	6.47	3.51	0.54	6.48	1.34	-1.67	4.36	1.50	-1.39	4.39			
Domestic Labour																					
2nd quintile	0.71	-0.84	2.26	1.20	-0.21	2.61	1.34	-1.63	4.32	2.58	-0.20	5.36	0.64	-2.19	3.48	1.40	-1.22	4.01			
3rd quintile	0.78	-0.84	2.41	1.29	-0.38	2.96	2.27	-0.70	5.24	3.44	0.61	6.27	0.91	-1.85	3.67	2.23	-0.56	5.02			
4th quintile	0.63	-1.11	2.38	1.71	-0.10	3.51	2.76	-0.34	5.86	4.05	0.92	7.19	1.36	-1.65	4.38	2.87	-0.14	5.88			
5th quintile	1.72	0.15	3.28	0.63	-0.91	2.16	3.44	0.73	6.15	3.08	0.51	5.64	2.54	-0.04	5.12	2.25	-0.17	4.68			
Mother work*domestic labour 1st quintile, in work (ref) 2nd quintile, in work 3rd quintile, in work 4th quintile, in work 5th quintile, in work	6.29	3.29	9.29	4.09	1.31	6.87	-0.78 -2.20 -3.56 -2.90 6.02	-4.52 -6.19 -7.59 -6.34	2.96 1.80 0.47 0.55 9.05	-1.75 -3.14 -3.56 -4.01 3.58	-4.86 -6.45 -7.34 -7.14 0.76	1.36 0.16 0.23 -0.88 6.40	-0.62 -0.44 -2.05 -1.38	-4.24 -4.23 -5.99 -4.60 -1.38	3.00 3.35 1.89 1.84 4.98	-1.47 -2.68 -3.04 -3.01	-4.40 -5.92 -6.54 -5.95 -1.84	1.46 0.56 0.46 -0.08 3.56			
Mother's work hours	0.76	0.18	1.33	0.82	0.23	1.41	0.61	0.02	1.21	0.67	0.07	1.26	-0.15	-0.73	0.43	0.03	-0.55	0.62			
Father's work hours	-0.19	-0.73	0.34	-0.02	-0.47	0.43	-0.19	-0.73	0.34	0.00	-0.46	0.46	-0.45	-0.98	0.07	-0.36	-0.77	0.06			
Mother's education NVQ1 or equivalent NVQ 2 or equivalent NVQ 3 or equivalent NVQ 4 or equivalent NVQ 5 or equivalent													-4.21 -2.49 -2.51 0.74	-6.56 -4.00 -3.88 -1.85	-1.85 -0.98 -1.13 3.32	-3.81 -2.21 -0.94 1.37	-5.93 -3.42 -2.28 -0.68	-1.69 -1.01 0.40 3.43			

Table D.2: Division of labour and children's Progress in Maths scores with covariates

Children's Progress in Maths score by division of labour, gender attitudes and family context

D.2.1

			Мо	del 1					Mo	del 2			Model 3							
Variable	boys				girls		boys				girls		boys			girls				
	coef.	95	% CI	В	959	% CI	В	95	%CI	В	959	% CI	В	95	% CI	В	95	% CI		
Overseas qualification only													-2.24	-5.97	1.50	-1.04	-5.35	3.26		
None of these													-6.59	-9.03	-4.16	-5.40	-7.60	-3.20		
Father's education																				
NVQ1 or equivalent													-1.83	-3.99	0.34	-2.76	-5.04	-0.49		
NVQ 2 or equivalent													-2.55	-4.04	-1.07	-2.13	-3.47	-0.79		
NVQ 3 or equivalent													-0.63	-2.17	0.91	-1.23	-2.62	0.15		
NVQ 4 or equivalent																				
NVQ 5 or equivalent													2.89	0.28	5.51	1.87	-0.05	3.79		
Overseas qualification only													-2.62	-5.80	0.57	-4.06	-7.54	-0.58		
None of these													-4.57	-6.73	-2.41	-4.48	-6.25	-2.72		
OECD equivalised income																				
1st quintile (lowest													-4.70	-7.36	-2.03	-3.29	-5.65	-0.92		
income)																				
2nd quintile													-1.63	-3.32	0.06	-2.24	-3.86	-0.61		
3rd quintile																				
4th quintile													0.74	-0.81	2.29	0.78	-0.54	2.10		
5th quintile (highest													3.23	1.50	4.96	3.88	2.40	5.36		
income)																				
Stable family													1.70	0.63	2.77	0.82	-0.18	1.83		
Centered age	-0.46	-0.63	-0.28	-0.48	-0.65	-0.32	-0.45	-0.62	-0.28	-0.48	-0.65	-0.32	-0.39	-0.55	-0.23	-0.44	-0.60	-0.28		
Constant	92.22	90.29	94.14	92.65	90.81	94.49	91.17	88.75	93.60	91.22	88.97	93.47	100.73	3 97.58	103.88	99.87	96.89	102.85		

N.B. All work hours results are presented scaled as 1 unit=10 hours.

			Мо	del 1					Mo	del 2			Model 3							
Variable	boys girls					boys girls					boys			girls						
	В	95	% CI	В	B 95% CI B		В	B 95%CI		В	B 95% CI		B 95% CI		B 9		% CI			
Mother's gender attitudes	-0.40	-0.66	-0.14	-0.10	-0.33	0.14	-0.87	-1.50	-0.24	-0.59	-1.19	0.01	-0.14	-0.76	0.47	0.02	-0.59	0.62		
Father's gender attitudes	0.04	-0.20	0.28	-0.14	-0.36	0.08	-0.39	-0.99	0.20	-0.60	-1.18	-0.02	0.23	-0.33	0.79	-0.01	-0.60	0.58		
Gender attitudes interaction							0.07	-0.02	0.16	0.08	-0.01	0.16	-0.01	-0.09	0.07	0.01	-0.08	0.09		
Mother's education																				
NVQ1 or equivalent													-4.29	-6.64	-1.94	-3.94	-6.07	-1.81		
NVQ 2 or equivalent													-2.47	-4.00	-0.95	-2.24	-3.41	-1.06		
NVQ 3 or equivalent													-2.45	-3.85	-1.05	-0.94	-2.30	0.42		
NVQ 4 or equivalent																				
NVQ 5 or equivalent													0.76	-1.78	3.31	1.44	-0.63	3.50		
Overseas qualification only													-2.25	-6.08	1.58	-1.23	-5.49	3.03		
None of these													-6.64	-9.06	-4.22	-5.33	-7.50	-3.15		
Father's education																				
NVQ1 or equivalent													-1.86	-4.08	0.35	-2.81	-5.10	-0.52		
NVQ 2 or equivalent													-2.62	-4.14	-1.10	-2.22	-3.57	-0.88		
NVQ 3 or equivalent													-0.60	-2.13	0.93	-1.29	-2.68	0.10		
NVQ 4 or equivalent																				
NVQ 5 or equivalent													2.98	0.41	5.54	1.86	-0.09	3.81		
Overseas qualification only													-2.53	-5.74	0.68	-4.15	-7.67	-0.63		
None of these													-4.61	-6.75	-2.47	-4.62	-6.40	-2.83		
OECD equivalised income																				
1st quintile (lowest													-4.54	-6.91	-2.17	-3.03	-5.06	-1.00		
income)																				
2nd quintile													-1.51	-3.13	0.11	-2.08	-3.63	-0.52		
3rd quintile																				
4th quintile													0.63	-0.92	2.17	0.69	-0.63	2.02		

Table D.3: Gender attitudes and children's Progress in Maths scores with covariates

D.

			Mo	del 1					Mo	del 2		Model 3							
Variable	boys			girls			boys			girls				boys		girls			
	В	95	% CI	B 95% CI		В	B 95%CI		В	95% CI		В	95% CI		B 95		5% CI		
5th quintile (highest													2.97	1.28	4.67	3.73	2.28	5.19	
income)																			
Stable family													1.76	0.69	2.83	0.81	-0.18	1.80	
Centered age	-0.48	-0.65	-0.30	-0.49	-0.65	-0.32	-0.48	-0.65	-0.30	-0.49	-0.66	-0.32	-0.39	-0.55	-0.23	-0.45	-0.61	-0.28	
Constant	101.73	3 99.79	103.68	100.13	98.40	101.86	104.42	2 100.64	108.20	103.01	99.45	106.56	101.34	97.34	105.33	100.4	5 96.25	104.65	

N.B. All work hours results are presented scaled as 1 unit=10 hours.
			Mo	del 1					Mo	del 2					Mo	del 3		
Variable		boys			girls			boys			girls			boys			girls	
	В	95	% CI	В	95	% CI	В	95	%CI	В	95	% CI	В	95	% CI	В	95	% CI
Mother in work (yes)	0.95	-0.89	2.78	1.17	-0.66	2.99	2.44	-1.06	5.93	2.12	-0.94	5.19	1.30	-1.28	4.73	0.55	-2.34	3.45
Domestic labour																		
2nd quintile	1.27	-0.47	3.02	0.93	-0.69	2.56	1.40	-2.11	4.91	1.89	-1.02	4.81	1.36	-1.74	4.78	0.73	-2.06	3.52
3rd quintile	1.17	-0.58	2.93	1.17	-0.71	3.06	1.83	-1.68	5.35	1.29	-1.87	4.45	1.11	-1.66	4.40	0.09	-2.94	3.11
4th quintile	0.05	-2.08	2.19	2.10	0.25	3.94	2.18	-1.53	5.90	3.39	0.38	6.40	1.59	-1.45	5.31	1.68	-1.19	4.55
5th quintile	-1.15	-3.05	0.74	-0.19	-1.89	1.52	0.05	-3.29	3.39	0.87	-1.80	3.53	-0.11	-2.75	3.21	-0.03	-2.56	2.49
Mother work*domestic																		
labour																		
1st quintile, in work (ref)																		
2nd quintile, in work							0.19	-3.92	4.31	-1.22	-4.61	2.16	-0.53	-4.71	2.94	-1.28	-4.48	1.93
3rd quintile, in work							-0.71	-5.25	3.84	0.25	-3.54	4.04	0.47	-4.00	3.88	0.46	-3.19	4.10
4th quintile, in work							-3.81	-8.35	0.72	-2.03	-5.69	1.63	-3.05	-7.74	0.50	-1.53	-4.97	1.91
5th quintile, in work							-2.14	-6.06	1.78	-1.68	-5.05	1.69	-1.04	-5.13	1.95	-1.04	-4.14	2.06
Father in work (yes)	10.54	7.16	13.91	7.19	4.18	10.21	9.57	6.13	13.00	6.44	3.33	9.54	5.39	2.21	8.85	3.70	0.75	6.66
Mother's work hours	0.70	0.11	1.28	0.44	-0.17	1.04	2.31	1.09	3.53	1.21	0.02	2.39	0.41	-1.14	0.04	-0.49	-1.09	0.12
Father's work hours	-0.54	-1.13	0.06	-0.24	-0.72	0.24	0.00	-0.71	0.71	0.02	-0.58	0.62	-0.53	-1.39	-0.28	-0.56	-1.03	-0.08
Mother*father work hours							-0.04	-0.07	-0.02	-0.01	-0.03	0.00	-0.02	-0.04	0.00	0.00	-0.02	0.02
Mother's education																		
NVQ1 or equivalent													-6.81	-9.44	-4.19	-5.29	-7.65	-2.92
NVQ 2 or equivalent													-3.15	-4.85	-1.44	-2.96	-4.29	-1.63
NVQ 3 or equivalent													-1.64	-3.45	0.18	-1.82	-3.35	-0.30

Table D.4: Division of labour and children's BAS Word Reading scores with covariates

D.2.2 Children's BAS Word Reading scores by division of labour, gender attitudes and family context

			Mod	iel 1					Mod	iel 2					Mo	del 3		
Variable		boys			girls			boys			girls			boys			girls	
	В	959	% CI	В	959	% CI	В	959	%CI	В	95%	6 CI	В	959	% CI	В	959	% CI
NVQ 4 or equivalent																		
NVQ 5 or equivalent													2.09	-0.67	4.85	1.54	-0.91	3.99
Overseas qualification only													-4.47	-9.88	0.94	-1.69	-6.25	2.86
None of these													-6.96	-9.78	-4.14	-6.62	-8.80	-4.44
Father's education																		
NVO1 or aquivalant													5 25	7.07	2 72	2.09	6.25	1.70
NVQ1 of equivalent													3 37	5.02	1 73	2 34	3 77	-1.70
NVQ 2 of equivalent													2 30	-5.02	-1.75	1 41	3.06	-0.91
NVQ 5 of equivalent													-2.50	-4.20	-0.57	-1.41	-5.00	0.25
NVQ 4 of equivalent													1 30	1 03	6.68	2 92	0.85	1 98
Overseas qualification only													-5.67	-9.41	-1.03	-3.05	-7.62	-0.29
None of these													5.54	8.00	3.08	1.85	6.00	2.70
None of these													-5.54	-8.00	-5.08	-4.05	-0.99	-2.70
OECD equivalised income																		
1st quintile (lowest													-3.42	-6.69	-0.16	-2.43	-5.20	0.33
income)																		
2nd quintile													-1.65	-3.62	0.31	-3.09	-4.74	-1.45
3rd quintile																		
4th quintile													2.24	0.67	3.81	1.76	0.24	3.28
5th quintile (highest													4.69	2.87	6.51	3.61	2.16	5.07
income)																		
Stable family													2.28	1.10	3.46	2.12	1.03	3.20
Centered age	-0.47	-0.67	-0.27	-0.48	-0.67	-0.30	-0.46	-0.66	-0.26	-0.48	-0.66	-0.30	-0.34	-0.53	-0.16	-0.48	-0.65	-0.30
Constant	102.9	7 100.49	105.45	107.53	105.50	109.55	100.73	97.64	103.82	106.37	103.88	108.87	111.95	108.30	115.60	116.17	112.77	119.57

N.B. All work hours results are presented scaled as 1 unit=10 hours.

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			Мо	del 1					Мо	del 2					Мо	del 3		
Variable		boys			girls			boys			girls			boys			girls	
	В	95	% CI	В	95	% CI	В	95	5%CI	В	95	% CI	В	959	% CI	В	95	% CI
Mother's gender attitudes	-0.35	-0.64	-0.06	0.07	-0.21	0.34	-1.18	-1.99	-0.37	-1.01	-1.73	-0.29	-0.29	-1.05	0.46	-0.38	-1.08	0.33
Father's gender attitudes	0.02	-0.28	0.32	-0.17	-0.41	0.08	-0.75	-1.48	-0.03	-1.18	-1.83	-0.53	0.00	-0.68	0.68	-0.52	-1.20	0.16
Gender attitudes interaction							0.13	0.01	0.24	0.16	0.06	0.27	0.04	-0.07	0.15	0.10	-0.01	0.21
Mother's education																		
NVQ1 or equivalent													-6.67	-9.28	-4.07	-5.18	-7.55	-2.82
NVQ 2 or equivalent													-3.23	-4.95	-1.51	-2.78	-4.08	-1.48
NVQ 3 or equivalent													-1.69	-3.53	0.14	-1.74	-3.27	-0.22
NVQ 4 or equivalent																		
NVQ 5 or equivalent													2.07	-0.63	4.77	1.63	-0.93	4.19
Overseas qualification only													-4.55	-10.08	0.98	-1.89	-6.41	2.63
None of these													-7.09	-9.95	-4.24	-6.37	-8.52	-4.22
Father's education																		
NVQ1 or equivalent													-5.41	-8.02	-2.79	-4.15	-6.38	-1.93
NVQ 2 or equivalent													-3.38	-5.01	-1.76	-2.49	-3.92	-1.06
NVQ 3 or equivalent													-2.28	-4.20	-0.35	-1.52	-3.16	0.12
NVQ 4 or equivalent																		
NVQ 5 or equivalent													4.55	2.23	6.87	3.05	0.97	5.12
Overseas qualification only													-5.66	-9.34	-1.98	-4.51	-8.12	-0.90
None of these													-5.77	-8.26	-3.28	-5.20	-7.37	-3.03
OECD equivalised income													4.02	6.00	1.05	2.00	5.01	0.25
1 st quintile (lowest													-4.03	-6.80	-1.25	-2.68	-5.01	-0.35
income)													1.45	2.24	0.41	0.00	4.40	1.00
2nd quintile													-1.47	-3.34	0.41	-2.82	-4.40	-1.23
3rd quintile																		
4th quintile													2.02	0.47	3.57	1.58	0.04	3.12

Table D.5: Parental gender attitudes and children's BAS Word Reading scores with covariates

			Mo	del 1					Mo	del 2					Mo	del 3		
Variable		boys			girls			boys			girls			boys			girls	
	В	959	% CI	В	959	% CI	В	95	%CI	В	959	6 CI	В	959	% CI	В	959	% CI
5th quintile (highest													4.41	2.65	6.18	3.18	1.69	4.66
income)																		
Stable family													2.37	1.19	3.55	2.13	1.06	3.21
Centered age	-0.49	-0.69	-0.30	-0.50	-0.68	-0.31	-0.50	-0.70	-0.30	-0.50	-0.69	-0.31	-0.34	-0.53	-0.16	-0.49	-0.67	-0.32
Constant	113.98	111.94	116.02	115.64	113.58	117.70	118.82	2 114.12	123.52	121.95	117.92	125.97	114.31	109.77	118.85	118.71	114.01	123.41

N.B. All work hours results are presented scaled as 1 unit=10 hours.

				1.1.1						1.1.0						1.1.0		
			Mc	del I			_		Мо	del 2					Мо	del 3		
Variable		boys			girls			boys			girls			boys			girls	
	В	95	% CI	В	95	% CI	В	95	%CI	В	95	% CI	В	95	% CI	В	95	% CI
Mother in work (yes)	1.06	-0.28	2.40	1.07	-0.18	2.31	2.74	0.56	4.91	2.80	0.68	4.91	1.44	-0.55	3.43	1.46	-0.62	3.53
Domestic Labour																		
2nd quintile	1.03	0.10	1.96	1.29	0.21	2.37	1.77	-0.32	3.86	2.40	0.37	4.44	1.42	-0.52	3.35	1.61	-0.45	3.68
3rd quintile	0.66	-0.50	1.83	0.73	-0.49	1.95	1.22	-1.01	3.46	2.07	0.25	3.89	0.53	-1.57	2.62	1.27	-0.55	3.09
4th quintile	-0.09	-1.22	1.04	1.27	0.01	2.52	1.56	-0.62	3.74	2.82	0.80	4.83	0.90	-1.21	3.00	1.58	-0.45	3.61
5th quintile	0.24	-0.97	1.45	0.61	-0.55	1.76	1.81	-0.34	3.96	1.90	0.20	3.60	1.42	-0.61	3.44	1.19	-0.58	2.95
Mother work*domestic labour 1st quintile, in work (ref) 2nd quintile, in work 3rd quintile, in work 4th quintile, in work 5th quintile, in work Father in work (yes) Mother's work hours	2.25 0.29	0.27 -0.15	4.23 0.72	2.02 0.24	0.11 -0.19	3.93 0.66	-0.99 -0.55 -2.75 -2.81 2.03 0.17	-3.40 -3.41 -5.55 -5.39 0.01 -0.25	1.41 2.30 0.04 -0.23 4.05 0.60	-1.50 -1.96 -2.38 -1.94 1.71 0.15 0.30	-3.88 -4.22 -4.81 -4.24 -0.20 -0.29	0.88 0.31 0.05 0.37 3.63 0.60	-0.85 0.40 -1.84 -1.91 -0.84 -0.26	-3.05 -2.33 -4.50 -4.26 -2.87 -0.67 0.38	1.36 3.13 0.82 0.44 1.19 0.15	-1.21 -1.48 -1.64 -1.18 -0.21 -0.26	-3.62 -3.69 -4.03 -3.48 -2.10 -0.68 0.15	1.19 0.74 0.74 1.12 1.67 0.17
Mother's education NVQ1 or equivalent NVQ 2 or equivalent NVQ 3 or equivalent NVQ 4 or equivalent NVQ 5 or equivalent	0.14	-0.19	0.40	0.29	-0.03	0.01	0.13	-0.19	0.49	0.30	-0.02	0.02	-0.97 -1.15 -0.73 1.68	-2.56 -2.07 -1.93 -0.15	0.63 -0.23 0.46 3.52	-4.20 -1.68 -1.19 0.46	-5.74 -2.65 -2.15 -0.85	-2.66 -0.71 -0.23 1.78

Table D.6: Division of labour and children's BAS Pattern Construction scores with covariates

D.2.3 Children's BAS Pattern Construction by division of labour, gender attitudes and family context

			Mo	del 1					Mo	del 2					Мо	del 3		
Variable		boys			girls			boys			girls			boys			girls	
	В	959	% CI	В	959	% CI	В	95	%CI	В	959	% CI	В	95	% CI	В	95	% CI
Overseas qualification only													-3.77	-6.53	-1.00	-4.11	-6.40	-1.82
None of these													-3.23	-5.00	-1.46	-4.17	-5.72	-2.61
Father's education																		
NVQ1 or equivalent													-2.84	-4.21	-1.47	-4.04	-5.65	-2.42
NVQ 2 or equivalent													-1.46	-2.39	-0.53	-1.37	-2.39	-0.36
NVQ 3 or equivalent													-0.79	-1.93	0.35	-0.94	-2.07	0.18
NVQ 4 or equivalent																		
NVQ 5 or equivalent													-0.61	-2.36	1.13	0.32	-0.99	1.63
Overseas qualification only													-3.20	-5.44	-0.96	-2.96	-4.89	-1.03
None of these													-4.23	-5.59	-2.86	-2.98	-4.23	-1.73
OECD equivalised income																		
1st quintile (lowest													-3.28	-5.09	-1.47	-1.45	-3.06	0.16
income)																		
2nd quintile													-1.49	-2.71	-0.28	-1.53	-2.76	-0.30
3rd quintile																		
4th quintile													1.00	-0.03	2.03	0.04	-1.01	1.08
5th quintile (highest													1.67	0.55	2.80	1.33	0.21	2.46
income)																		
Stable family													1.02	0.29	1.75	0.79	0.15	1.44
Centered age	0.05	-0.07	0.16	0.05	-0.07	0.17	0.05	-0.07	0.16	0.06	-0.06	0.17	0.10	-0.01	0.21	0.06	-0.05	0.18
Constant	49.67	48.19	51.16	49.52	48.16	50.88	48.84	46.91	50.77	48.62	47.00	50.23	55.16	52.73	57.59	54.93	52.60	57.27

N.B. All work hours results are presented scaled as 1 unit=10 hours.

			Mo	del 1					Mo	del 2					Мс	del 3		
Variable		boys			girls			boys			girls			boys			girls	
	В	95	% CI	В	95	% CI	В	95	%CI	В	95	% CI	В	95	% CI	В	95	% CI
Mother in work (yes)	1.06	-0.28	2.40	1.07	-0.18	2.31	2.74	0.56	4.91	2.80	0.68	4.91	1.44	-0.55	3.43	1.46	-0.62	3.53
Domestic labour																		
2nd quintile	1.03	0.10	1.96	1.29	0.21	2.37	1.77	-0.32	3.86	2.40	0.37	4.44	1.42	-0.52	3.35	1.61	-0.45	3.68
3rd quintile	0.66	-0.50	1.83	0.73	-0.49	1.95	1.22	-1.01	3.46	2.07	0.25	3.89	0.53	-1.57	2.62	1.27	-0.55	3.09
4th quintile	-0.09	-1.22	1.04	1.27	0.01	2.52	1.56	-0.62	3.74	2.82	0.80	4.83	0.90	-1.21	3.00	1.58	-0.45	3.61
5th quintile	0.24	-0.97	1.45	0.61	-0.55	1.76	1.81	-0.34	3.96	1.90	0.20	3.60	1.42	-0.61	3.44	1.19	-0.58	2.95
Mother work*domestic labour 1st quintile, in work (ref) 2nd quintile, in work 3rd quintile, in work 4th quintile, in work 5th quintile, in work Father in work (yes)	2.25	0.27	4.23	2.02	0.11	3.93	-0.99 -0.55 -2.75 -2.81 2.03	-3.40 -3.41 -5.55 -5.39 0.01	1.41 2.30 0.04 -0.23 4.05	-1.50 -1.96 -2.38 -1.94 1.71	-3.88 -4.22 -4.81 -4.24 -0.20	0.88 0.31 0.05 0.37 3.63	-0.85 0.40 -1.84 -1.91 -0.84	-3.05 -2.33 -4.50 -4.26 -2.87	1.36 3.13 0.82 0.44 1.19	-1.21 -1.48 -1.64 -1.18 -0.21	-3.62 -3.69 -4.03 -3.48 -2.10	1.19 0.74 0.74 1.12 1.67
Mother's work hours	0.29	-0.15	0.72	0.24	-0.19	0.66	0.17	-0.25	0.60	0.15	-0.29	0.60	-0.26	-0.67	0.15	-0.26	-0.68	0.17
Father's work hours	0.14	-0.19	0.48	0.29	-0.03	0.61	0.15	-0.19	0.49	0.30	-0.02	0.62	-0.05	-0.38	0.28	0.16	-0.15	0.46
Mother's gender attitudes Father's gender attitudes																		
Gender attitudes interaction																		
Mother's education NVQ1 or equivalent NVQ 2 or equivalent													-0.97	-2.56 -2.07	0.63 -0.23	-4.20 -1.68	-5.74 -2.65	-2.66 -0.71

Table D.7: Parental gender attitudes and children's BAS Pattern Construction scores with covariates

			Mo	del 1					Mo	del 2					Mo	del 3		
Variable		boys			girls			boys			girls			boys			girls	
	В	95	% CI	В	959	% CI	В	95	%CI	В	959	% CI	В	95	% CI	В	95	% CI
NVQ 3 or equivalent													-0.73	-1.93	0.46	-1.19	-2.15	-0.23
NVQ 4 or equivalent																		
NVQ 5 or equivalent													1.68	-0.15	3.52	0.46	-0.85	1.78
Overseas qualification only													-3.77	-6.53	-1.00	-4.11	-6.40	-1.82
None of these													-3.23	-5.00	-1.46	-4.17	-5.72	-2.61
Father's education																		
NVQ1 or equivalent													-2.84	-4.21	-1.47	-4.04	-5.65	-2.42
NVQ 2 or equivalent													-1.46	-2.39	-0.53	-1.37	-2.39	-0.36
NVQ 3 or equivalent													-0.79	-1.93	0.35	-0.94	-2.07	0.18
NVQ 4 or equivalent																		
NVQ 5 or equivalent													-0.61	-2.36	1.13	0.32	-0.99	1.63
Overseas qualification only													-3.20	-5.44	-0.96	-2.96	-4.89	-1.03
None of these													-4.23	-5.59	-2.86	-2.98	-4.23	-1.73
OECD equivalised income																		
1st quintile (lowest													-3.28	-5.09	-1.47	-1.45	-3.06	0.16
income)																		
2nd quintile													-1.49	-2.71	-0.28	-1.53	-2.76	-0.30
3rd quintile																		
4th quintile													1.00	-0.03	2.03	0.04	-1.01	1.08
5th quintile (highest													1.67	0.55	2.80	1.33	0.21	2.46
income)																		
Stable family													1.02	0.29	1.75	0.79	0.15	1.44
Centered age	0.05	-0.07	0.16	0.05	-0.07	0.17	0.05	-0.07	0.16	0.06	-0.06	0.17	0.10	-0.01	0.21	0.06	-0.05	0.18
Constant	49.67	48.19	51.16	49.52	48.16	50.88	48.84	46.91	50.77	48.62	47.00	50.23	55.16	52.73	57.59	54.93	52.60	57.27

N.B. All work hours results are presented scaled as 1 unit=10 hours.

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Variable		Maths		V	vord readin	g
	coef	959	% CI	coef	95%	% CI
Gender (girl)	-1.63	-4.03	0.77	1.75	-0.65	4.16
Mother's gender attitudes	-0.24	-0.52	0.05	-0.08	-0.36	0.20
(low= egalitarian)						
Child Gender*mother gend	0.29	-0.07	0.66	0.40	wt 0.00	0.80
atts (girl)						
Father's gender attitudes	0.25	-0.01	0.51	0.26	-0.04	0.57
(low=egalitarian)						
Child gender*mother gend	-0.16	tp -0.51	0.18	-0.21	-0.60	0.18
atts (girl)						
Mother's education						
NVQ1 or equivalent						
NVQ 2 or equivalent	2.26	* 0.45	4.08	2.21	* 0.32	4.11
NVQ 3 or equivalent	2.86	* 0.83	4.89	3.71	** 1.79	5.62
NVQ 4 or equivalent	4.62	** 2.75	6.48	5.53	** 3.64	7.42
NVQ 5 or equivalent	5.36	** 2.76	7.96	6.54	** 3.79	9.29
Overseas qualification only	2.69	-0.73	6.12	2.98	-0.95	6.91
None of these	-0.92	-3.30	1.47	-0.02	-2.53	2.48
Father's education						
NVQ1 or equivalent						
NVQ 2 or equivalent	-0.34	-2.15	1.47	2.02	* 0.02	4.03
NVQ 3 or equivalent	1.80	-0.07	3.67	3.86	** 1.75	5.97
NVQ 4 or equivalent	2.15	* 0.23	4.07	5.17	** 2.93	7.40
NVQ 5 or equivalent	4.75	** 2.34	7.17	9.30	**6.73	11.88
Overseas qualification only	-1.03	-4.01	1.95	0.87	-2.51	4.25
None of these	-2.04	-4.19	0.11	0.20	-2.18	2.58
OECD equivalised income						
1st quintile (lowest						
income)						
2nd quintile	2.99	* 1.13	4.85	2.24	* 0.12	4.36
3rd quintile	4.41	** 2.61	6.20	3.65	** 1.52	5.78
4th quintile	5.08	** 3.22	6.94	5.50	** 3.37	7.63

Table D.8: Gender attitudes and children's maths and word reading scores: mediation checks

5th quintile (highest income)	7.52	** 5.71	9.33	7.44	** 5.26	9.62
Mother Malaise Inventory	0.08	-1.20	1.37	-0.60	-2.13	0.93
(S1)						
Father Malaise Inventory	-1.31	-2.81	0.18	-1.65	-3.35	0.04
(\$1)						
Activities with mother	0.02	-0.07	0.10	-0.06	-0.15	0.02
Activities with father	0.04	-0.04	0.12	0.17	** 0.08	0.26
Centered age	-0.42	-0.56	-0.29	-0.43	**-0.60	-0.27
Stable family	1.34	* 0.52	2.17	1.85	**0.89	2.81
Constant	88.76	** 84.37	93.16	96.33	**91.30	101.36

N.B. As neither mediators significantly changed the results of the model (separately or combined) they are all presented together, however, the Malaise adjustments were checked independently first, then the combined activities with mothers and fathers were added last - adding the activities reduced the sample size by ~ 1500 (sample size varied slightly between the progress in maths analyses and the word reading analyses). *= $p \leq 0.05$ **= $p \leq 0.001 wt$ =adjusted wald test for interaction $p \leq 0.05$ Parental activity variables are how often a parent does the following with their child: read, tell stories, music, art, physically active games, indoor activities, takes to a park/playground. For mothers the alpha coefficient was .71 and for fathers it was point .73.





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