Children's aspirations and emotional and behavioural problems

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Abstract

Life stage is important in the development of aspirations. Compared to adolescents, children's aspirations are characterised as ambitious and unrealistic, and have rarely been considered. Aspirations are related to self-esteem and control beliefs, which are more likely for younger children to be free of societal opportunities and constraints. Therefore, at a younger age aspirations may be a better reflection of children's hopes for the future. The general aim of this research was to investigate the pathways to primary school children's aspirations and to explore the relations between younger children's aspirations and emotional and behavioural problems.

Data was used from the first four sweeps of the Millennium Cohort Study, when the children were aged 9 months, 3 years, 5 years and 7 years, respectively. Information from the parents, teachers and the children themselves was used. At age 7 the MCS children were asked 'when you grow up, what would you like to be'. Aspirations were classified to reflect their occupational status, masculinity/femininity and intrinsic/extrinsic motivation, and by the realism and maturity of the aspiration. Structural equation, pathway, and regression models explored the child, family, and contextual pathways to and from children's aspirations at age 7.

Younger children although more unrealistic than adolescents, already have occupational aspirations for the future. Gender, ethnicity, family SES, parental values, cognitive ability and school engagement directly predicted (albeit weakly) children's aspirations. Family SES, the child's gender and ethnicity also, albeit weakly, influenced children's aspirations via parental values, parent involvement and the child's ability. Although aspirations at age 7 were by no means the strongest factor predicting behaviour difficulties at that age, low, intrinsic, fantasy, descriptive and uncertain aspirations were related to more child behavioural problems. While rare occupational aspirations, compared to non-rare occupational outcomes were related to fewer emotional symptoms and peer problems.

Declaration

I, Vanessa Moulton 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.

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Table of contents

Table of tables

Table of figures

Appendices

Chapter 1 Introduction

1.1 Context of this study

Over the past decade 'aspirations' have received considerable attention within UK policy. The emphasis on aspirations has proved extremely evocative, in particular the notion that raising the aspirations of poor families is an important device in improving low educational attainment and social mobility. The issue of low aspirations has featured in White Papers and educational policy of both New Labour and the previous coalition government (e.g. Department for Education and Skills (DfES), 2004, 2005; Department for Education (DfE), 2010). The 2010 School White Paper called for the creation of an 'aspiration nation' (DfE, 2010).

However, the assumption of a 'poverty of aspirations' among disadvantaged young people and their families has been disputed by several small scale qualitative studies (Kintrea, St Clair & Houston, 2011). They claim that aspirations were high across all social groups, but children and parents from poorer backgrounds had less belief that they could achieve their goals. The difficulty of misalignment has been raised by others, particularly for children from less advantaged backgrounds who may have the ambition, but not the resources to achieve their aspirations (Croll, 2008; Gorard, Huat See & Davis, 2012). By raising aspirations with no support or resources young people falling short of these aspirations may be more predisposed to negative emotional and psychological well-being in the future.

More recently the House of Commons Education Committee have focused specifically on the underachievement in education of white working class children (HCEC, 2014). The debate on the influence of aspirations is still topical. That HCEC report cited home environment as a key factor in determining achievement, and aspirations as one of the factors most frequently discussed by witnesses. The discussion was similar to the 'poverty of aspirations' debate, but specifically focused on white working class children suggesting they are less likely to hold high aspirations, have positive attitudes towards education, and believe they can achieve their goals. Others argued that just raising aspirations was not sufficient but raising competence was fundamental to improving achievement. While other witnesses argued lack of 'social capital' was more significant than lack of aspiration. Professor Becky Francis stated:

> *'…there is a lot of evidence that working-class families have high aspirations. What they do not have is the information and the understanding as to how you might mobilise that aspiration effectively for outcomes for your children. Money makes a big difference here….but also understanding the rules of the game'. (p.29).*

There has been some attention directed at the importance of understanding and developing the aspirations of younger children. Early 2015, Labour's shadow education minister Tristram Hunt

argued for the introduction of career education in primary schools. Research commissioned by the Department for Education evaluating a career education pilot scheme for 9 to 11 year olds in primary schools found pupils involved in the scheme had broadened their horizons, reduced their stereotypical thinking about future jobs, and increased confidence about their futures, particularly pupils eligible for Free School Meals (FSMs) (Wade et al., 2011). A decade ago, two reviews of research on children's career development highlighted the importance of and the limited understanding of career development in early life (Hartung, Profeli & Vondracek, 2005; Watson & McMahon, 2005). According to Hartung et al. (2005),

> '*Preliminary evidence suggests that steady progress in vocational exploration, awareness, aspirations and expectations, interests, and adaptability during childhood facilitates the development of personal identity and connectedness to the social and interpersonal world. Such progress at the same time may reduce the likelihood of delinquent and deviant behaviours*' (p.411).

Since the call to action in 2005 there has been little empirical evidence in the UK focusing on younger children's aspirations.

1.2 The rationale for this study

Adolescence is seen as a key stage in the development of aspirations as teenagers become more focused on their desires for the future and show increased selectivity in goal-directed behaviour (Cantor, 1990). There has been much research relating aspirations, particularly in adolescence, to later outcomes. However, the literature on adolescents' educational and occupational aspirations (Beal & Crockett, 2010; Mello, 2008; Schoon & Parsons, 2002) seldom extends to young children. Although less realistic than adolescents, younger children already have dreams or ambitions for the future (Looft, 1971). These dreams may be less constrained by societal norms, realistic opportunities and ability than those of adolescents (Eccles, 2009).

There is some evidence from small scale studies that suggests children begin making judgements about the suitability of various types of occupations, as early as age four (Trice & Rush, 1995). And for children in primary school, their aspirations tend to be occupational, reflecting the job they would like to do (albeit often unrealistic) rather than desires regarding other life domains (Auger, Blackhurst, & Herting, 2005). As children's views about aspirations are the precursors to adolescent aspirations, it would be of value to investigate the aspirations of primary school children. This thesis does not contend that adolescence is a key life stage in the development of aspirations, but explores the notion that some pathways to aspirational development in childhood may already be influencing potential future options.

Most of the research on aspirations has been motivated by the premise that aspirations are related to children's outcomes because aspirations reflect their achievement goals, optimism, self-esteem (Malmberg, 2002; Nurmi, 1991), and self-efficacy or expectancy beliefs. Self-efficacy reflects confidence in one's ability to organise and execute a course of action to solve a problem or accomplish a task. Related constructs are locus of control (Rotter, 1966), expectancy for success (Eccles et al., 1983) or helplessness (Seligman, 1980). In control theories, children with an internal locus of control feel they can influence their successes and failures. Similarly, expectancy beliefs are the success the individual believes they will have in upcoming tasks, either in the immediate or in the long-term future.

Self-efficacy and control theories have also been linked to emotional and behavioural problems (Bandura, 2001; Eccles et al., 1983). These perspectives can be categorised as constructs which drive the development of aspirations and well-being, with high self-efficacy, expectancy beliefs and internal locus of control being associated with positive outcomes, and external locus of control and helplessness with negative outcomes. However, there is little empirical evidence relating aspirations to emotional and behavioural problems, particularly in primary school children. Nonetheless, early aspirations may be especially important for children's outcomes, as they may reflect children's self-efficacy and self-esteem more directly than later aspirations. Younger children tend to be optimistic about their futures because they are not as restricted by societal norms and their perceived abilities as adolescents.

1.3 The present study

The main contribution of this thesis is the extensive analysis of primary school children's aspirations using a representative large scale longitudinal dataset. Most previous work on the topic has focused on adolescents, and any work investigating younger children has in the main been conducted in the United States using small purposive samples of children. In using a large representative sample of children, this thesis investigated the characteristics of younger children's aspirations such as the gender-typicality and realism identified in smaller scale studies. There are few development theories, with the exception of Gottfredson (1981) outlining aspects of the development of aspirations in children. Her theory of circumscription and compromise outlines stages in development, some of which this work was able to explore.

There is a limited understanding of aspirational development in early life. The previous work on older children has identified individual, family and contextual determinants of aspirations. Prior work has also established that children can envisage themselves in the future and are making judgements about occupations at an early age. The thesis tests, where possible, whether the determinants found for young people's aspirations were also associated with younger children's aspirations. Therefore the first aim of this thesis was to investigate the individual, family, and

contextual pathways to younger children's aspirations. This exploration of early aspirations may help inform and understand the development of aspirations and career development as children move towards later childhood, adolescence and adulthood.

The second major aim of this thesis is to explore the association between children's aspirations and emotional and behavioural problems. Previous work has focused on educational outcomes. In particular, for younger children aspirations may be a better indicator of their belief in themselves and their confidence about the future compared to adolescent aspirations. Importantly, aspirations in this thesis were measured using a number of different classifications. The study did not just focus on the prestige of the aspiration (high v low aspirations), but also explored the gender typicality of occupational aspirations, the motivation expressed by the aspiration, its realism and the child's maturity.

This project uses secondary analysis of data from the first four sweeps of the UK Millennium Cohort Study (MCS). A nationally representative sample, MCS includes a wealth of information on family and child characteristics, as well as school and neighbourhood data. In sweep 4 of MCS, when the children were aged 7 they were asked 'when you grow up, what would you like to be?' This question forms the basis of this thesis. The fieldwork for MCS4 took place in 2008, and most interviewing was completed by the time the financial crisis peaked at the end of the year. A year earlier in 2007, Gordon Brown succeeded Tony Blair as Prime Minister, and in his acceptance speech identified aspirations as a major policy focus (Brown, 2007). At the time of the fieldwork for MCS4 'aspirations' were also 'centre stage' for educationalists and the media. For example, ahead of the Association of Teachers and Lecturers (ATL) conference, the education section of the BBC news channel headline on the 14th March 2008 stated 'Celebrity culture 'harms pupils'

> *'…Teachers fear their pupils' obsessions with footballers, pop stars and actors are affecting their progress in school, and limiting their career aspirations…..more than a third said their pupils wanted to be famous for the sake of being famous……*
>
> *Delegates will debate a motion that argues 'the decline in this country into the cult of celebrity' is 'perverting children's aspirations".*

1.4 Structure of the thesis

The structure of this thesis is as follows. Chapter 2 considers previous work on children's aspirations, focusing on theories and concepts relating to aspirations, and the determinants of children's aspirations. Subsequently, the chapter examines the relation between aspirations and emotional and behavioural difficulties. Chapter 3 describes the key sources of data and how the independent and dependent variables were operationalised. In particular, how the main variable

of interest, aspirations, was coded and classified. It also considers the main limitations of the data available for this thesis. Chapter 4 outlines the methods employed in this thesis. In particular the types of models used, model estimators, missing data, model fit and multi-group analysis. Chapters 5 to 9 comprise the empirical sections of this thesis. Chapters 5 to 7 investigate the determinants of young children's aspirations, while Chapters 8 and 9 focus on the association of aspirations and emotional and behavioural problems.

Chapter 5 starts with bivariate analysis of the major determinants of aspirations as identified in Chapter 2 - the literature review. Structural equation models (SEMs) were fitted investigating the individual and family pathways to aspirations, using three classifications of aspirations (by occupational aspirations, masculinity and femininity of the aspiration, and extrinsic/intrinsic motivation), and by the realism of the aspiration and children's maturity. Chapter 6 focuses on the influence of social reproduction on children's aspirations. A pathway model tests the direct influence of grandparents', both maternal and paternal, social class on children's aspirations and indirectly via the parents' social class. Chapter 7 focuses on the effect of contextual factors on children's aspirations classified by occupational prestige, masculinity and femininity of the aspiration, and extrinsic/intrinsic motivation. A number of different types of SEMs were investigated, including single level, two level and a cross-classified two level models. Neighbourhood socio-economic status, school characteristics (i.e., achievement and poverty) were modelled as predictors of children's aspirations alongside family status, family resources and child characteristics.

Chapter 8 is an initial exploration of the association of children's aspirations and emotional and behavioural problems. A cross-sectional regression analysis investigated the children's aspirations expressed by their realism and the child's maturity, and also included non-response, uncertain and uninterpretable responses. Chapter 9 presents SEMs of the pathways to children's aspirations, and from children's aspirations to emotional and behavioural problems. The models focused on the influence of child and parent level factors, with the different aspiration classifications as investigated in Chapter 5. The effects of different settings, the home and school, on the child's emotional and behavioural problems were also modelled. In Chapter 10 there is a discussion of the overall conclusion and research significance, strengths and limitations, as well as implications for future research and policy.

Chapter 2 Literature review

The study of aspirations is multidisciplinary and has been a focus of interest in psychology, sociology, education, economics and career development. This thesis acknowledges the importance of the individual, the individual's growth throughout the lifespan and the individual's situation and context in the development of aspirations and emotional and behavioural problems. This chapter identifies what aspirations are and how aspirations have been conceptualised in previous literature. It then focuses on a number of relevant theories from different disciplines, and highlights how aspirations develop and their main determinants. It then summarises the relation between aspirations and emotional behavioural problems and finishes by highlighting the aims of this thesis.

2.1 What are aspirations?

An aspiration is defined by the Oxford English Dictionary as "a hope or ambition of achieving something". Aspirations have been described as "personal goals" (Nurmi, 2004) or "possible selves" (Markus & Nurius, 1986), distinct from expectations as they reflect what someone would like to achieve rather than what they think they will achieve. Aspirations are "ideal" and can show general hopes or ambitions, which may be unrealistic. While expectations are more realistic assessments of future outcomes, usually taking account of ability and structural constraints.

There are different ways of looking at children's aspirations and this is reflected in the different types and coverage of questions eliciting aspirations across different studies. Some focus on general aspirations, asking for narratives of future hopes (Elliott & Morrow, 2007) and open-ended questions about what children would like to be (Looft, 1971), while others are ratings of aspects of life children might want for the future such as "a good job, money, getting married etc." (Croll, Attwood, & Fuller, 2010). Some studies with adolescents have focused on future job aspirations (Schoon, Martin, & Ross, 2007), while most studies on children's aspirations have covered academic achievements (Bandura, Barbaranelli, Caprara & Pastorelli, 2001; Jacob & Wilder, 2010) and educational outcomes (Goodman & Gregg, 2010; Hill et al., 2004). However, aspirations are typically conceptualised as a univariate construct measured by some variation of a single question (Rojewski, 2007).

In surveys asking general open-ended questions about aspirations, even in children, aspirations tend to be occupational, reflecting the job a child would like to do rather than desires regarding other life domains (Auger et al., 2005; Looft, 1971). As Croll et al. (2010) wrote of children aged 11 and 12, "It is evident that, for the great majority of children, the job they will be doing in their

adult lives was a dominating aspect of their sense of the future" (pg. 58). In their study, 85% of British children expressed a choice of future career. The most popular occupational choices for girls were hairdresser and beautician, doctor or veterinarian and teacher while for boys, entertainer / sportsman and the skilled trades were the favourite choices. These occupational aspirational choices were reflected in many other studies of children in secondary education (e.g., Elliott & Morrow, 2007; Kintrea et al., 2011; Polavieja & Platt, 2014). As far as the author knows there have been no large scale studies looking at primary school children's aspirations in the UK. In a pioneering study by Looft in 1971 a small group of 6 to 8 year old children in the US were asked two open-ended questions about what they would like to be. The most popular aspirations for boys some 40 years ago were football player or policeman, while for girls nurse or teacher were the favourites.

Croll et al. (2010) noted that a large proportion (one in six) of eleven to twelve year olds made what they call "fantasy or quasi-fantasy" choices such as professional footballers, singers, actors and models. However, one in ten children had these types of occupational aspirations by the age of 15 in the British Household Panel Survey (Croll, 2008), suggesting that children tend to discard these types of aspirations as they get older for more realistic alternatives (Cook et al., 1996; Croll et al., 2010; Gutman & Ackerman, 2008). In the long term children's aspirations are evolving. However, there is some evidence that at least in the short term the occupational aspirations of elementary school children are stable over a given school year (Trice, 1991; Trice & King, 1991).

Most large scale studies of adolescent aspirations in the UK have identified that older children's aspirations were generally higher compared to their parents' achievements or what the labour market might allow (Croll, 2008; Kintrea et al., 2011). For example, the majority of adolescents aspired to professional, managerial and technical professions (Croll, 2008; Kintrea et al., 2011; Schoon, 2009). Most studies maintain that having high aspirations results in positive outcomes (e.g., Bandura et al., 2001; Cook et al., 1996; Goodman & Gregg, 2010). However, there is some debate regarding the difficulties of misalignment. In particular, children from less advantaged backgrounds may have the ambition but not the resources to achieve their aspirations (Croll, 2008; Gorard, Huat See & Davies, 2012; Gutman & Ackerman, 2008). Although interestingly even at primary school age, Looft (1971) found that two-thirds of boys and half of the girls changed their responses when asked about expectations as opposed to aspirations. Another small scale study in the US with 8 to 9 year olds most boys did not believe they would actually become professional athletes (Auger et al., 2005).

More recently, there has been interest in uncertain aspirations. Adolescents with uncertain intentions are more ambivalent about continued schooling (Croll, Attwood, Fuller & Last, 2008). In a recent study, 15 year olds with uncertain academic intentions had lower academic

performance and educational enrolment at a later age (Gutman, Schoon, & Sabates, 2012). Young people with uncertain occupational aspirations at 16 were less likely to be in education, employment, or training between the ages of 16 and 18. Adolescents with uncertain occupational aspirations were also associated with lower wage attainment ten years later (Yates, Harris, Sabates, & Staff, 2011). However in another study using the same cohort, for some adolescents uncertainty about career aspirations also preceded later success (Gutman & Schoon, 2012).

In summary, aspirations are children's hopes for the future; they are important as they influence key choices and seem to be dominated by future occupations (Croll et al., 2010). Aspirations can be ambitious, often unrealistic even quasi-fantastical, but become more realistic as children get older. For most children their aspirations are higher than their parents' achievements (Croll, 2008) However for older children there is some concern about the impact of misalignment and uncertain aspirations, although their expectations may be more aligned. As far as the author is aware there has been no large studies investigating primary school children's vocational aspirations in the UK. The next section highlights theories and concepts relating to aspirations.

2.2 Theories and concepts relating to aspirations

The development of aspirations and related constructs has been explained by a number of theories from different disciplines. The two main disciplines are psychology and sociology, with many of the career development theorists and vocational psychologists adapting their theories from these two disciplines to explain the development of occupational choice. Two overarching theories, Life course theory (Elder, 1985) and Ecological Systems Theory (Bronfenbrenner, 1979) help frame the development of aspirations and emotional and behavioural problems.

2.2.1 Life course and life stage theories

Life course theory (Elder, 1985) is an interdisciplinary theory incorporating psychology, economics, history, sociology, demography and biology. Life course theory focuses on the history of the individual's surrounding society and the individual's personal development, and the ways these changing histories interact to affect the individual's present and future condition (Thomas, 2004). Important principles of the theory are that events and roles in life are accumulative life experiences, and do not necessarily occur sequentially. Life course is constructed through the choices and actions taken within historical and social settings; time and place of an individual's life is important as well as geographical and social location; and lastly lives are interdependent on the social and historical influences expressed through shared relationships. The major strength of this theory is it places child development within a social, cultural and historical context. However, it does not describe the specific pathways by which

these various environmental experiences interact with children's cognitive, social and emotional well-being (Miller, 2001).

In most psychological theories adolescence is seen as the key life-stage in the development of aspirations or goals. Cantor (1990) suggested that adolescents become more focused on their desires and aspirations for the future and show increased selectivity in goal directed behaviour. Nurmi (2004) maintains that through a process of channelling, selection, adjustment and reflection the aspirations of adolescents initially develop as vague representations of possible future outcomes based on the world around them, in particular societal norms and parents' expectations and aspirations. Career development has long been recognised as a life long process of roles, settings and events beginning at birth (Gysbers & Moore, 1975; Super, 1957; Vondracek, Lerner, & Schulenberg, 1986). Super's Life-Span, Life-Space approach (1980) recognises the importance of development throughout life and relates development to recognised life stages. He purports five vocational development stages growth, exploration, establishment, maintenance and decline which correspond with the life stages of childhood, adolescence, adulthood, middle adulthood and old age. In the childhood stage "growth" is depicted as the child developing a future focus by exploring the world around them. The concept of life-space relates to the context of the individual in different roles across the life-span. Key to Super's theory is the concept of self which emerges, grows and changes over time as products of social learning.

Although adolescence is a key life stage in aspirations development, it would be naïve to suggest that social and environmental factors do not influence younger children. Theories of career development provide some understanding of the future cognitions of primary school children. Reviews of research on children's career development (Hartung et al., 2005; Watson & McMahon, 2005), have acknowledged that children begin developing an understanding of the world of work, forming occupational interests and aspirations, and engaging in career relevant exploration at a young age. Some studies have even suggested that elementary school children are already beginning to contemplate more realistic career directions and potential obstacles towards accomplishing possible career aspirations (Auger, et al., 2005; Creed, Conlon, & Zimmer-Gembeck, 2007).

However, there are few career development theories, which specifically outline aspects of child development. The two main proponents are Ginzberg (1952) and Gottfredson (1981). Both of these theories span the period from early childhood to late adolescence. Ginzberg coined the concept of the "increasing realism of choice" and made explicit the fantasy (preadolescence), the tentative (adolescence) and the realistic stages (later adolescence and early adulthood) in occupational choice. Ginzberg thought career choice depended on reality (the constraints in the world), education, the person-environment interaction and the satisfaction of personal values.

Later Ginzberg (1984) restated his theory “Occupational choice is a lifelong process of decision making in which the individual constantly seeks to find the optimal fit between career goals and the realities of the world of work” (Ginzberg, 1984, p179). According to Gottfredson’s (1981) theory of circumscription and compromise, children develop career aspirations in four stages. Children rule out unacceptable aspirations based on the age-specific themes of size and power (ages 3-5 years), gender roles (ages 6-8), social valuation (ages 9-13), and unique personal characteristics (ages 14 and older). As well as recognition of gender roles around the ages of 6 to 8 some children become aware of social class and this is the beginning of distinguishing between jobs on this basis. The compromise stage is the process whereby individuals reassess their occupational choices based on external realities such as obstacles or opportunities in the social or economic environment. Children move through this process at different rates. Thereby, implying some aspiration options could be set aside before adolescence.

Although different theories provide conflicting views of how and when thoughts and plans develop, there is some synergy. Ginzberg (1952) and Gottfredson (1981) both suggest that children go through a fantasy stage where their aspirations are based solely on their interests and desires, with little attention paid to their abilities and the difficulty of achieving such goals. Ginzberg (1952), postulates that fantasy choice occurs prior to age eleven, after which children view their aspirations as more realistic choices. However, Gottfredson maintains by around age 5 children have moved from magical to intuitive thinking and no longer classify people as tall or short or report that they would like to be animals or fantasy characters (a stricter definition of fantasy). In adolescence children start to become aware of social class, their ability, and values which leads to the elimination of aspirational possibilities. However, the literature generally supports an inverse association between age and the prevalence of expressed fantasy-based aspirations and a positive association between age and realistic aspirations (Croll, 2008; Schoon et al., 2007; Trice, Hughes, Odom, Woods, & McClellan, 1995). Gottfredson’s theory is unique in its focus on the influence of social class and gender on vocational development. However, there is limited empirical support for Gottfredson’s theory (Juntenen & Even, 2012) and although she considers structural constraints e.g. education and employment, she does not account for the broader societal and cultural context in which the child lives.

2.2.2 Development of the self

Underlying many of the theories relating to aspirational development is self-concept. Consistent with Super (1957), self-concept forms the basis of Gottfredson’s theory, whereby the nature of compromise in the development of occupational choice is the compromise between self and reality. Self-concept is defined by Gottfredson (1981) as “one’s view of oneself, one’s view of who one is and who one is not. When projecting oneself into the future, self-concept also includes who one expects or would like to be” (p.547). By comparing self-concept and

occupational images (a concept bearing some resemblance to work knowledge) the individual forms preferences for occupations. While the development of self-concept progresses a narrowing of options occurs as the young person eliminates certain occupations from their considerations, for example on the basis of gender or social class. Therefore, Gottfredson suggests the exploration stage in adolescence, to narrow their occupational choices, is within a set of occupations deemed compatible at a younger age with the individual's gender, social class and intelligence.

Interestingly, more recent work on young children's episodic future thinking, (i.e., the ability to project the self into the future to pre-experience an event) suggests children under the age of 5 have difficulty in representing themselves in future states (Atance & Meltzoff, 2005) and cannot distinguish between near and distant future events (Friedman, 2005). By age 7, children can envisage themselves in the future, but their aspirations "oscillate between fantasy and reality" (Seginer, 2009). However, regardless of age, there is agreement that memories form the basis for constructing possible futures and children who are limited in their sense of the past are also likely to show difficulties envisaging future- orientations (Addis, Wong & Schacter, 2007; Busby & Suddendorf, 2005).

The development of the self is also important because individuals' self-conceptions, including the ways they view and feel about themselves, appear to influence their overall feelings of competence and also well-being. Self-concept is also related to other constructs such as self-esteem an element of self-concept, achievement motivation and self-efficacy, which is discussed later in the chapter. Children's sense of self changes across infancy, childhood and adolescence, and continues to develop into adulthood. In early childhood (age 3 to 4) children understand themselves in terms of concrete, observable characteristics related to physical attributes, physical activities and abilities, social relationships and psychological traits (Harter, 1999). During the pre-school years children's self-evaluations are unrealistically positive (Trzeniewski, Kinal & Donnellan, 2010), as are their aspirations. Even if children have failed badly at a task several times they are likely to believe that they will succeed on the next try (Ruble, Grosovsky, Frey, & Cohen, 1992). Children begin to refine their self-concepts in elementary school, partly because they are engaged in social comparisons. By middle to late elementary school, children's conceptions of self have begun to become integrated and more broadly encompassing (Harter, 1999). Eccles, Wigfield, Harold, & Blumenfeld (1993) in agreement with Gottfredson maintain that children aged 6 or 7 are already socialised around gender and have incorporated gender stereotypes into their self-concepts. Self-concept develops separately across different domains and areas of interest and is argued to be formed on the basis of frame of reference. For example academic self-concept is developed on the basis of school peers and for occupational self-concept children's knowledge of the world of work. (Marsh & Hau, 2003; Super, Savickas, & Super, 1996). Others also acknowledge the

importance of context in self-concept development, a person's sense of self, is shaped through interaction with the environment and other people (Shalveson, Hubner & Stanton, 1976).

2.2.3 Contextual theories

As Brandtstadter and Rothermund (2002) maintain, goals (or aspirations) are dynamic structures that undergo reconstruction over time to meet contextual realities. Ecological systems theory (Bronfenbrenner, 1979) focuses on how individuals develop in context recognising multiple influences (e.g. peers, families, schools, neighbourhoods) on child development throughout the life course. The development of a child depends on the interaction between the child and their environments and is therefore socially constructed. Bronfenbrenner describes a number of systems which influence development. The microsystem contains the individual with their own characteristics and the pattern of activities, roles and interpersonal relations the developing child has in their home, school and neighbourhood. The macrosystem describes the culture or broader social context in which an individual lives. For example, socioeconomic status, poverty, and the impact of different historical events e.g. the recent recession has on individuals. Other systems described in the theory involve the relation between settings e.g. home and school, as well as settings where the individual is not involved but the impact of another individual's setting influences the child e.g. a parents loss of employment may change the pattern of interaction between the child and the parent, and transitions over the life course e.g. the increased opportunities for career women in the workplace.

Applying the context described by Bronfenbrenner to vocational psychology, the developmental-contextual approach (Vondracek et al,, 1986) is a general conceptual framework, where individuals interact with their changing contexts, which provides the basis of their own development. The framework identifies three key elements in career development, the individual, the context and the relationship between the two. The framework takes the emphasis of multiple influences (e.g., biological, psychological, social etc.) operating in an individual's functioning at any time as outlined in life-span developmental psychology. More recently in order to address the limitations of lack of detail about underlying processes Vondracek, Ford & Profeli (2014) combined theories of systems with the developmental-contextual approach to develop an integrative theory, coined the living systems theory of vocational behaviour and development. The developing individual is portrayed as embedded in an interconnected set of contexts, including the immediate social and material setting in which he or she is situated, but also including his or her social class, and cultural or societal norms and customs in which the individual is not an active participant in the setting. Individuals are conceptualised as self-constructing, self-regulating, and self-organising living systems that function in multiple contexts.

2.2.4 Social reproduction

Although as discussed the wider context is important in child development, given the emphasis of younger children in this thesis the home may be their main situational influence. Therefore the focus of social class in aspirational development theories, families and their social background are a key area of interest. In sociology the transmission of resources across generations has been described in the literature as “social reproduction”. Social class is reinforced through homogamy (Hout, 1982; Mare, 1991). Research has shown that people marry within rather than outside socio-economic groups (Kalmijn, 1998) although there is a greater preference in marriage for similarity in cultural resources (e.g., values and opinion) than economic status (e.g., income) when choosing partners (Kalmijn, 1994). In sociology there are competing perspectives on the question of how families maintain their privilege across generations. The rational action perspective (Goldthorpe, 2007) maintains that a family’s choice of a child’s academic pursuits will be driven by the parent’s belief that a child will attain a given level of education, the parent’s expectations of the cost of that education, and the belief that the level of attainment will protect the child from loss of status in comparison to their parent’s background. As a result, the less advantaged parents aim for the type of qualifications that lead to realistically attainable occupational outcomes for their children rather than risky high level educational qualifications, which could lead to upward mobility. Another explanation highlights the importance of cultural capital (Bourdieu, 1984). Membership of a social class is accompanied by a set of values and beliefs. For example, the educated middle class parents give their children the skills and resources to do well in the educational system.

Social classes are not culturally homogeneous. The middle classes, in particular, are quite diverse (Scherger & Savage, 2010). This can be explained in part by upward or downward mobility of one or both parents. Advantaged parents whose class positions were stable across generations might have more resources to pass onto their children, compared to parents who achieved upward mobility. Likewise, parents who experienced downward mobility may be better positioned than second generation working-class parents to help their children retain their own parents’ status. Grandparent influences are therefore worthy of consideration, recent studies have shown that using only two generations to derive status across generations substantially underestimates long-run persistence for both paternal and, particularly, maternal lineage (Lindahl, Palme, Sandgren, Massi, & Sjögren,2015; Stuhler, 2012). In fact, studies using data covering three or more generations maintain that social advantage or disadvantage persists for far longer than three generations (Stuhler, 2012). Clark and Cummins (2013) claim social mobility is slow and there is considerable persistence in the wealth status of households in England from 1800 to 2012. They argue that social class differences can persist for as many as twenty to thirty generations.

The social inheritance process might be different in grandfathers and grandmothers - paternal and maternal - and for granddaughters and grandsons. Evolutionary theory maintains that maternal grandmothers tend to invest the most in their grandchildren, with more contact and the closest relationships with their grandchildren, followed by maternal grandfathers, paternal grandmothers and lastly paternal grandfathers (Coall & Hertwig, 2011). However, findings so far are inconclusive as most previous work on grandparent to grandchild effects has been based on one or two selected representatives from the earlier generation. Chan and Boliver (2013) showed maternal grandfather effects, but their study did not include maternal grandmothers and paternal grandparents. Erola and Moiso (2007) found a small, but significant association between the social status of children in Finland and both maternal and paternal grandfathers' status, after controlling for parental status. The status of the grandmothers did not appear to play a role. However, the grandparents' data was based on information collected in 1950 when the labour force participation rate for women was low.

Given the importance of social reproduction and the family context for younger children two frameworks should be considered. The first, the family investment model explains how relative income levels result in the purchase of goods and services made by the parent that can be used to invest in the human capital of their children (Kiernan & Huerta, 2008). As well as the quantity of investment through material resources, this also includes aspects such as time spent with the child. This investment results in positive outcomes in child development, not only on the well-being of children, but equips them with the resources to expand their horizons. This investment may impact on the level and type of aspirations a child may have as a result of the resources available to them and their family (Schoon & Parsons, 2002; Schoon et al., 2007). The second related framework is the family stress model, which maintains that levels of income relate to the parents' well-being which in turn impacts on their parenting practices resulting in different child outcomes (Elder & Caspi, 1988). A parent who invests in the human capital of their child as a result of their well-being might induce optimistic hopes for a child's future.

2.2.5 Social learning theory and motivational constructs

As well as the importance of social inheritance and the transmission of resources in socialisation, situation and context are also vital to understanding a child's behaviour according to social learning theory (Bandura, 1977). Individuals are taught to behave through explicit reinforcement or punishment, or by the observational learning of others in the environment. However, learning does not necessarily lead to a change in behaviour, but if children notice positive, desired outcomes in the observed behaviour, they are more likely to model, imitate and adopt the behaviour themselves. Children learn by modelling others' behaviours, their parents' and other relevant adults in their community. Bandura (1997) expanded his theory to include the concept of self-efficacy, an individual's confidence in their ability to organise and execute a

given course of action to solve a problem or accomplish a task. In social cognitive theory, there are two types of beliefs a child will need; belief that certain behaviours lead to certain outcomes and a belief that the child can perform the behaviour necessary to produce the outcome. Self-concept is closely aligned to self-efficacy, however efficacy judgement is less concerned with the skills and abilities individuals possess, but what individuals believe they can do with those skills and abilities (Bong & Skaalvik, 2003). Bandura maintains that self-efficacy, is the major determinant of goal setting and motivation. For example, high personal academic expectations predict subsequent performance and occupational aspiration choice (Bandura, 2001). Bandura (1997) also proposed collective efficacy, an individuals' perceptions regarding the community's performance capabilities for attainment or success, for example in school or the labour market. Adults', parents' and children's collective personal beliefs within a community may impact on the motivations and aspirations for children in the community to succeed and develop; thereby influencing the behaviour of children in the community.

Lent and Brown (2002) derived their social cognitive career theory from Bandura, but focus specifically on the development of interests, career choice and career-related performance. They maintain the individual is an active agent in the processes of self-efficacy beliefs, outcome expectations and personal goals which interact with aspects of the individual such as gender, ethnicity and social class, their environment and learning experiences. Self-efficacy and outcome expectations regarding activities and tasks influence career interests. Individuals form a lasting interest in an activity when they believe they are good at it and when they believe that performing it will produce a valued outcome. Ongoing interest and positive self-efficacy and outcome expectations will promote goals which encourage an individual to continue to engage in the activity.

As well as self-efficacy, other motivational constructs include locus of control (Rotter, 1966), helplessness (Seligman, 1980) achievement motivation (Dweck, 2006), and expectancy value theory (Eccles et al., 1983). In control theories, children with an internal locus of control feel they can influence their successes and failures. Locus of control may also relate to children's occupational aspirations. For example, children with an external locus of control have expressed more fantasy aspirations (Trice & Gilbert, 1990). Similarly, in achievement motivation if a child is motivated by mastery orientation (i.e. seeking to improve their competence and learn new material), as opposed to help orientation (i.e. the tendency to seek out situations where they are assured of success and avoid situations in which they may be criticised), they will focus on their effort or learning from mistakes, rather than on how others evaluate them. Children with help orientation base their self-worth on the approval of others. These different motivation patterns are evident as early as preschool (Smiley & Dweck, 1994). During middle childhood children begin to distinguish ability, effort and external factors in explaining their performance (Skinner, 1995). Children high in achievement motivation develop mastery

orientated attributions. They believe there successes are due to ability and failure to insufficient effort or a very difficult task which leads to high expectancy for success and a willingness to approach challenging tasks. Children who develop learned helplessness attribute their failures to their ability and not their successes. Although, as discussed, children tend to be optimistic about their abilities and futures, helpless responses have been found in children aged younger than 4 (Herbert & Dweck, 1985). According to Dweck (2000) young children can display aspects of the helpless response when they confront failure including self-blame, negative feelings, low persistence, few constructive strategies and reduced expectations.

In expectancy value theory, Eccles et al. (1983) argue that children's subjective task values are also important predictors of children's activity choices and define four components of task value; interest in or enjoyment of the activity – similar to intrinsic motivation; perceived importance of doing well; perceived usefulness of the activity for short and long range goals; and the cost of engaging in any particular activity. Subjective task values are deemed as important predictors of activity choice in adolescents, but even children aged 6 and 7 can differentiate self and task perceptions, and have the ability to distinguish between competence perceptions for different activities, and their valuing of specific activities (Eccles et al., 1993). They have some sense of what they are better at or not, however generally their self-concepts are high. Although children at this age have a sense of their ability in different activities, their perceptions of ability are over optimistic, which decreases across the elementary school years (Marsh, 1989).

As well as in Eccles' expectancy value theory, intrinsic motivations are explored in self-determination theory (Ryan & Deci, 2000). Intrinsic motivation theories focus on the reasons for engagement. When individuals are interested in and enjoy the activity they are intrinsically motivated. When extrinsically motivated, individuals participate in activities for tangible reasons such as receiving a reward. Intrinsically motivated behaviours originate from the self, when the individual experiences competence, autonomy and relatedness. Therefore feelings of competence will enhance intrinsic motivation when the individual has a sense of autonomy, as well as security. In self-determination theory, there are different types of extrinsic motivation ranging from externally regulated – the least autonomous to integrated regulation, the most autonomous where motivation is congruent to one's values or needs, but may not be conducted for inherent satisfaction (Ryan & Deci, 2000). Kasser and Ryan (1993, 1996) have linked intrinsic and extrinsic motivation to well-being. Pursuit of intrinsic aspirations such as affiliation, personal growth and community involvement were positively associated with self-esteem, compared to extrinsic aspirations such as wealth, fame and image which were associated with depression and anxiety.

2.2.6 Summary

In summary, life course theory (Elder, 1985) and ecological systems theory (Bronfenbrenner, 1979) are two theories which frame the development of aspirations, and have been used by vocational psychologists for the basis of theories in career development (Super, 1980; Vondracek et al., 1986). Although the development of aspirations is acknowledged as a lifetime process, adolescence has been the key focus of theory and research because it is the time when individuals are selecting and reflecting on future aspirational choices. In the development of aspirations, with the exception of Gottfredson (1981) pre-adolescence has largely been overlooked. However, childhood is seen as a period of growth, when children are developing self-concepts and are gaining an understanding of the world of work. By age 7 children should have moved away from magical thinking and developed the cognitive skills to mentally project themselves into the future. Although young children will be more optimistic about their abilities and unrealistic about their aspirations than adolescents, they will have developed gender role self-concepts, have some understanding of social class and some skills to differentiate between self and task perceptions, and values which form the basis of activity and occupational choice. However, for primary school children perceptions of ability and societal structural and economic constraints may not be realised. At this age, the context of home, family influence, and social background are seen as particularly key. However, children are starting to refine their ability self-concepts based on their experiences at school. According to Bandura (1997), children learn by modelling others' behaviours, in particular parents, when the desired outcome is positive. Bandura maintains self-efficacy is the major determinant of goal setting and motivation. Self-efficacy is closely aligned to self-concept, as well as other motivational constructs including locus of control, helplessness, achievement motivation and expectancy value theory. In a number of motivation theories intrinsic motivation (Eccles et al., 1983; Ryan & Deci, 2000) plays a key role, where being interested and enjoying an activity results in positive outcomes. As well as developmental stage and types of motivation, other predictors of aspirations are outlined in the next section.

2.3 Determinants of children's aspirations

This section outlines the main factors which have been found to predict aspirations in children (where research is available) and adolescents. It first focuses on the individual: the child's gender, ethnicity, ability, attitudes and temperament. Parental and family influences are then discussed, followed by contextual factors including peers, school, and the neighbourhood.

2.3.1 Individual child predictors

2.3.1.1 Gender

As well as developmental stage, gender is a major factor in differentiating children's aspirations (Schoon & Eccles, 2014). By age 7, children not only know and endorse gender stereotypes but also view gender-atypical behaviour negatively, and tend to avoid gender-atypical types of play (Stoddart & Turiel, 1985). In expressing career aspirations, females tend to endorse intrinsic values, such as helping others, more than males who tend to favour power and money (Weisgram, Bigler & Liben, 2010). These gender differences emerge in childhood as children focus on gender as a social category and learn what is culturally perceived as masculine and feminine (Blakemore, Berenbaum & Liben, 2009) and are reflected in children's later aspirations, as well. For example, in the UK, the most popular occupational choices for girls in secondary education tend to be 'hairdresser', 'beautician', 'doctor', 'veterinarian' or 'teacher', while for boys the most popular choices are 'entertainer', 'sportsman' and the skilled trades (Croll et. al, 2010). Girls are more likely than boys to have aspirations for occupations held predominately by members of the other gender (Eccles, 2011; Sandberg, Meyer-Yunger, Carver & Perry, 2004).

Girls tend to have consistently higher educational and occupational aspirations than boys (Mello, 2008; Schoon et al., 2007). However, they also tend to have lower levels of self-confidence in their abilities, regardless of aptitude, particularly in traditionally male represented areas such as mathematics and science (Eccles, 1987; Sullivan, 2009). A more recent study looking at gender equity and science aspirations suggested that even girls in primary school who tended to enjoy science believed that having science aspirations was "undesirable" and 'unthinkable' (Archer, DeWitt & Wong, 2013). Science careers were imagined as being incompatible with girls' performances of popular femininity. Girls also tend to be more pragmatic in their choices. In a longitudinal study in the US boys tended to consistently report more fantasy type occupations than girls across all ages (Helwig, 2001). Both boys and girls shift to more realistic aspirations as they get older (Cook et al., 1996).

2.3.1.2 Ethnicity

In the UK, children from ethnic minorities tend to have higher educational and occupational aspirations than white children (Croll et al., 2010; Goodman & Gregg, 2010; Strand, 2007). This may in part be due to how children perceive the expectations their parents have for them. Ethnic minority parents are more likely to want their children to stay on at school and attend university, pay for private tuition, be involved with the child's school, and have higher levels of supervision (Strand, 2011). In the UK and US, students from Asian backgrounds in particular have been found to have the highest educational and occupational aspirations compared to other ethnic

groups (Gutman & Akerman, 2008). However, having higher aspirations does not always result in higher attainment – although Black Caribbean and African boys had higher educational aspirations and worked as hard at school as White British boys they did not achieve higher outcomes (Strand, 2007).

2.3.1.3 Child ability

Children's abilities also play an important role in the development of their aspirations. Aspirations are shaped by an individual's abilities, as well as their perceptions of themselves and their abilities. Aspirations are raised when children do well (Bond & Saunders, 1999), and for secondary school children, the perception of one's academic ability has been associated with differences in the levels of aspirations (Strand & Winston, 2008). This is a reciprocal process whereby, doing well increases belief in one's own ability, which encourages children to try, which results in them doing better and believing in their own ability (Bandura, 1997). This process is reinforced by other factors such as how children perceive their parents' beliefs in their abilities (Bond & Saunders, 1999). Parents' perceptions of children's ability in maths and English have been found to predict children's subsequent perceptions of their competence (Jodl, Michael, Malanchuk, Eccles, & Sameroff, 2001; Parsons, Adler & Kaczala, 1982). A child's perception of parental expectations is thought to have an effect on their achievement, independently of actual parents' expectations (Gill & Reynolds, 1999). And children's achievement have been found to influence parental expectations (Goldenberg, Gallimore, Reese, & Garnier, 2001).

As well as ability, children's attitudes are important. Children who engage with school, for example put more effort in, tend to do better and have higher educational and career aspirations (Bond & Saunders, 1999; Schoon et al., 2007). Academic intrinsic motivation involves enjoyment of school learning. As young as age 7, children with higher academic intrinsic motivation are significantly more likely to have higher achievement, ability, higher motivation over time and function more effectively in school (Gottfried, 1990). However, according to Gottfried, at this age the relationship between subject specific motivation, ability and achievement has not fully developed. However, Abu-Hilal (2000) found that there was a strong association among adolescents between attitudes to school subjects and educational aspirations, and between aspirations and achievement. More masculine aspirations such as for manual and physical occupations tend to be associated with lower ability (Creed et al., 2007).

2.3.1.4 Child temperament

In addition to attitudes and ability, how children interact with family, school and the environment will be influenced by their temperament (Shiner et al., 2012). Temperament is an early

emerging basic disposition in the domains of activity, affectivity, attention and self-regulation, which are a product of genetic, biological and environmental factors working together throughout development (Shiner et al., 2012). According to Shiner and Caspi (2012) there are a number of processes through which early temperament shapes the development of later personality and adaptation. These processes include environmental elicitation, construal, selection and manipulation. These influence how other people react to children, including their behaviour and expectations and other people's responses are likely to be internalised as part of the children's emerging self-concept (Bates, Schermerhorn & Peterson, 2012). They also influence how children experience the environment, how they cognitively process social information, and choose the environments which they spend their time (Derryberry & Tucker, 2006; Rothbart, 2011). There are well documented connections between temperament differences and parental and peer relationships, and a wide variety of life outcomes including school readiness, academic achievement, psychopathology and vocational interests (Oakland, Stafford, Horton & Glutting, 2001; Shiner et al., 2012). For example, Pulkkinen (2001) found lower occupational aspirations was a consequence of aggressive behavior in boys, and low emotional control, anxiety and passivity in girls.

2.3.2 The role of parents and family

2.3.2.1 The influence of parents

Parents are another major influence on children's aspirations. Parental social class, education, and occupation have been found to influence children's aspirations, as well as parent's values, expectations of and involvement with their children. Those from higher social classes foster familiarity with higher status occupations via their own jobs and their social milieu. Children from lower-class backgrounds tend to have lower educational aspirations (Schoon & Parsons, 2002), and to aspire to less prestigious occupations than their more advantaged peers (Croll, 2008). In Britain, parental social class significantly predicted parents' aspirations for adolescents' education in both the 1958 National Child Development Study (NCDS) and 1970 British Cohort Study (BCS70) (Schoon & Parsons, 2002; Schoon et al., 2007). It has long been established, for example, that children aspire to the careers of their parents at rates significantly above chance (Holland, 1962; Werts & Watley, 1972), particularly at primary school ages (Trice et al., 1995), and if the parent is satisfied in their job (Trice & Tillapaugh, 1991). As well as occupation, parental education also influences young people's career aspirations (Crockett & Bingham, 2000; Mau & Bikos, 2000). Parents who are highly educated tend to have high academic efficacy and believe they can affect their children's academic and occupational development. Educated parents are more proactive and successful in enabling their children's competencies than parents who doubt they can influence their children's development (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996a; Elder, 1995). Children from poorer

families have been found to have less belief in their own ability compared to children from richer families; they are also less likely to think that their own actions are important in determining future outcomes (Goodman & Gregg, 2010).

Parental values, expectations and involvement are all influenced by the parents' socio-economic status. Membership of a particular socio-economic group is loaded with a set of values and beliefs. Hitlin (2006) proposes that aspirations are influenced by personal value structures which are in turn shaped and channelled by society and in particular parental influences. Parental values are assumed to underlie social preferences that help shape behaviour with respect to children. The most commonly studied values reflect the dimensions of autonomy versus conformity (Kohn, 1969; Schaefer, 1987). Schwartz (1992) suggested two high-order dimensions of values: openness to change versus conservation, and self-enhancement versus self-transcendence. For example, in the first dimension, openness to change includes self-direction and stimulation, while conservation contains security, conformity and tradition. .Therefore, the first dimension relates to the conflict of following one's own interests compared to preserving the status quo and the certainty it provides in relationships with close others, institutions and traditions. Research has shown that people who hold advantaged positions in the social structure value self-direction in themselves and their children more than do people in less advantaged positions (Kohn, 1969; Lareau, 2002). Socially disadvantaged individuals tend to give a relatively greater emphasis to obedience and conformity to authority and tradition (Alwin, 1989).

Parental expectations have been found to influence children's aspirations both academically and occupationally (Pizzolato & Slatton, 2007; Schoon et al., 2007; Schoon & Parsons, 2002) and tend to increase in line with economic resources available to the family (Schoon et al., 2007). Studies have shown that parental expectations and aspirations of their children influence adolescents' own beliefs about themselves (e.g., Klebanov & Brooks-Gunn, 1992), as well as their educational and vocational choices (e.g., Eccles, Wigfield & Schiefele, 1998; Wilson & Wilson, 1992). In the Avon Longitudinal Study of Parents and Children (ALSPAC; 1998), maternal aspiration for the child to attend university was one of the most socially graded factors, with 81% of the richest mothers reporting that they hoped their 9-year-old would go to university, compared with only 37% of the poorest mothers (Goodman & Gregg, 2010). However more recently in 2008, 97% of all mothers in the UK Millennium Cohort Study would like their seven year olds to attend university when they are older regardless of their own education (Hansen & Jones 2010). Parents can also influence children's attitudes towards levels of future optimism (Nurmi, 1991; Nurmi & Pulliainen, 1991). For example, in data investigating twins in England and Wales, parenting behaviours of depressed mothers were characterised as less responsive and less positive towards their children (Kim-Cohen, Moffitt,

Taylor, Pawlby, & Caspi, 2005). In turn, parents' expectations are related to their mental health and optimism.

As discussed, parental socio-economic resources, values and expectations can influence parental involvement. Parental involvement with children in the home has been found to have a significant impact on a child's cognitive development especially at primary school, which in turn aids achievement and setting of high aspirations (Desforges & Abouchaar, 2003). Specifically, involvement with children's academic achievement including verbal interaction, book reading, helping with homework, and involvement with the school help to raise aspirations (Muller & Kerbow, 1993; Stevenson & Baker, 1987; Wilson & Wilson, 1992). Some studies have highlighted the greater influence of the mother's support compared to the father's (Marjoribanks, 1993). Parents with less time and resources, compared to more advantaged parents will be less able to offer the same level of support to their children to encourage their child's schooling and aspirations (Williams, Williams, & Ullman, 2002). Poor parents may have less time and energy to devote to developing their children's human capital. Single parents in particular will be disadvantaged by time constraints (Liontos, 1992; Standing, 1999). These findings are in line with the family investment model which explains how relative income levels result in the purchase of goods and services made by the parent that can be used to invest in the human capital of the child. This investment, which includes time spent with the child, results in positive child outcomes, but is compromised under conditions of adversity, including parental ill mental health (Kiernan & Huerta, 2008).

2.3.2.2 The influence of grandparents

As discussed, social reproduction and investment of family resources in children is thought to be influential across generations. Compared to adolescents, the influence of grandparents on younger children's aspirations could be important. Recent demographic changes have increased the potential influence of grandparents on their grandchildren. Grandparents are living longer and having healthier lives, and could therefore - despite rises in the age at childbearing, the demands of eldercare and more long-distance mobility - have longer and more active relationships with their grandchildren. The number of individuals who will live as part of three and four generation families is increasing (Bengtson 2001). The potential availability of extended kin may become a resource for children as they grow up (King & Elder 1997). In Britain, around half of all grandparents of very young children see them at least once a week (Hawkes & Joshi 2007). Grandparents may influence the level of education the grandchild receives, give access to their social networks, and demonstrate the value of certain types of work. More substantially, grandparents are involved in formal or informal types of childcare. In Britain, one in four families received some form of childcare from at least one grandparent when the child was aged three (Hawkes & Joshi 2007). Wealth is one of the strongest elements in

grandparent-grandchild transfers. Wealth accumulates within the family. Having wealthy grandparents behind wealthy parents may give an additive wealth advantage to the child.

The international evidence on the influence of grandparent class over and above that of parent class is mixed. In a US study, schooling, occupational status and income of grandparents had few significant effects on the occupational status of their grandchildren when parents' characteristics were controlled (Warren & Hauser 1997). A Finnish study showed similar findings, although associations differed by gender lineage (Erola & Moisio 2007). By contrast, a more recent study based on data from three British birth cohort studies found that grandparents' social class had a direct effect on grandchildren's mobility outcomes net of parents' social class, wealth and schooling (Chan & Boliver 2013), although only amongst the higher social classes.

2.3.3 The role of context

Contextual frameworks in developmental psychology stress the need to examine the multiple contexts that influence children and their families, for example, family, school and neighbourhood (Bronfenbrenner, 1979). According to Jencks and Mayer (1990), the individual outcomes of children are impacted by aspects of the neighbourhood. These include community services, collective socialisation, the negative behaviour of neighbours and peers, and the scarcity of resources in the community. How children evaluate their situation based on neighbourhood conditions and their peers may also important. Contextual factors such as peers, teachers, schools and neighbourhoods have been reported to influence aspirations (Ainsworth 2002; Kintrea et al., 2011; Ryan, 2000). A recent study looking at the aspirations of teenagers found that community, family and schools work together to reinforce children's views of future options (Kintrea et al., 2011).

2.3.3.1 The role of peers

Theories of achievement motivation highlight the important role of context and socialisation in the development of achievement beliefs and behaviours (Eccles et al., 1998). Children's experiences with peers occur on several levels: general interactions, relationships and groups (Rubin, Bukowski & Parker, 1998). Most work looking at peer influence has focused on negative effects such as antisocial, deviant and health-risk behaviours in adolescence. Adolescence compared to earlier life-stages, is marked by increases in peer interactions, and a growing psychological and emotional dependence on peer relationship where success among peers in adolescence becomes dominant (for a review, see Brechwald & Prinstein, 2011). Therefore, the effect of peers on younger children has been considered less important. The home environment, namely parents and family, has been seen as the greatest influence on young children's development and aspirations, as discussed earlier in the chapter.

At school, the evidence suggests children orient towards peers sharing similar motivational orientations and preferences (Berndt, Laychak & Park, 1990). Younger children also seem to be influenced by peer interactions. For example, sex segregation in young children tends to occur when children have choices of playmates in such situations as schools, and many aspects of play tend to be different among boys and girls e.g. more forceful, and active types of play for boys and for girls calmer styles of interactions (Martin & Fabes, 2001). The proportion of same-sex play preferences increases with age through the elementary school years (Maccoby & Jacklin, 1987). According to Berenbaum, Martin, Hanish, Briggs and Fabes, (2008) these behaviours and interaction styles over time may promote the development of different attitudes, motives, interests and aspirations in boys and girls. Fabes et al. (2014) argue that differences in early activity interests and preferences for boys and girls may prepare the way for later differences in aspirations by gender.

2.3.3.2 School context

As well as the gender of peers, gender make-up of the school differentiates aspirations. Girls who attend single sex schools have higher aspirations than those from co-educational school environments (Wall, Covell & Macintyre, 1999) and are also more likely to aspire to careers in the natural sciences and mathematics (Schoon, 2001). Single sex schooling reduces the gender gap in self-concept. Girls in single sex schools have greater belief in their academic abilities in mathematics and science (Sullivan, 2009). However, in the US research with boys and girls has shown increased contact with same-sex peers in single sex schools can intensify gender stereotypic behaviour and attitudes (Fabes, Martin, Hanish, Galligan & Pahlke, 2015).

In addition to the gender make-up of the school, the type of school a child attends can be influential. Children in particular types of schools (for example, schools with a six form or a grammar school) are likely to have higher academic aspirations than children attending other types of schools (Goodman & Gregg, 2010).These types of schools may have better resources, and superior teacher quality (Ainsworth, 2002). Pupils from lower socio-economic backgrounds tend to receive less teacher time and attention (Foster, Gomm & Hammersley, 1996). Teachers' perceptions of children can influence children's subsequent performance and motivation (Eccles-Parsons, Kaczala & Meece, 1982; Upadyaya, Viljaranta, Lerkkanen, Poikkeus & Nurmi, 2012). However, research investigating child outcomes related to aspirations such as academic self-concept and academic attainment have also found negative effects of higher academic schools on career aspirations. Academic self-concept, (the perception of a person's abilities in a specific subject), as discussed has been shown to be an important predictor for career choices in adolescence. However, school context in terms of school-average achievement can influence career intentions negatively as proposed by Marsh et al. (2008) in their research on the big-fish-little-pond effect (BFLPE). Students in classes or schools with high average individual

achievement have lower academic self-concepts than peers with the equivalent ability in schools or classrooms with average or low individual achievement. According to Marsh et al. (2008) children form their own academic self-concept by comparing their own achievements to those of their class or school peers, using the average as a frame of reference. This can have detrimental effects for higher achieving students in academic environments. In a study across a number of countries, being schooled with other high achievers had a negative impact on academic self-concept and career aspirations in science (Nagengast & Marsh, 2012).

2.3.3.3 Neighbourhood context

Along with the family and school, the neighbourhood a child lives in may be a key influencer of aspirations. Neighbourhood characteristics shape the type of role models children are exposed to outside the home. Wilson (1996) argues that neighbourhoods with adults who have steady jobs foster behaviour and attitudes that are beneficial for success. Studies have found neighbourhood effects on children's cognitive ability at pre-school age (McCulloch & Joshi, 2000) and variation in children's cognitive and behavioural adjustment by place (McCulloch, 2006). Furthermore, children who live in advantaged neighbourhoods are more likely to be exposed to helpful social networks which can provide positive resources, information and opportunities (Schulenberg, Vondracek, & Crouter, 1984). As Lupton and Kintrea (2011) suggest, deprived communities are characterised by inward-looking perspectives which limit residents' horizons. For example, in the study by Kintrea et al. (2011) white young working-class adolescents living in deprived areas were the least aspirational and tended to live in environments where traditional skilled 'blue-collar' occupations were valued, even if these kinds of jobs were relatively scarce.

However, previous large scale quantitative studies have failed to show strong 'neighbourhood effects' on educational and other outcomes (Leckie, 2009; Rasbash, Leckie, Pillinger & Jenkins, 2010). It has been argued that this is not necessarily because neighbourhood does not matter, it is a limitation of the conceptualisation and measurement of neighbourhoods. Using political boundaries such as electoral wards to capture neighbourhoods in all likelihood does not capture the actual place an individual interacts with (Lupton, 2003). Others have explained the limited neighbourhood effects by suggesting that schools are the main pathway through which the influence of neighbourhood is transmitted to children (Leckie, 2009; Owens, 2010). A recent cross-sectional study on the occupational aspirations of secondary school children in Germany found weak neighbourhood effects (defined as social class composition) and stronger school effects (defined as school type and parents average occupational status) which in part explained the neighbourhood effect (Wicht & Ludwig-Mayerhofer, 2014).

As discussed earlier in the chapter, selection biases occur in choice of partners and peers. Care also needs to be taken to account for selection effects in schools and neighbourhoods. It might be that children who are open to non-gender stereotypic courses and occupations select themselves or their parents select them into same-sex schools (Fabes et al., 2014). Neighbourhood selection is the result of residential mobility choices which sort households into different neighbourhoods producing and affecting patterns of residential segregation. The sorting process can either reproduce or alter neighbourhood characteristics over time (Hedman & van Ham, 2011). In support, Kintrea, et al. (2011) found that neighbourhood, family and schools tend to combine around particular views of future options and reinforce each other. They maintain aspirations are influenced by the individual's level of engagement with school, the influence of peer groups and attitudes of family members towards work.

2.3.3.4 Other contextual factors

As well as peers, schools and neighbourhood, according to life course and ecological systems theory there are other contextual factors which may impact on children's aspirations, including history, timing and the economy. As highlighted, the proportion of mothers' aspirations for their child to attend university had increased dramatically over a ten year period, albeit using a different sample set (Goodman & Gregg, 2010; Hansen & Jones 2010). The increase in maternal aspirations could be explained by the influence of government policy in raising aspirations, or the recognition that higher qualifications are needed to secure employment in a more competitive labour market. Increases in the importance of aspirations and types of aspirations over time have been highlighted in other work. In a study using two birth cohorts, the NCDS and the BCS70, when the adolescents were 16, in 1974 and 1986 respectively, occupational aspirations and academic achievements were more strongly associated with each other in the more recent cohort, when the youth employment market was more difficult (Schoon & Parsons, 2002). In a recent study, Uhls and Greenfield (2012) claim that fame has become a more important goal for preadolescents, as the desire for fame has become cognitively accessible at a younger age, than in previous generations via the media.

2.3.3.5 Summary

In summary, as well as developmental stage, perhaps the most important predictor of children's aspirations is gender. Although aspirations tend to be gender typical, girls have higher aspirations than boys, but have lower self-confidence particularly in maths and science. The child's ethnicity, ability, attitudes to school in particular and temperament are child level factors found to influence aspirations. Parents and family are major influences, especially for younger children. In particular, parents and the families socio-economic background informs parental resources, values, and expectations directly (and indirectly through parental involvement) shape the child's aspirations. Contextual factors including peers, school and neighbourhood can

determine aspirations, particularly for older children, along with other factors including the historical and economic environment.

2.4 Aspirations and emotional and behavioural problems

This section examines the importance of studying emotional and behavioural difficulties in young children. And discusses the link between aspirations and well-being, and highlights some of the relevant research conducted in this area.

2.4.1 Emotional and behavioural problems in children

According to Goodman (1997) one in ten children and adolescents aged 5–16 could be suffering from a clinically diagnosed mental disorder in the UK (Green, McGinnity, Meltzer, Ford, & Goodman, 2005). For children (aged 5-10) 4.9% have a conduct and 2.4% an emotional disorder. Boys are more likely than girls to have a conduct disorder, 6.9% and 2.8% respectively (Green et al., 2005; Moffitt & Scott, 2008). The most common disorders for children and adolescents are attention deficit hyperactivity disorders (ADHD), oppositional defiant disorder (ODD), conduct disorders (CD), and anxiety disorders (Green et al., 2005).

These common disorders are often grouped together into two broader categories – internalising which consists of emotional and anxiety disorders, and externalising problems such as ADHD and conduct disorders (Achenbach & Edelbrock, 1978). The distinction is made as internalising problems affect the child's internal psychological environment exhibiting withdrawn, anxious and inhibited behaviours, while externalising problems are manifested in the child's outward behaviour for example acting out, disruption, hyperactivity and aggression (Eisenberg et al., 2001).

In investigating internalising and externalising problems in children it is important to take account of comorbidity, the presence of more than one diagnosis occurring in an individual at the same time. There are two types – homotypic and heterotypic comorbidity. Homotypic relates to comorbidity within (for example depression and dysthymia) and heterotypic comorbidity between (for example depression and conduct disorder). Studies with young people have found both homotypic and heterotypic comorbidity (Angold, Costello, & Erkanli, 1999; Burke, Loeber, Lahey, & Rathouz, 2005; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). The trajectories of mental disorders and how emotional and behavioural problems manifest themselves in boys and girls are different. For example, a higher proportion of boys have childhood-onset disorders (Moffitt & Caspi, 2001). However, the problems that are more typical of girls (such as anxiety) may be underestimated as they are more difficult to directly observe (see Crick & Zahn-Waxler, 2003 for a review).

The long term outcome for children with internalising or externalising problems is concerning as there is evidence of continuity of child psychopathology into adulthood (Kim-Cohen et al., 2003; Merikangas et al., 2010; Schoon & Bynner, 2003). Although at least half of children with externalising problems have been found to recover (Buchanan & Flouri, 2001) some problems, especially early onset externalising problems, have been associated with poor outcomes. For example, conduct disorders have been associated with leaving school earlier or gaining fewer qualifications, teenage parenthood, unemployment, financial difficulties, criminal activities and substance abuse (Bailey, Vermerin, & Mitchell, 2007; Fergusson & Horwood, 1998; Kratzer & Hodgins, 1997; Moffitt, Caspi, Harrington, & Milne, 2002; Wiesner, Kim, & Capaldi, 2005). Internalising problems, in particular early anxiety, have been associated with later depression (Merikangas et al., 2010), poor academic achievement and relationship problems in later life.

Family background factors have consistently emerged as one area which is associated with the likelihood that problems will occur. For example, parental qualifications, poverty, deprivation, family structure, mother's mental health and parenting styles have all been explored as risk factors associated with internalising and externalising problems (Barber & Harmon, 2002; Costello, Compton, Keeler, & Angold, 2003; Goodman & Gregg, 2010; Harrington et al., 1993; Kiernan & Huerta, 2008; Shanahan, Copeland, Costello, & Angold, 2008). Individual variables such as age, gender, and cognitive ability of the child have also been acknowledged as important (Goodman & Gregg, 2010; Green et al., 2005; Huisman et al., 2010; Merikangas et al., 2010). An understanding of the direct or indirect association of factors such as aspirations with child psychopathology is useful in helping to inform future work on child outcomes.

2.4.2 Aspirations and emotional and behavioural problems

Previous work has mainly focused on the role of aspirations in educational and occupational outcomes and not on other child outcomes, in particular emotional and behavioural difficulties. The empirical evidence on the relationship between aspirations and emotional and behavioural problems is scarce, particularly in primary school children. However, there are good reasons to expect why aspirations and emotional behavioural problems may be related in children. As discussed, children's aspirations are strongly influenced by parental input and background, and family background factors have consistently emerged as one area strongly associated with the likelihood that a child will have behaviour problems. For example, parental qualifications, poverty, family structure, mother's mental health and parenting have all been explored as risk factors of children's emotional and behavioural problems (e.g. Costello, Compton et al., 2003; Kiernan & Huerta, 2008; Shanahan et al., 2008). As well as parental factors, child-level variables that are strongly associated with children's aspirations, such as age, gender and cognitive ability, have also been acknowledged to play a role in children's emotional and behavioural adjustment (Green et al., 2005; Huisman et al., 2010).

2.4.2.1 Self-concept, self-efficacy and control beliefs

Also, the development of self-concept is central to many aspirational theories (Gottfredson, 1981; Super, 1980). Self-concept appears to influence children's overall feelings of competence and well-being. According to Wyman, Cowen, Work and Kerley (1993) "…future expectations (using a combined measure of aspirations and expectations) seem to be part of the fabric of a child's ongoing self-experience and the attitudes and feelings with which he or she engages the world" (p. 658). Self-concept is related to other constructs such as self-esteem, and motivational constructs such as achievement motivation (Dweck, 2006) and self-efficacy (Bandura, 1997). Self-esteem is an element of self-concept and is related to how satisfied people are with their lives and their overall outlook.

Self-esteem is important as evaluations of individuals competencies affect emotional experiences, future behaviour and long-term psychological adjustment, and are therefore related to both aspirations and emotional and behavioural problems. Pre-schoolers have several self-esteems related to such activities as learning well in school, trying hard at challenging tasks, making friends and treating others kindly (Marsh, Craven & Debus, 1998). However their understanding is restricted. According to Marsh (1990) by age 6 or 7 children have formed at least 4 self-esteems – academic competence, social competence, physical/athletic competence and physical appearance – that become more refined with age. Individuals with high self-esteem tend to feel good about themselves and hopeful in general, whereas individuals with low self-esteem tend to feel worthless and hopeless (Harter, 1999). Low self-esteem in childhood and adolescence is associated with problems such as aggression, depression, substance abuse, social withdrawal, negative thinking about relationships, and social ideation (Orth, Robins, & Roberts, 2008; Rubin, Coplan & Bowker, 2009; Sowislo & Orth, 2013). High self-esteem in adolescents has been associated with internal control beliefs with regard to the future (Nurmi & Pullianen, 1991).

Aspirations impact on choices and direct future activities, which are themselves related to emotional and behavioural outcomes. The pursuit of one's aspirations has been shown to be beneficial for an individual's well-being as it increases the likelihood of goal attainment and a sense of self-efficacy (Bandura, 2001; Eccles et al., 1983). In control theories, children with an internal locus of control feel they can influence their successes and failures. Similarly, expectancy beliefs are the success the individual believes they will have in upcoming tasks, either in the immediate or long-term future. Choices are influenced by both negative and positive task characteristics and have costs associated with them, as one choice eliminates other options. These perspectives can be categorised as constructs which drive the development of aspirations and well-being, with high self-efficacy, expectancy beliefs and

internal locus of control associated with positive outcomes, while external locus of control and helplessness with more negative outcomes (Abramson, Metalsky, & Alloy, 1989).

A high sense of self-efficacy has been found to be strongly related to a greater probability of attaining family and educational goals (Malmberg, 2002). Trice and Gilbert (1990) found that children aged 9-10 years old with more external locus of control expressed fewer occupational aspirations or mainly fantasy aspirations, as compared to children with greater internal locus of control who evidenced more realistic occupational aspirations. Hopelessness has been shown to be characteristic of depressed children and to be linked to low self-esteem and less prosocial behaviour (Kazdin, Rodgers & Colbus, 1986). Similarly children with high, compared to low, future expectations had less anxiety and depression (Wyman et al., 1993).

2.4.2.2 Intrinsic and extrinsic motivation

Ryan & Deci (2000) focus on the reasons why individuals are motivated. In their extensive work they have linked intrinsic motivation (affiliation, helping others, and personal development) and extrinsic motivations (wealth, fame, and attractiveness), discussed earlier, to individual's well-being. They propose three elements in the motivation of intrinsic goals, competence, autonomy and relatedness which they maintain results in positive mental health outcomes. The first two elements of competence and autonomy relate to self-esteem and a sense of control as identified by other psychologists. These attributes are an important link between aspirations and emotional and behavioural adjustment. Numerous studies have revealed that an emphasis on intrinsic goals, relative to extrinsic goals, is associated with better mental health and well-being (Kasser, 2002; Kasser & Ryan, 2001; Nickerson Schartz, Diener & Kahneman, 2003; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Females, compared to males place more importance on intrinsic goals relative to extrinsic ones (Kasser & Ryan, 1993; Ryan et al., 1999). Some studies propose that adolescents have become more focused on the self and are more orientated toward material success (Twenge, Konrath, Foster, Campbell, & Bushman, 2008; Twenge, Campbell & Hoffman, 2010), therefore having more extrinsic aspirations. However, in a recent meta-analysis of materialism and well-being, the age of the participant moderated the size of the effect between materialism and well-being. The relation was more negative for individuals over the age of 18, than those under 18 (Dittmar, Bond, Hurst & Kasser, 2014).

2.4.2.3 Typicality of aspirations

In developmental psychology, goals that match the challenges and demands of a particular life stage or situation contribute to an individual's well-being (Nurmi & Salmela-Aro, 2002). As highlighted, primary school children tend to be optimistic about their abilities and their futures and become more realistic as they get older. Children's aspirations also reflect this pattern, and

having unrealistic aspirations is deemed as typical of this age group. However, although characteristically unrealistic, most primary children tend to have occupational aspirations, but do not have aspirations for fantasy objects or characters. Having aspirations which are not typical of the child's life stage, for example aspiring to be a fantasy character or to be an object may result in negative health outcomes. Also gender typicality is attributed to this age group. Research on gender self-concept, suggests that high gender typicality in aspirations is associated with having more positive and better peer relationships. Children who are high in gender typicality are liked by their peers (Egan & Perry, 2001), whereas children who are low in gender typicality are more likely to be teased (Young & Sweeting, 2004). Gender typicality has been linked with mental health outcomes. Children who are considered gender atypical are more likely to have lower feelings of self-worth, more likely to be perceived by others as depressed and anxious, and at greater risk of suicide (Carver, Yunger & Perry, 2003; Yunger, Carver & Perry, 2004). However, negative mental health might not be due to being atypical, but may be as a result of social repercussions such as being unpopular and teased for it (Jewell & Brown, 2013). At age 7, according to Gottfredson (1981) and others, children are aware of gender roles. Having aspirations which are not gender- typical for this age group may result in unpopularity, peer problems and poor mental health outcomes.

2.4.2.4 Studies investigating aspirations and behavioural problems

Although as discussed there are good reasons to believe there is a relationship between young children's aspirations and emotional problems, there is no direct longitudinal evidence for the association of aspirations and behavioural problems in primary school children. However studies suggest that future cognitions motivate behaviours related to the fulfilment of preferred outcomes, including positive future states promoting fewer behavioural problems.

One study compared the 'possible selves' of 238 male and female delinquents and non-delinquent youths (aged 13-16 years old) in Detroit, United States (U.S). The expected hopes and fears of delinquent youths compared to non-delinquent youths were more negative. The data was correlational, but implied a connection between possible selves and delinquent behaviour, although of course not directional. A follow-up study was conducted, to investigate the direction of the association. In the follow-up study, youths with more negative possible selves were more likely to report having engaged in delinquent behaviour (Oyserman & Markus, 1990). As aspirational constructs, positive possible selves can serve as incentives for increasing positive prosocial behaviours or for decreasing negative antisocial behaviour. However, the follow-up study was short term, and some of the participants were delinquent youths pre-selection, suggesting the relationship may be bi-directional.

A more recent study explored the reciprocal relation between future-orientated cognitions (i.e. aspirations and expectations) and behaviour during adolescence (Beal & Crockett, 2010). A longitudinal study was conducted with participants (n=317) present on three occasions, T1 mean age =14.98, a year later (T2) and subsequently 7 years later (T3). The study found adolescent aspirations predicted adult attainment 8 years later. However, behaviours such as delinquency did not mediate the effect of aspirations, but behaviours did mediate expectations. The authors suggest aspirations and expectations are distinct as suggested by some theorists (Gottfredson, 1981). They also suggest that the reason aspirations predicted change in academic activities, but not the reverse, while expectations and extracurricular activities was bidirectional may be due to expectations being sensitive to feedback from experience, whereas aspirations may not be (Eccles et al., 1983), As discussed in section 2.4.2.3, younger children's aspirations compared to teenagers and adults, are even less likely to take into account individual's and societal constraints. Finally the former study was conducted with a sub-sample of incarcerated youths and the latter with a community based sample, Beal and Crockett also suggest the relationship between future-cognitions and negative behaviours may be attenuated in a (small) community sample.

Although the relationship between future cognitions and behavioural problems may be reciprocal, (particularly for expectations and behaviour problems), the picture is complex. A longitudinal study in the U.S. found behaviour problems at grade 8 did not predict educational and occupational aspirations at grade 11. (Hill et al., 2004). The paper investigated the impact of parental academic involvement on school achievement, behaviour problems, and occupational and educational aspirations of 12-16 year olds from 463 families. The study found that school achievement and parental involvement were better predictors, than school behaviour problems of children's aspirations. Further, when separating high and low socio-economic status families, behaviour problems did not predict aspirations. Although in this study the behaviour to aspiration pathway was not significant, it does not imply that the relationship is not bidirectional or that aspirations do not predict behaviour. However, it may be that aspirations are more likely to explain behavioural problems, than expectations.

Finally, a recent study found that high occupational aspirations might contribute to building resilience to externalising problems for children in poverty (Flouri & Panourgia, 2012). Although the study was conducted with 9,198 primary school children, the data was cross-sectional and therefore causal inferences are difficult to defend. This study also highlighted that a proportion of children (around 1 in 6) who when asked what they would like to be when they grow up and did not give an occupational aspiration, scored higher on the internalising and externalising scales, on average than children giving an occupational aspiration. Not having an occupational aspiration or not giving any type of aspiration at age 7 may be associated with emotional and behavioural problems. In conclusion, the limited empirical evidence suggests that any

relationship between aspirations and expectations, and behavioural problems is most likely bi-directional. However, if future cognitions motivate behaviours, they are more likely to be aspirations than expectations, and particularly in younger children. Although, care needs to be taken in assuming the association of high self-esteem, self-efficacy and high aspirations results in positive child outcomes. Some studies have warned having high aspirations for some groups of adolescents without the appropriate resources or opportunities, might result in negative outcomes (Gorard et al., 2012; Sabates, Harris & Staff, 2011; Yates et al., 2011). A U.S. study with 761 student's aged 12-14 years examined academic aspiration-expectation discrepancies on academic risk-related behaviours and related psychosocial factors. Students from poorer neighbourhoods were more likely than their peers to have aspirations that exceeded their expectations. Adolescents' whose aspirations exceeded expectations, had higher levels of emotional and behavioural difficulties, higher levels of anxiety and poorer peer relations. Although the study was cross-sectional, the authors believe the emotional and behavioural symptoms result from frustration over the aspiration-expectation discrepancy (Boxer, Goldstein, Delorenzo, Savoy, & Mercado, 2010). However, the concerns of misalignment of high aspirations in adolescence may be less warranted for pre-secondary school children, as optimism is characteristic of this age-group.

2.4.2.5 Summary

In summary, previous work has focused on the role of aspirations in educational and occupational outcomes, and not other child outcomes. Studying possible mediators of emotional and behavioural difficulties is important, as the long term outcome for children with emotional and behavioural problems is concerning. There is good reason why aspirations and emotional and behavioural problems may be related. Both have similar child level and parental predictors. Children's self-concept and self-efficacy are central to many aspirational theories and are related to constructs including self-esteem and controls beliefs, including locus of control, helplessness, and expectancy beliefs. In some studies, high self-esteem and greater control beliefs have explained positive emotional and behavioural outcomes in children. In these theories, competence and autonomy are central to positive outcomes. Similarly, the type of motivation and the development stage are important for well-being. Having intrinsic aspirations for personal growth and helping others, rather than extrinsic aspirations have been related to positive mental health outcomes, particularly in adults. And finally, aspirations which match the particular life stage or situation contribute to well-being. For primary school children, optimistic aspirations, but not magical thinking, and gender typical aspirations would be characteristic of this age group.

2.5 Summary

As described, life course theory and ecological systems theory frame the development of aspirations and emotional and behavioural difficulties. The development of aspirations is a lifetime process, but the focus of previous research has been adolescents, viewed by psychological theorists as the key stage in aspirations development. This is reflected in the few aspirational theories, with the exception of theorists such as Gottfredson (1981), which include the development of childhood aspirations in any detail. However by age 7, children can envisage the future, are developing gender self-concepts and have possibly gained some understanding of their social heritage and the world of work. Although children's aspirations seem to be dominated by future occupations, there have been no large scale studies looking at primary school children's aspirations. This may be owing to the characteristic optimism of this age group, reflected in their often ambitious and unrealistic aspirations. However, understanding the determinants of aspirations for children at this age may help inform work on the development of aspirations and occupational choices in older children and adolescents.

Other than developmental stage, studies have found gender is a major predictor of children's aspirations. Generally, previous work on primary school children has used small unrepresentative samples, conducted outside the UK and found children's aspirations to be optimistic and ambitious, gender typical and often unrealistic. Work conducted with adolescents has found ethnicity, actual ability as well as perceived ability, attitudes to school, interests and temperament to be predictors of aspirations. Contextual influences include parental resources, values, expectations, parental involvement with the child, peers, school, neighbourhood and other macro-level predictors. Although children may be influenced by the school context, for younger children the home is the main frame of reference and therefore the influence of parents and family could be key predictors of aspirations pre-adolescence. As far as the author knows, these influences have not been examined using a large representative sample of primary school children.

The development of self-concept is central to most aspirational and motivational theories. As well as gender self-concepts, young children are developing self-esteem and self-efficacy which influence their feelings of competence and well-being. These constructs are related to control beliefs, including locus of control, helplessness, and expectancy beliefs. In some studies, high self-esteem and greater control beliefs have explained positive emotional and behavioural outcomes in children. In these theories, competence and autonomy are important for positive outcomes, and are also associated with the type of motivation and well-being. Having intrinsic aspirations for personal growth and helping others, rather than extrinsic aspirations have been related to positive mental health outcomes, particularly in adults. Typically most primary school

children are optimistic about their perceived competence, although atypical some children have shown helpless responses when they confront failure and may avoid situations perceived as difficult and feel they have little control of their futures. Therefore, for primary school children having high aspirations may be a factor in explaining positive emotional and behavioural outcomes, while low aspirations may be related to negative outcomes. And finally having aspirations which match the particular life stage or situation are thought to contribute to well-being. For primary school children, optimistic, ambitious and unrealistic aspirations, but not magical thinking, as well as gender typical aspirations are characteristic of this age group.

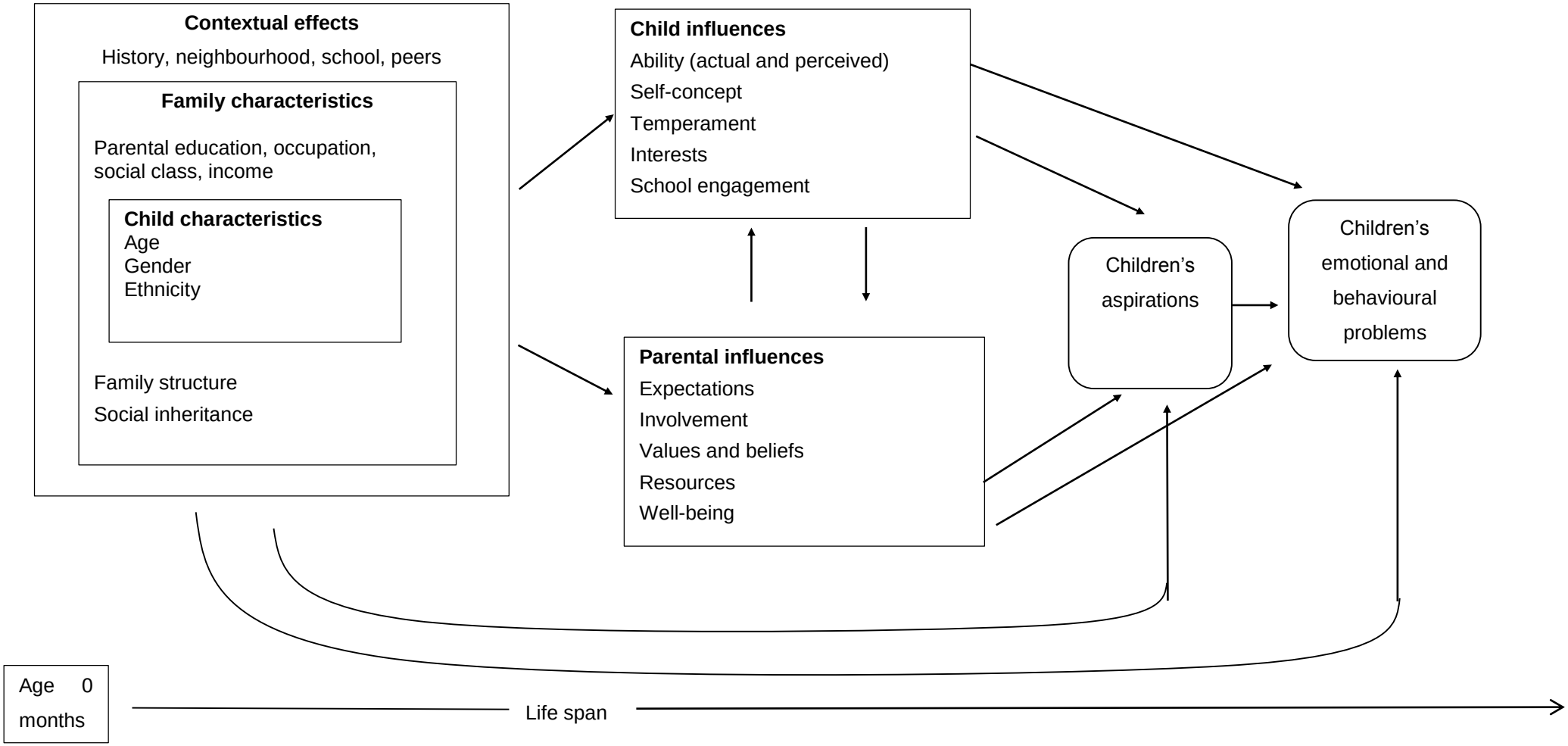
Life stage is important in the development of aspirations, and there has been no large scale study in the UK testing whether children's aspirations are optimistic and gender typical. Furthermore, at age 7 children should be able to envisage their futures. According to Gottfredson (1981) children of this age have unrealistic aspirations, but not fantasy aspirations for characters or view the future in terms of concrete and observable features. Aspirations typical of children's development at this life stage may be related to positive emotional and behavioural outcomes, while atypical aspirations may be associated with negative outcomes.

Other than life stage and the gender typicality of the aspirations, important features of the study of aspirations are the prestige of the aspiration and the motivation for the aspiration. Generally, high aspirations have been linked to positive educational and attainment outcomes. However the relation between the prestige of the aspiration, (which may be reflective of higher self-esteem, higher self-efficacy and greater control beliefs), and emotional and behavioural problems has not been examined in primary school children. Intrinsic motivations have been related to well-being, particularly in adults. Little work has focused on children's intrinsic and extrinsic motivations and well-being.

As highlighted, a number of studies have focused on the antecedents of adolescents' aspirations. As far as the author knows, these influences have not been tested using a large representative sample of primary school children. The role of parents and the family context may be particularly important to aspirational development at this age.

This thesis attempts to explore these questions. An overall hypothetical exploratory model of the determinants of and the possible mediation of children's aspirations on emotional and behavioural problems based on the literature review are outlined in Figure 2-1. The specific project aims and objectives are outlined in the next section.

Figure 2-1: Hypothetical summary model of the determinants of and the possible mediation of children's aspirations on emotional and behavioural problems[1]



[1] The work on the association between aspirations and EBD is exploratory in nature and proposes that the pathway for young children might be from aspirations to EBD. However, the use of arrows in the pathway diagrams used in Structural Equation Modelling (SEM) visually implies causality. Causal inference cannot be made as the research is not experimental and the pathways from aspirations to emotional and behavioural problems are cross-sectional i.e. are not temporal.

2.6 Project aims and hypothesis

The overarching framework for the thesis is life course theory (Elder, 1985). The theory places child development within a social, cultural and historical context. The literature shows that life stage is important in the development of aspirations, and few studies have focused on the aspirations of primary school children. Work in the area, has identified ambitious, unrealistic and gender typical aspirations as characteristic of this life stage. In studies with older children and adolescents the child's gender, ethnicity, ability, interests and temperament are all antecedents of aspirations, as well as parental, family, peers, school, and neighbourhood influences. In ecological systems theory (Bronfrenbrenner, 1979) at any given life stage individuals interact with their immediate changing contexts, including social and material setting, as well as influence from their social class, cultural and societal norms. For primary school children, the role of parents and the family context may be particularly important for aspirational development. Both of these theories inform each of the studies in this thesis.

Previous authors have focused on the role of aspirations in educational and occupational outcomes and not emotional and behavioural difficulties. Self-concept underlies many theories of aspirational development (Super, 1957; Gottfredson, 1981) and self-concept is related to self-esteem, and control beliefs, which for primary school children, are more likely to be free of societal opportunities and constraints, compared to adolescents. Therefore, aspirations may better reflect children's hopes and fears for the future. The general aim of this current research is twofold: to investigate the pathways to young children's aspirations, and to explore the relation between young children's aspirations and their emotional and behavioural problems. The specific aims of each of the studies in this thesis are as follows:

2.6.1 Individual level predictors of children's aspirations

The first study explores the individual and family level predictors of children's aspirations. Life-course and ecological systems theories frame the study and other theories and assumptions informing the questions and hypothesis are outlined below.

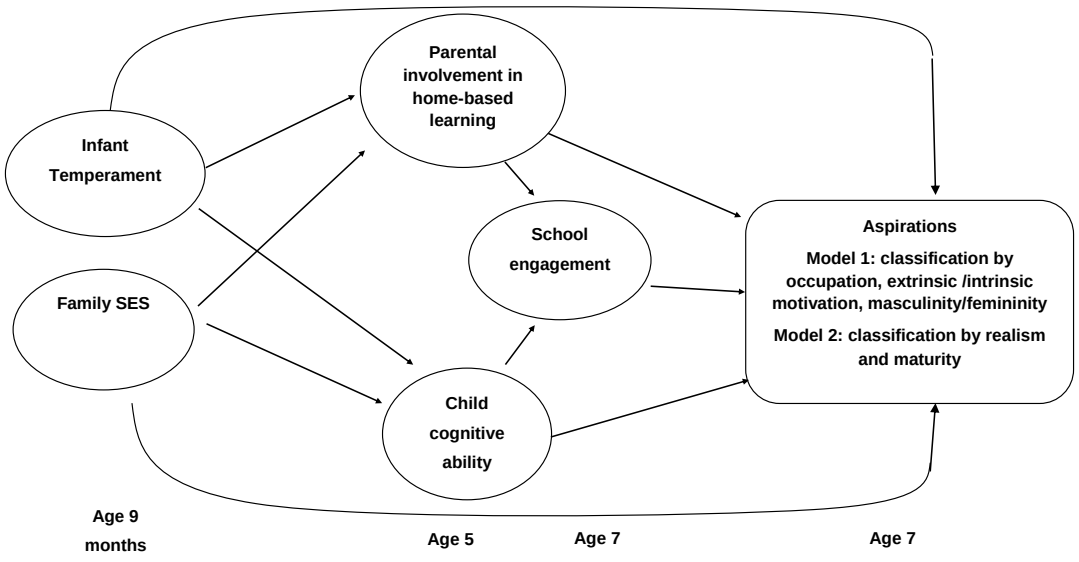
Aim 1: To investigate the individual level determinants of primary school children's aspirations. Figure 2-2 shows the hypothesised model. The analysis and results concerning Aim 1 can be found in chapter five (and chapter nine).

Firstly the study examined the characteristics of children's aspirations at age 7. Followed by an investigation of the pathways to occupational, masculine/feminine and extrinsic/intrinsic aspirations at age 7. It was predicted that, as with older children, ethnicity would be a key determinant of these three ways of classifying young children's aspirations. It was also expected

that aspirations would be gender-typical in both boys and girls, as proposed by Gottfredson. In line with the family investment model, lower SES was predicted to be related to lower aspirations both directly and indirectly via less parental involvement in home-based learning and lower cognitive ability. In turn, parental involvement in home-based learning would be related to school engagement, cognitive ability and aspirations. Cognitive ability and school engagement would also be associated with high occupational, intrinsic and feminine aspirations. As discussed, temperament would be related to SES of family of origin, parental involvement in home-based learning and cognitive ability but also aspirations, such that easy temperament would be related to high occupational, intrinsic and feminine aspirations. Finally, in line with findings from studies on adolescents aspirations were expected to be higher in girls and ethnic minority children, and girls to be more likely than boys to have intrinsic aspirations.

The second part of the aim was to explore the pathways to aspirations, classified by their realism and the children's maturity. According to Gottfredson, seven-year-olds who express a fantasy or a descriptive (e.g., 'tall', 'big') aspiration may be falling behind developmentally. Children with fantasy or descriptive aspirations were expected to have lower cognitive ability, more difficult temperament and less attachment to school. It was also expected that aspirations for rare as opposed to common occupations, more typical of primary than secondary school children, would be predicted by more positive developmental pathways. Aspirations for rare aspirations, likely reflecting higher perceptions of competence, would be related to both higher parental involvement in home-based learning and higher cognitive ability. Finally, in line with previous research, girls were predicted to be less likely than boys to have fantasy aspirations and dreams for rare occupations.

Figure 2-2: Hypothesised single level model predicting primary school children's aspirations



2.6.2 Grandparents influence on children's aspirations

The second study investigated the association of the parents' and grandparents' social class with the child's classed aspirations. According to Gottfredson (1981), from the age of nine, children start to become aware of social class, their ability and values, which leads to the elimination of possible occupational aspirations. However, although younger children may not be making conscious decisions about which jobs are unacceptable as falling below a minimum status level, they may be more influenced by their parents and their immediate family and environment, compared to older children. Social reproduction, the transmission of resources across generations is reinforced through homogamy and membership of a social class is accompanied by a set of values and beliefs. As highlighted below, this study specifically focused on the role of social class.

Aim 2: To test the direct and indirect influence of both maternal and paternal grandparents' social class on the classed aspirations of their young grandchildren. The analysis and results relating to Aim 2 can be found in chapter six. Figure 2-3 shows the hypothesised model. The specific aims and hypothesis were as follows:

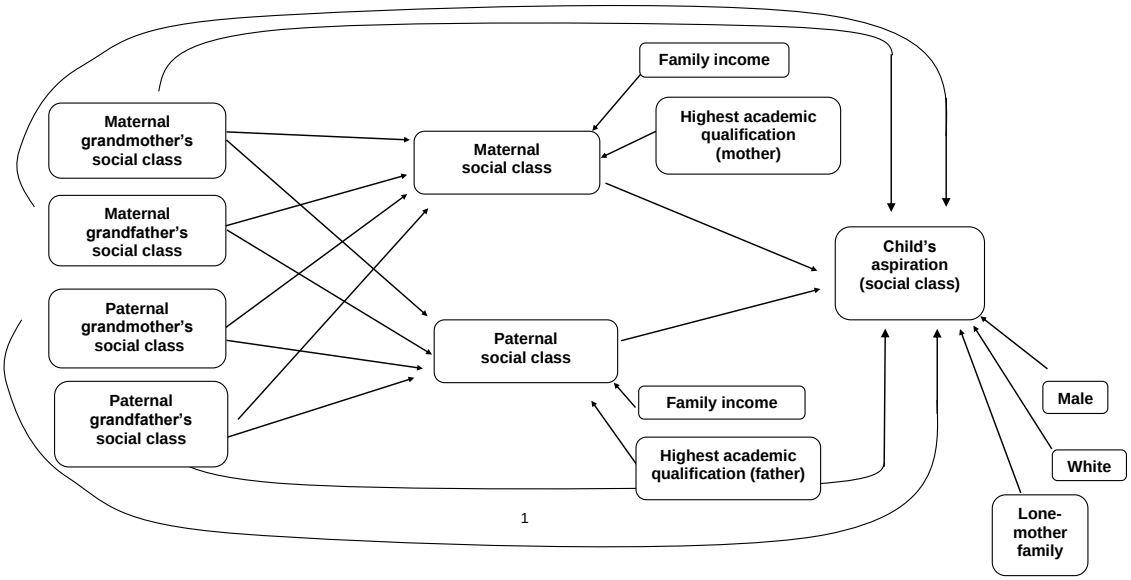
The first part of this study was to investigate the direct association of grandparents' social class with their grandchildren's classed aspirations. Although previous findings are mixed, direct grandparent on grandchild effects have been found in the UK. In the present study, children were at an age when grandparents may be more involved with their grandchildren and it is therefore plausible to expect to find direct grandparent effects on children's aspirations. Based on evolutionary theory (Coall & Hertwig, 2011), the hypothesis is maternal grandparents may be more important than paternal grandparents, as they tend to invest more in the grandchild, perhaps because of certainty of lineage and facilitating child survival.

The second part of the study was to chart indirect effects on the child via the child's parents. The hypothesis was that any effect of grandparents' class on children's aspirations would be both direct and indirect. In other words, any grandparent to grandchild class effects would be mediated, at least in part, by the social class of the parents. The third part was to test a specific version of what is known as the 'sunken middle-class' hypothesis (Jackson & Marsden, 1962), that parents who experienced downward mobility, in particular mothers, might have the cultural resources and motivation to influence upward counter mobility in their children's ambitions. And likewise, those parents who achieved upward mobility might not have the resources to influence their children's aspirations to the same social class.

Children's aspirations have been found to differ by gender and ethnicity. Girls and ethnic minority children tend to have higher aspirations than boys and non-white children. The transmission of social class over generations was expected to vary by ethnicity, because of the

high occupational aspirations of immigrant parents, and by gender. The last part of the study was to explore differences in the formation of classed aspirations by gender and ethnicity.

Figure 2-3: Hypothesised multigenerational pathway model of parents and grandparents social class on children's classed aspirations



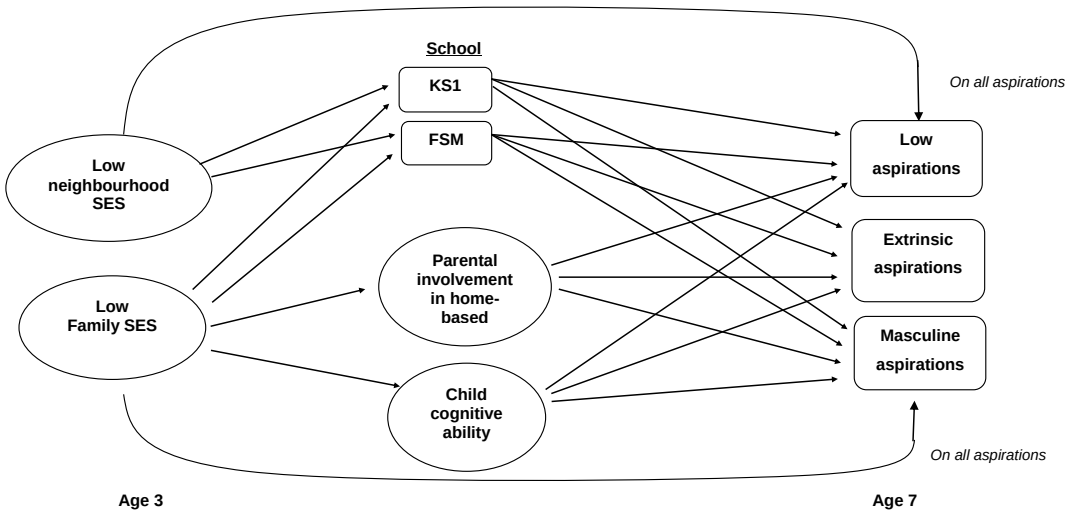
2.6.3 Influence of school and neighbourhood on children's aspirations

As outlined in ecological systems theory, the development of a child depends on the interaction between the child and their environments. In career development, the developmental-contextual approach (Vondracek et al, 1986) identifies the individual, the context and the relationship between the two. Contextual factors such as schools and neighbourhood have been reported to influence the aspirations of older children. There are mixed findings on whether single sex and higher achieving schools raise children's aspirations. And theory suggests neighbourhood characteristics shape role models, social networks and community outlook. Although for younger children, the home context may be more important, this study investigates the role of the broader context i.e. school and neighbourhood in determining children's aspirations at age 7.

Aim 3: To investigate the role of the broader context i.e. school and neighbourhood on children's aspirations classified by occupation, the masculinity/femininity of the aspiration, and extrinsic/intrinsic motivation. The analysis and results relating to Aim 3 can be found in chapter seven. Figure 2-4 shows the hypothesised model.

The main aim was to examine whether neighbourhood socio-economic status and school characteristics influences young children's aspirations. It was hypothesised that at age 7, school characteristics may have some effect, for example children in higher performing and more advantaged schools may have higher occupational and less stereotypical aspirations. Neighbourhood effect was predicted to be less influential than the school in determining younger children's aspirations. Recent studies suggest that school is the main pathway through which the influence of neighbourhood is transmitted to children. The second element of the study was to investigate if neighbourhood socio-economic status and school characteristics contribute to children's aspirations over and above the pathway from family socio-economic status to children's aspirations. It was predicted, for children at age 7 family SES would be a stronger pathway to children's aspirations than either the school or neighbourhood.

Figure 2-4: Hypothesised multilevel model predicting primary school children's aspirations



2.6.4 Association of the realism and maturity of the aspiration on child behaviour

This study focused on developmental life-stage of the children, by investigating the relation between the realism and maturity of the aspiration and child behaviour. According to Gottfredson's theory of circumscription and compromise at age 7 children should no longer have descriptive or fantastical aspirations. While Ginzberg (1952) viewed preadolescence as the fantasy stage, but described the process as the 'increasing realism of choice'. The development of self-concept is central to many aspirational theories, and appears to be

influence children's overall feelings of competence and well-being. Self-concept is also related to self-esteem and self-efficacy and around age 7 children are starting to form self-esteem in specific domains. Typicality of aspirations at a particular life stage contribute to individual's well-being, having unrealistic, but not magical thinking, is also characteristic of the age group of children in this study.

Aim 4: To explore the association between children's aspirations classified by their realism and children's maturity (or the children's ability to formulate aspirations at age 7) and externalising and internalising problems in young children. The study controlled for externalising and internalising problems at age 5, to explore if there was still a relation between aspirations and child behaviour allowing for prior problem behaviours. The analysis and results relating to Aim 4 can be found in chapter eight. The specific aims and hypothesis were as follows:

The main aim was to explore the association of young children's aspirations classified by their realism and the children's maturity to children's externalising and internalising problems. It was expected that young children who had occupational aspirations would have positive outcomes compared to children who had fantasy,' descriptive' or uncertain aspirations, or those who did not state an aspiration. Seven year olds who express a fantasy or 'descriptive' aspiration may be falling behind developmentally or employing an escape function. Fantasy or substitutive future orientations may be an escape from the stresses of everyday life (Nuttin, 1985) Therefore it was expected these children would have lower cognitive ability and more emotional and behavioural problems. The same pattern of results was expected for children whose responses could not be interpreted and for those who did not give an aspiration at all. Uncertain or unexpressed aspirations may reflect goal avoidance or difficulties in episodic future thinking, which was hypothesised to be linked to increased emotional or conduct problems.

In addition, the study explored if children with aspirations for rare occupations (i.e. less realistic, but typical of young children) are related to more positive emotional and behavioural outcomes compared to children choosing non-rare occupations. Children aspiring to rare occupations may be expressing their hopes for the future, free from constraints. At this age, this may be evidence that children have high self-efficacy and strong beliefs that they can influence their choices, regardless of the difficulty of their goals (Bandura, 1997).

2.6.5 Model of children's aspirations and hyperactivity, conduct problems, emotional symptoms and peer problems

The final study built on the findings of the previous analysis in the thesis (in particular from aims 1 and 4) to bring together a model of the pathways to and from children's aspirations at age 7. The focus was on the individual and family level determinants of aspirations and the relation

between aspirations and hyperactivity, conduct problems, emotional symptoms and peer problems.

Aim 5: Building on the findings from the previous aims of the thesis, the final study aimed to consider a model of the pathways to and from children's aspirations. The analysis and results pertaining to Aim 5 can be found in chapter nine. Figure 2-5 shows the hypothesised model. As in previous studies, life-course and ecological systems theories frame the study, and the family investment model, and Gottfredson's and Bandura's work as well as previous empirical evidence informs the hypothesis and questions.

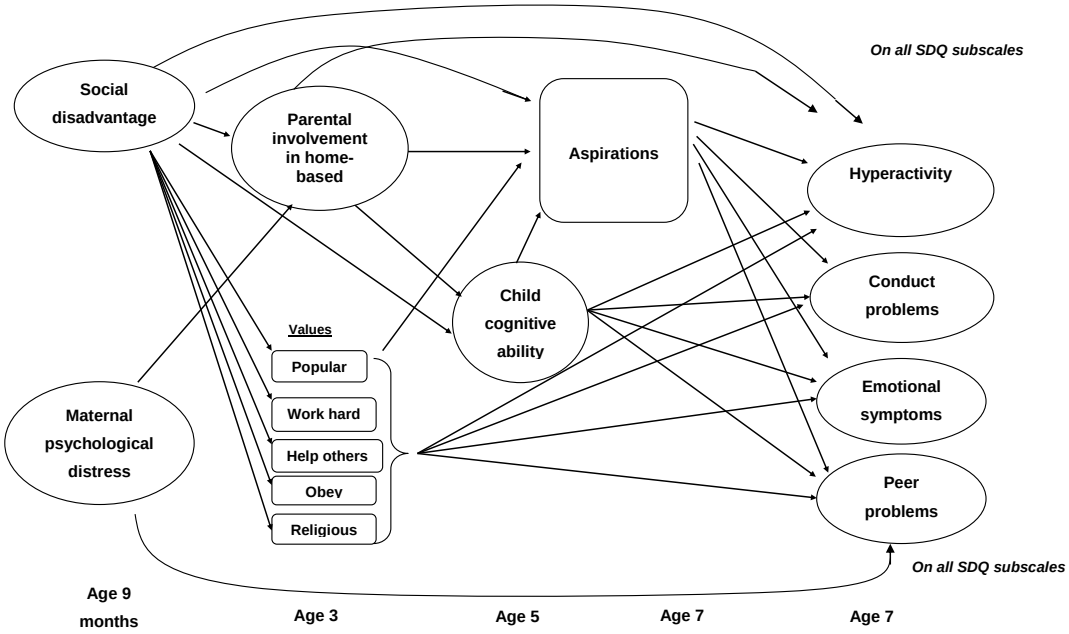
The main element of the study was to investigate models of the pathways to children's aspirations, and from children's aspirations to hyperactivity, conduct problems, emotional symptoms and peer problems. Two different classifications of aspirations were employed. The first classified aspirations by the prestige of the occupation, masculinity/femininity, and extrinsic/intrinsic aspirations. In line with the family investment model, social disadvantage was expected to be directly associated with less parental involvement in home-based learning, parent's traditional values (e.g., obedience and working hard), and child's lower cognitive ability, lower aspirations and more emotional and behavioural problems. Less parental involvement in home-based learning would be related to lower aspirations and lower cognitive ability. In turn, lower cognitive ability would be associated with lower and more masculine aspirations. In addition, maternal psychological distress was expected to be directly related to children's emotional and behavioural problems, and negatively associated with parental involvement in home-based learning. Finally, low aspirations, (they are not typical of younger children) and extrinsic aspirations (associated with poorer mental health) would be related to emotional and behavioural problems, and masculine aspirations would be related to behavioural problems.

The alternative approach classified aspirations by their realism and children's maturity. Children with fantasy or descriptive aspirations were expected to have lower cognitive ability, and more behavioural problems. It was also expected that aspirations for rare as opposed to common occupations, would be predicted by social advantage and parental values for popularity. Aspirations for rare aspirations, likely reflecting higher self-efficacy, would also be related to both higher parental involvement in home-based learning and higher cognitive ability, as well as positive emotional and behavioural outcomes.

This study also investigated the influence of situation by exploring whether pathways differed when children's emotional and behavioural difficulties were reported by the teacher or the parent. It was predicted teachers would be more sensitive to externalising behaviours, while parents to depression and anxiety. Teachers also tend to rate boys higher than girls on both emotional and behavioural problems. Finally, the work explored the association of gender atypical aspirations with emotional and behavioural problems. Children with gender atypical

aspirations were expected to have peer problems and possibly other emotional problems as a result of social consequences of atypicality at an age when gender roles are a major focus for the child (Gottfredson,1981).

Figure 2-5: Hypothesised model of the antecedents to primary school children's aspirations, and from aspirations to emotional and behavioural problems.



Chapter 3 Data

The research in this thesis is based on the secondary analysis of longitudinal data from the Millennium Cohort Study (MCS) and linked contextual data. This UK cohort study offers a large nationally representative sample of young children, tracked from early life and is therefore suitable for conducting research investigating children's development. This chapter presents an overview of the MCS, describes how the children's aspirations was coded and operationalised, and offers a description of the emotional and behavioural difficulties construct. This is followed by a description of the key independent and dependent variables used in the analyses, as well as an outline of the main data limitations.

3.1 The Millennium Cohort Study

The data source of this thesis is the MCS, a longitudinal large-scale survey of 19,518 children born in 2000-2002 from 19,244 families in the four countries of the UK (Plewis, 2007a). The MCS is a rich data source designed to capture information on individual's development and outcomes throughout their childhood, adolescence and successively throughout adulthood, and is therefore a suitable source for the study of children's aspirations. The MCS children were born over a period of two years, between September 2000 and August 2001 in England and Wales, and between November 2000 and January 2002 in Scotland and Northern Ireland (NI). At the time of writing, data had been collected when the children were aged 9 months (sweep 1), 3 years (sweep 2), 5 years (sweep 3), 7 years (sweep 4) and 11 years (sweep 5).

In 2008, aged 7 (sweep 4) 14,043 children took part in the MCS. Each child was given the opportunity to take part in a self-completion questionnaire which included for the first time an open question on children's aspirations, the main focus of this thesis. Although, this question was repeated again in 2012-2013 at sweep 5, when the children were aged 11, the data was not available in time to be subsequently coded and analysed for inclusion. This thesis uses data from the first four sweeps of the MCS, analysing the development of the child up to and including age 7. Throughout the remainder of this thesis, the first four sweeps may also be referred to as MCS1, MCS2, MCS3 and MCS4.

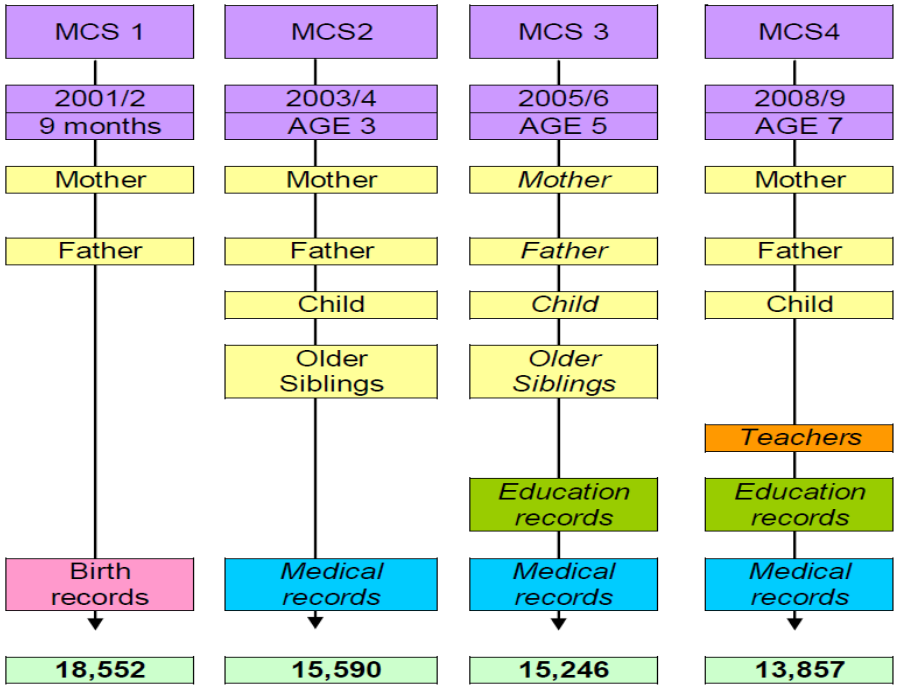
3.1.1 Content and types of interviews

The MCS includes measures of children's socio-emotional and cognitive development, attitudes and interests, as well as the parent's health, resources, practices and a range of socio-economic background factors. Information was also collected from schools and teachers

regarding the child's school behaviour and outcomes, as well as data appended from external sources including KS1 data obtained from the National Pupil Database, and geographically linked data, including the Indices of Multiple Deprivation (IMD).

Figure 3-1 gives an overview of the interview respondents and data sources at each sweep by the number of families taking part. At each sweep of the MCS, the child's parents or guardians were interviewed with computer assisted personal interviewing (CAPI) and computer assisted self-interviewing (CASI). At each sweep of the MCS a main interview, usually conducted by the child's mother, and a partner interview, completed by the father or the child's father figure were undertaken. In sweep 1 (MCS1) the survey covered the circumstances of pregnancy and birth, early developmental milestones, the child's temperament, parental mental health and the social and economic background of the child's family. The second sweep (MCS2) included additional questions on involvement with the child, parental values, the mother's perception of the child's emotions and behaviour and any changes in social and economic circumstances since sweep 1. In addition the children completed a cognitive assessment. From sweep 2 onwards anthropometric measurements of the child were taken. In sweep 3 (MCS3) as well as any changes in social and economic circumstances, parental involvement in home-based learning was measured, along with the mother's perception of the child's emotions and behaviour at age 5. The child completed age 5 cognitive assessments. Teacher information was collected for children living in Wales, Scotland and NI, in England similar, although not directly comparable data was accessed via the Foundation Stage Profile in England. At sweep 4 (MCS4) as well as the mother's perceptions of the child's emotions and behaviours, teachers were also asked of their views of the child. Along with cognitive assessments the child was asked to complete a short paper self-completion questionnaire covering their interests, their relationships with their friends, their feelings about school, what they like to do at school and their future cognitions.

Figure 3-1: Overview of MCS content, sweeps 1 to 4



Source: Hansen, K et al. (2012). Millennium Cohort Study: First, second, third and fourth surveys. A guide to the datasets (Seventh Edition).

3.1.2 MCS sample design

The main aim of the MCS sampling design was twofold; to provide a representative sample of the UK population, while offering sufficient sample sizes to conduct analysis with minority ethnic groups and disadvantaged populations (Plewis, 2007a). To achieve these aims, the MCS sample was geographically clustered by the characteristics of the electoral ward and stratified to over-represent areas of high child poverty, areas with high proportions of ethnic minorities in England and also the three smaller countries in the UK (Plewis, 2007a). Also as discussed, the MCS sampled children born over a 16 month period rather than a particular week as in previous cohort designs, thus reducing the potential influence of time specific events, for example seasonality of birth on the results (Hansen et al., 2014).

The sampling design had two stages, the selection of electoral wards across the UK and the selection of children aged 9 months within these wards. The wards were grouped into three strata for England, ‘advantaged’, ‘disadvantaged’ and ‘ethnic’, and two strata for Wales, Scotland, and NI, ‘advantaged’ and ‘disadvantaged’. There was no stratification by ethnicity for Scotland, Wales and NI as the proportions of ethnic minority populations was small. The three strata for England were as follows (Plewis, 2007a).

- The ‘ethnic’ stratum in England was identified by ward populations, where at least 30 per cent of the population were Black (Black Caribbean, Black African and Black Other) or Asian (Indian, Pakistani and Bangladeshi) as reported on the 1991 Census of Population form.

- The areas with high child poverty categorised as ‘disadvantaged’ were drawn from the poorest 25 per cent of wards (excluding those ethnic minority wards specified as above) based on the child poverty component of the Index of Deprivation 2000 for England and Wales.

- The remaining stratum ‘advantaged’ were those children who were not living in wards defined in the first two strata i.e. not ‘ethnic’ or ‘disadvantaged’ and is therefore a relative grouping.

For Scotland, Wales and NI the two strata, ‘disadvantaged’ were children who fell into the upper quartile (38.4% or higher) of the Child Poverty Index and ‘advantaged’ children living in wards which were in the remaining quartiles.

The first stage was the random selection of 398 electoral wards, the primary sampling units (PSUs) from across the UK. Table 3-1 shows the stratum by country and the number of wards and families within each (Hansen et al., 2014). The sample was selected systematically within each stratum and country, by ordering within region for England and Scotland and then by ward size in descending order for all four countries. The sampling interval was determined by the ratio of the number of wards in the population to the number of wards required. Then, the families were selected from a list of all 9 month old children living in these wards who were eligible to receive Child Benefit at that age (Plewis, 2007a).

Table 3-1: MCS sample size and number of sampled wards by stratum within country

Country	Stratum	Number of wards in stratum	Number of families in MCS	Number of families by country
England	Advantaged	110	4,828	
	Disadvantaged	71	4,806	
	Ethnic	19	2,591	12,225
Wales	Advantaged	23	832	
	Disadvantaged	50	1,928	2,760
Scotland	Advantaged	32	1,145	
	Disadvantaged	30	1,191	2,336
NI	Advantaged	23	723	
	Disadvantaged	40	1,200	1,923
Total	**9**	**398**	**19,244**	**19,244**

The achieved sample size for MCS1 was 18,552 households, which corresponded to an overall response rate for eligible sample in fieldwork of 82% (Hansen et al., 2014). As expected, response rates varied by stratum. Response rates in the 'advantaged' stratum were better than the 'disadvantaged' for all countries and 'ethnic' stratum for England. In MCS2, as well as the 18,552 productive families at MCS1, a further 1,389 families who had been eligible at MCS1, but did not take part were included in the sample. This resulted in a total of 15,590 families at MCS2, 692 of which were productive 'new families' introduced to the study at MCS2 (Hansen et al., 2012), as shown below in Table 3-2.

At sweep 4, when the children were aged seven, 14,043 children were included in the survey – 13,681 were single children, 166 were pairs of twins and 10 were triplets. This thesis uses records for only one child per family (singletons and the first-born twin or triplet) to avoid having to account for the clustering of children within families.

Table 3-2: The number of families and children included in the first four sweeps of the MCS

MCS sweep	Number of families	Number of children
MCS S1	18,552	18,818
MCS S2	15,590[2]	15,808
MCS S3	15,246	15,459
MCS S4	13,857	14,043
Total	**19,244**	**19,518**

3.1.3 Weighting the data

As discussed, the MCS uses a 'disproportionately stratified cluster sample' (Plewis, 2007a). Therefore, the observations are not independent and weighting of means, variances etc. need to be taken account of to reduce sampling error. If the sampling design is ignored, standard errors could be underestimated and the resulting significance tests invalid (Hansen et al., 2014). In longitudinal studies it is also important to account for non-response. There are four types of non-response, attrition, sweep non-response, unit non-response and item non-response. Attrition is the permanent loss of the cohort member over sweeps, while sweep non-response is the temporary loss of the cohort member over at least one sweep, but returning to the study at later sweeps. Unit non-response is the complete absence of an interview representing the cohort member, for example non-response to the child self-completion survey at MCS4, but completion of other interviews relating to the cohort member. Item non-response refers to the absence of answers to specific questions in the interview, for example refusing to respond to a question on income. Non-response can result in the loss of cohort members with particular characteristics. For example, lone parents, young mothers, the less educated and ethnic minorities are associated with higher levels of non-response in the MCS (Ketende, 2010; Plewis, 2007b).

Where possible, recommendations on how to deal with sample design and non-response in analysing the MCS were followed (Jones & Ketende, 2010). However, depending on the type of analysis and the statistical software used not all weighting, clustering and non-response adjustments could be employed. Multiple imputation and full information maximum likelihood

[2] In MCS2 692 new families were introduced to the study (therefore 14,898 families who completed MCS2 also completed MCS1 (Hansen et al., 2010).

(FIML) were also used to deal with missing data. An overview of the procedures used and restrictions are outlined in Chapter 4 and any techniques specific to the analysis are given in the relevant results chapters.

3.2 Key measures

Section 3.2 describes the response to the aspirations question, the different ways the aspirations variable was operationalised in this thesis, and how the responses to the aspiration question were coded. Aspirations were the main outcome variable in Chapters 5, 6 and 7. The other key outcome measure in this thesis was children's emotional and behavioural problems, defined in section 3.2.2 and is the main outcome of interest in Chapters 8 and 9.

3.2.1 Aspirations

As described, in sweep four of the MCS when the children were aged 7, a paper self-completion questionnaire for the child was introduced to the study. Written consent was obtained from a parent or guardian for the child to participate. Along with questions covering their hobbies, friendships, feelings and experiences at school the children were asked an open ended question "When you grow up, what would you like to be?" If a child needed help understanding or completing the question on their own, the interviewer was available to help them (Chaplin-Gray, Gatenby, Simmonds, & Huang, 2010). The coding and operationalisation of the children's responses to the aspirations question forms part of this thesis.

3.2.1.1 Response to the aspirations question

Most (89.8%, n = 12,611) of the children gave at least one response to the aspirations question, as shown in Table 3-3. The majority (82.68%) of children gave only one response to the aspirations question. A few (7.13%, n = 1,001) gave two or more responses. The number of responses ranged from none to eight, on average children responded once (M = 0.95 including non-response; M = 1.10 excluding non-response) to the question. There were two types of non-response, children who completed the Child Self-Completion questionnaire, but did not complete the aspirations question (n = 633) and children who did not complete any questions on the Child Self-Completion questionnaire – self-completion non-response (n = 799). To understand if non-responders characteristics were different from responders, children who did not respond to the aspirations question were included in the analysis in Chapter 8[3].

[3] Unless they were the second twin or second and third triplet.

Table 3-3: The number of responses to the aspirations question (MCS4)

Number of responses*	Number of children	Percentage of responses
One aspiration*	11,610	82.68
Two aspirations	761	5.42
Three aspirations	184	1.31
Four or more aspirations	56	0.40
None	1,432	10.20
Total	**14,043**	

*includes any response given including 'don't know', 'uninterpretable responses' as well as interpretable aspirations

The types of responses the children gave are shown in the word collage in figure 3-2 for boys and figure 3-3 for girls[4].

[4] Figures 3.2 and 3.3 are for illustrative purposes only. It does not show all the types of responses, nor is the scale of the lettering representative of the exact magnitude of the responses. The size is a vague representation of the popularity of the children's responses by gender.

Figure 3-2: Illustrative representation of boy's responses to the aspirations question

Figure 3-3: Illustrative representation of girl's responses to the aspirations question

3.2.1.2 Operationalisation of the aspirations responses

Chapter 2 outlined the different ways in which aspirations have been studied, particularly in adolescence. As there were few examples from previous work of younger children's responses to an open ended question on aspirations the work was exploratory. As a result the coding strategy was two-fold. Firstly, to take account of previous work conducted in this area with older children, coding strategies from other studies were employed. This allows for comparisons to be made with the aspirations of older children and to identify if any of the predictors of aspirations found in older children were evident for children pre-secondary school. Secondly, this thesis focuses on the developmental stage of the child and is therefore also interested in the typicality and a-typicality of children's aspirations at this age, and whether aspirations influence or are related to children's emotional and behavioural problems. Therefore the aspiration responses were coded using a number of different coding schemes as follows.

The first coding classifications focused on occupational aspirations. Three types of occupational classifications were used in this thesis, and outlined in section 3.2.1.4 as follows:

- Broad job categories e.g. sports person, teacher etc.
- Standard Occupational Classification 2000 (SOC2000)
- National Statistics Socio-economic Classification (NS-SEC)

The second classification described in section 3.2.1.5 reflected the masculinity / femininity of the aspiration. The third classification focused on the motive of the aspiration covered in section 3.2.1.6. The final coding scheme was directed at the development stage of the MCS children, focusing on the realism of the aspiration and the maturity of children's aspirations in section 3.2.1.7. The next section describes how the children's responses to the aspirations question was coded into general categories.

3.2.1.3 Coding the aspirations question into general categories

The coding of the children's responses to the aspirations question was initially based on the work undertaken by six postgraduate psychology students under the supervision of Professor Eirini Flouri. The initial coding was later refined and extended by the author of this thesis.

The first step was to group the children's qualitative responses into broad categories which formed the basis of the coding for the aspiration classifications used in this thesis. There were three main categories:

- Occupational aspirations
- Non-occupational aspirations
- Other types of responses.

Occupational aspirations

Most of the children's aspirations were occupational, and were mainly grouped on the basis of the job type and function, and the broader area of work. The distinction was made because there were some very popular occupational aspirations, for example 'sports person', 'teachers', 'vets', 'doctors', and 'singers'. These occupations were given their own category. Other occupations with fewer responses were grouped together by function, for example driver, administrator and guard, or by occupational area, for example business professionals, the skilled trades, and the service sector. Where possible, within these occupational aspirations the categories were specified in more detail to identify further areas of interest. For example:

- 'sports players' were categorised by type of sport. For example, the response 'professional footballer' was grouped as 'sports person (football)'.
- 'teachers' where possible were categorised by level, for example 'teacher (head)' or by domain, for example 'teacher (art)'
- occupational areas such as:
    - business professional could be for example 'business professional (accountant)', 'business professional (solicitor)' or,
    - skilled trades could be for example 'skilled trades (plumber)', 'skilled trades (blacksmith)'.

Non-occupational aspirations

Some children gave aspirations which were not occupational and these were grouped into three main categories, 'fantasy', 'descriptive' and an 'other' category. 'Fantasy' was given to responses which were not occupational nor were achievable, depicting magical thinking. For example, responses such as 'superhero', 'fairy', or a TV / film character (for example, 'Hannah Montana', 'Inspector Gadget', and 'Dr Who'). Responses such as 'superhero' became 'fantasy (superhero)' and 'fairy' were categorised as 'fantasy (fairy)'. The 'descriptive' category was given to responses reflecting states of mind or characteristics. For example, 'happy' and 'tall' became 'descriptive (happy)' and 'descriptive (tall)'. The 'other' category consisted of 'royalty', 'mum' and 'dad'. 'Royalty' was differentiated by the sub-groups 'king', 'queen', and 'princess'. The sub-groups for 'mum' were 'mum (a mum)', mum (like mum)' and 'mum (work with)'. For 'dad' the same sub-group categorisations were applied 'dad (a dad)', 'dad (like dad)' and 'dad (work with)'.

Other types of responses

The other types of responses were non-response as discussed in section 3.2.1.1, uncertain and non-interpretable responses. A number of children's responses could not be categorised as they could not be easily understood. For example, 'a flayvotht', 'a darey lokecy', 'lastoonrst', and 'a deter'. These responses were categorised as 'not interpreted'. Non-response was categorised as 'blank' no response at all, 'don't know' where the child wrote the response 'don't know', 'not sure' and 'nothing' where the child wrote the response 'nothing'.

Some of the children offered explanations for their aspirations or gave more details about their responses. These details were captured in the categorisation. For example, the response:

- 'I want to be a rich footballer, playing for Chelsea' was categorised as 'sports person (football) rich Chelsea',
- 'a famous popstar' was categorised as 'singer (popstar) famous', and
- 'a cleaner like my mum' was categorised as 'cleaner, like mum'.

Where more than one aspiration was given, the responses were treated separately and categorised and coded as described above. If the child's first response was 'don't know' or 'not interpreted', but a second response was given - the first aspiration was coded as 'don't know' or 'not interpreted' and the subsequent responses coded as appropriate. The next four sections outline how these general categories were coded into occupational aspirations, the masculinity/femininity of the aspiration, extrinsic / intrinsic goals and the realism and the maturity of children's aspirations.

3.2.1.4 Classifying occupational aspirations

In order to code the responses into occupational aspirations the Standard Occupational Classification (SOC2000) was employed. SOC2000 measures the skill level and skill specialisation operationalised in terms of the length of time it takes to become competent and proficient in performing the associated tasks within an occupation, and with the nature of the body of knowledge that is required for competence. In the first instance, where possible, the children's aspired occupation was classified by Unit Group (4 digits) Standard Occupational Classification 2000 (SOC2000) Volume 2 from the Office for National Statistics (http://www.ons.gov.uk). This in depth coding system identifies 353 unit groups allowing occupations to be identified at a job specific level, for example nurses=3211, sports players=3411, veterinarians=2216 etc. Using this approach enabled further aspirational classifications including broader occupation categories, social class and the masculinity/femininity of the aspirations to be derived from the Unit Group (4 digit) coding of SOC2000.

When not enough detail was given to classify the occupation by unit group, then the next appropriate grouping (i.e., minor (3 digits), sub-major (2 digits) or major (1 digit)) was used instead. When a four digit code was not available, zeros were used to create a 4 digit code (i.e., SOC '1' became '1000', SOC '11' became '1100', and SOC '111' became '1110') for comparability. For example, 'teacher' (where the subject matter or level of academia was not given) was coded to 231 (i.e., the SOC for the minor group 'teaching professionals' was given a code of 2310). If the aspiration was 'businessman', it was coded to 1 (i.e., the SOC for the major group 'managers and senior officials' was given a code of 1000). Any answers which did not relate to an occupation were left blank.

For some occupations where the level of SOC is determined by a professional versus non-professional job function, it was assumed the child was referring to the professional level, unless other information had been given which would indicate otherwise. For example, professional job functions including, engineer, banker, accountant etc. were assumed to be professional, resulting in a SOC code of 2, at the major grouping level. Without asking additional questions, there is no clear understanding of exactly what the occupations meant to the children. Therefore, in coding children's answers to occupational groups, a number of other assumptions were made as follows:

- an 'artist' (code=3411) was someone who produced art as opposed to a singer or performer (code=3413)
- an 'astronaut' was a scientist ('physicist, geologist and meteorologist' code=2133), rather than a pilot (code=3512)
- a driver of a bike or car, if sports related i.e. 'a racing driver', 'a formula 1 driver' was coded as a sports person (code=3441), whereas a 'motorbike rider' was assumed to be a courier (code=9211) and a 'car driver' a taxi driver or equivalent (code=8214)
- 'someone who works for the FBI' was a senior policeman (code=1172)
- a 'games maker or designer' referred to a 'computer games designer' (code=2132)
- a 'painter' was a painter and decorator (code=5323)
- a 'spy' works in military intelligence and was therefore assumed to be a senior official in national government (code=1111).

From the Unit Group (4 digit) coding of SOC2000 the following occupational classification were derived for analysis in this thesis; SOC2000 major group classification, broad job categories and National Statistics Socio-economic Classification (NS-SEC).

Standard Occupational Classification 2000 (SOC2000) – Major Group

In the analysis the Major Group Standard Occupational Classification 2000 (SOC2000) was used. The major group level of classification uses the first digit from the in depth Unit Group coding explained above. Occupations are classified into 9 major groups, from 1 to 9, with 1 indicating the highest level of occupational status and 9 the lowest, as follows:

1 Managers and Senior Officials

2 Professional Occupations

3 Associate Professional and Technical Occupations

4 Administrative and Secretarial Occupations

5 Skilled Trades Occupations

6 Personal Service Occupations

7 Sales and Customer Service Occupations

8 Process, Plant and Machine Operatives

9 Elementary Occupations

This classification of children's aspirations by the major SOC(2000) group was used in the analysis conducted in Chapters 5, 7 and 9.

Broad occupational classifications

A broad job category variable was devised to conduct basic descriptive analysis on the general types of occupational aspirations primary school children might have. This variable was created by identifying the specific or combined generic job categories with the highest number of children's aspirational responses. The specific job categories were identified by the Unit Group codes defined by SOC2000 for example SOC code 2216=veterinarians, 3411=artists, 3441=sports players etc. Some SOC2000 categories were combined to create a generic job-category. For example 'teacher', was a combined category of unit codes e.g. 2310 (teacher – generic), 2315 (teacher – primary), 2316 (teacher – special needs) to create the minor group (3 digit) 'teacher' category of 231.

The cut-off point included fifteen job categories, with at least 1.4% of children aspiring to one of the specific categories outlined in Table 3-4. The fifteen job categories represented well over three-quarters (78.9%) of occupations aspired by children at MCS4.

Table 3-4: Percentage of children's aspired occupations (weighted data)

Aspired occupation	Total (N = 11,220) %
Sports player	18.7
Teacher	12.5
Police officer	7.5
Vet	6.7
Actor/singer/entertainer	5.8
Hairdresser	4.5
Doctor	4.1
Artist	4.0
Animal carer	3.1
Scientist	2.8
Fire services	2.5
Nurse	1.8
Dancer	1.7
Builder	1.7
Armed forces	1.4
Other occupations	21.1

This broad classification of children's occupational aspirations was used in the descriptive analysis conducted in Chapter 5.

National Statistics Socio-economic Classification (NS-SEC)

In this thesis, occupational aspirations were also classified to represent children's classed aspirations. Social class was measured using the three class version of the National Statistics Socio-economic Classification (NS-SEC). Conceptually the NS-SEC measures employment relations and conditions of occupations, thus aiming to show the structure of socio-economic

positions in society (Rose & Pevalin, 2005). The three class version is assumed to form a hierarchy as follows;

1 Managerial and Professional Occupations,

2 Intermediate Occupations, and

3 Routine and Manual Occupations.

In this thesis the self-employed were included in category two and those who had never worked and the long-term unemployed were included in category three.

As described all occupational aspirations were classified to the 4 digit Standard Occupational Classification 2000 (SOC2000). In the analysis this was denoted as occupational aspirations in the tables or low aspirations in the modelling, in chapters 5,7 and 9. For the purposes of this thesis the NS-SEC was derived from SOC2000 using the guidance issued by the Office for National Statistics (Rose & Pevalin, 2005). From applying the 4 digit SOC2000 as reference the Simplified NS-SEC was established. This classification of children's aspirations by NS-SEC was used in the analysis conducted in Chapter 6. This chapter focused on classed aspirations, and therefore NS-SEC was used to examine social mobility across generations, including grandparent to grandchild.

In the modelling of all the aspiration and socio-economic constructs (with the exception of Chapter 8), the occupational classifications variables operationalising the children's aspirations, parental occupations and social class were defined as continuous variables. In the main the analysis of the occupational classification variables were defined by either the 9 Major Groupings of SOC2000, or for NS-SEC the seven class version was used. However, the NS-SEC classification is not strictly hierarchical. There were empirical reasons for using the occupational classifications as continuous variables. Latent constructs were used to measure social and economic status, and in order for model convergence all family SES variables were continuous. Similarly, the occupational, masculine/feminine and extrinsic/intrinsic aspirations were continuous and correlated to allow model convergence.

The NS-SEC determines the work and market relations typical for each class, and aims to capture qualitative differences in employment relations. Rose and Pevalin (2005) maintain the class categories are based on social relations, and are therefore not inherently hierarchical or linearly ordered. The main measurement issue is identifying self-employment as a separate class category, NS-SEC Class 4. Rose and Pevalin (2005) suggest however that the NS-SEC can be collapsed into a three-class hierarchy. The three class version was used in Chapter 6.

SOC2000 measures occupations on the basis of 'skill level' and 'skill specialisation'. Broadly the classifications are ordered by four skill levels defined by the length of time thought necessary to become fully competent in the performance of the tasks associated with the job. This is related to the time taken to gain necessary formal or work-based training.

Although these classifications are not hierarchical, there is some ordering, for example classes and occupations are advantaged with respect to others, for example managers in larger organisations compared to intermediate employees or administrative occupations. A bivariate analysis of the coded seven class version of NS-SEC and the SOC2000 nine major groups was conducted, comparing the median equivalised weekly income[5] and the percentage of parents, both mother and their partner with degrees between the groupings in each classification (see appendix I). For both the mother and their partner their household income by NS-SEC, and percentage of the mother's partners with a degree was hierarchical. However, for the mother's NS-SEC a higher percentage of the self-employed had a degree, compared to intermediate occupations. Mothers and their partners in Professional Occupations (major group 2, SOC2000) had a higher weekly income and a greater proportion were educated to degree level or above, compared to Managers and Senior Officials (major group 1). The other major groups were ordered. This work acknowledges that both NS-SEC and SOC2000 are not strictly hierarchical and therefore care should be taken with the interpretation of findings

3.2.1.5 Classifying masculine and feminine aspirations

As discussed in Chapter 2 gender differences in aspirations has been an important feature of the work in this area (Schoon & Eccles, 2014). For children around age 7, the recognition of gender roles may be a key aspect of self-concept development at this age (Gottfredson, 1981). In order to investigate children's gendered responses a variable relating to the masculinity and femininity of children's aspirations was devised.

The masculinity and femininity of the aspirations were coded using where possible the unit group (4 digit) SOC2000 by identifying the proportion of UK working- age (16-74) persons in that occupation who were women according to Quarter 2 (April-June) 2008 Labour Force Survey (LFS), around the time of MCS4 fieldwork. Where the percentage of females in the labour market was not available for a particular unit group, the relevant minor group, sub-major group or major group code was used if available, starting with the most detailed classification.

The LFS adult population experienced an average of 46% women in their occupations; 71% for women and 25% for men. The average proportion of women in children's aspired occupations is

[5] Based on the OECD equivalised income at MCS sweep 1 (Hansen et al., 2014).

40%; 58% for girls and 23% for boys. Actual adult occupations are therefore more segregated for women on average than aspired occupations are for girls.

To reflect the segregation for women in the workplace, the following bandings based on Hakim's classification of occupational segregation (Hakim, 1998), were applied:

1 'ultra-feminine' (>= 75% or more women in that occupation)

2 'feminine' (50% to 74.9% of women in that occupation)

3 'integrated' (25% to 49.9% of women in that occupation)

4 'masculine' (less than 25% of women in that occupation)

These asymmetrical categories are as proposed by Hakim (1998) to reflect a situation where women are in a minority, as there are fewer women than men in the labour market. Thus, occupations where women were in the majority were classed as feminine, but only those with 75% or more men were classified as 'masculine'. Those where they represent between one quarter and a half of the workforce are treated as 'integrated', rather than male dominated (Sullivan, Joshi, & Leonard, 2011).

A large proportion of children aspired to be sports players and sports instructors. For many sports there is a sex difference in the percentage of professional and recreational athletes, as well as sports instructors, so an alternative coding system was used. For codes 3441 (sports players) and 3442 (instructors of sports) participation in particular sports (where given) from the Active Persons Survey 2 (APS2) (Oct 07/Oct 08), Sport England, 2010[6] was used as a proxy for sports players and instructors. For a few sports where figures were unavailable from the APS, participation figures were taken from the 'The Women's Sport and Fitness Foundation' (WSFF) factsheets[7]. An alternative source was also used for veterinarians. 'Vet' was a popular aspiration in MCS4 but the actual number of vets in Britain was very low for a percentage of female vets to be available in LFS. In 2011, the membership of the Royal College of Veterinary Surgeons (RCVS, the profession's regulator) was 53.9%, outlined in their fact sheet 2011[8]. This percentage was used in this variable.

Finally, non-occupational future states were also allocated an appropriate gender category where possible. For example, 'Superman' was coded 'masculine', 'Fairy' was coded 'Ultra-

[6] http://archive.sportengland.org/research/active_people_survey/active_people_survey_2.aspx
[7] http://www.wsff.org.uk/publications
[8] http://www.rcvs.org.uk/publications/rcvs-facts-2011/

feminine', Mum was coded 'ultra-feminine', and 'Dad' was coded 'masculine'. Where there was no gender inference the response was given a 'blank' category.

The classification of children's aspirations by masculinity and femininity was used in the analysis conducted in Chapter 5, 7 and 9.

3.2.1.6 Classifying extrinsic and intrinsic goals

As outlined in Chapter 2, Ryan and Deci (2000) define aspirations in terms of goal motivation. Intrinsic aspirations are goals, such as affiliation, personal growth and community that directly satisfy basic human needs, whereas extrinsic aspirations are goals, such as wealth, fame, and image. Although must studies focus on the basic dichotomy of extrinsic versus intrinsic motivation (Kasser, 2004; Nickerson et al., 2003), in self-determination theory there is a continuum of motivation, including four different types of extrinsic motivation (Ryan & Deci, 2000). In this thesis, the children's aspirations, when an answer was given, were coded as:

1 intrinsic-intermediate

2 otherwise

3 extrinsic-intermediate

4 extrinsic

As discussed in MCS4 the children were asked an open question 'what they would like to be when they grow up', and were allowed to write as much or as little as they wished. Some children gave responses which explained the motivation behind their aspiration, however, the children were not specifically asked about the reason for their aspiration. Therefore in the main the children's responses were coded on the basis of the inferred motivation of their chosen aspiration, rather than the child's reported reason for choosing a future orientation.

'Extrinsic' motivations were aspirations reflecting materialistic goals (e.g., financial success), or concerns about image, power or popularity. Aspirations such as 'supermodel', 'billionaire', 'popstar' were coded as 'extrinsic'. 'Extrinsic-intermediate' aspirations were goals, which could reflect concerns about or preoccupations with financial success, image, praise, or popularity (e.g., 'actor', 'singer, ''hairdresser', 'beautician', 'fashion designer'). There were very few children (n=90) who, unprompted, gave purely 'intrinsic' responses such as working for charity or goals related to personal growth. Intrinsic (or charitable) goals (e.g., personal growth, affiliation, community feeling) are more focused on pursuits that are supportive of intrinsic need

satisfaction. Therefore, these aspirations were merged with other responses which could be intrinsic as they involved helping or caring for people and animals, such as ‘nurse’, ‘vet’, ‘teacher’, ‘doctor’ and ‘clergy’. All such responses were coded as ‘intrinsic-intermediate’. Aspirations which were neither extrinsic nor intrinsic (such as ‘farmer') were coded as ‘otherwise’.

Without asking specifically about children’s motivations a number of inferences had to be made regarding the children’s motivations. If the response included “fame, money or beauty’ it was immediately coded as extrinsic regardless of the occupation. Similarly if the words, ‘care, help and charity’ were used the response was coded as intrinsic. However, when no adjectives were provided, a number of assumptions were made. For example, any occupation which was related to fame, money or beauty was coded as extrinsic-intermediate, while any occupation related to caring and helping was coded as intrinsic-intermediate. However, there were some occupations which could be perceived as extrinsic or intrinsic depending on the individual. For example, a ‘teacher’ or ‘doctor’ was coded as intrinsic-intermediate reflecting the helping and caring natures of the occupations. However, for some children these professions may be more synonymous with the notion of power. A full list of the main aspirations and the extrinsic/intrinsic categories they were coded into are shown in appendix II.

The classification of children’s aspirations by extrinsic/intrinsic goals was used in the analysis conducted in Chapter 5, 7 and 9.

3.2.1.7 Classifying the realism and the maturity of children’s aspirations

This thesis also aimed to investigate aspirations relevant to the individual’s life-stage. As discussed in Chapter 2, the developmental stage is a major factor in determining children’s aspiration, as well as an indicator of children with developmental or behavioural difficulties. The typicality and a-typicality of children’s aspirations at this age are of interest, particularly in respect of children’s emotional and behavioural problems. The classification of this variable was exploratory in nature and was based on the realism of the occupation i.e. how achievable was the aspiration in the general population, and the maturity of the children’s aspiration i.e. the child’s aspiration was not based on magical thinking or descriptions of objects. The children’s responses were coded into eight categories as shown below.

1 Non-rare occupation

2 Rare occupation

3 Fantasy

4 Descriptive

5 Uncertain

6 Not interpreted

7 Item non-response

8 Self-completion non-response

The first two categories, occupational aspirations were sub-divided into those for ‘rare’ and ‘non-rare’ occupations. All things being equal, rare occupations are more difficult to achieve (and therefore unrealistic) if there are fewer adults in these jobs.

If the aspired job was held by less than one in a thousand of the UK working population in 2008, when Sweep 4 of MCS took place, then it was labelled ‘rare’. ‘Non-rare’ occupations were those jobs held by more than 0.1% of the UK working population in 2008. Using the Quarter 2 (April-June) 2008 Labour Force Survey (LFS), roughly contemporary with Sweep 4 of the MCS, the proportion of people employed in occupations (coded to the unit groups of the Standard Occupational Classification 2000) were identified. Rare occupations, taken together, accounted for a small percentage (6.6%) of the adult working population in 2008 (LFS), but a high proportion (37.8%) of the children’s occupational aspirations (MCS4). These jobs are typical of children’s responses in other studies (Croll et al., 2010). ‘Rare’ occupations included ‘sports person’, ‘vet’, ‘pop star’ or ‘spy’. ‘Non-rare’ occupations included jobs such as ‘teacher’, ‘police officer’, ‘doctor’, ‘hairdresser’ or ‘builder’.

The three non-occupational categories were fantasy, descriptive and uncertain aspirations. ‘Fantasy’ aspirations were ‘magical’ or not achievable (such as ‘royalty’, ‘superhero’, ‘fairy’). ‘Descriptive’ were responses reflecting traits or states of mind (such as ‘happy’, ‘helpful’, ‘normal’, ‘good’), or adult roles (such as ‘ adult’, ‘tall’, ‘ man’, ‘ mum’). According to Gottfredson (1981), fantasy and descriptive categories are thought to be representative of children aged 5 or younger. ‘Uncertain’ aspirations combined the ‘don’t know’ and the few ‘nothing’ responses.

The remaining categories were coded as described in ‘other types of responses’ in section 3.2.1.3 and were non-interpretable responses, as well as two different types of non-response.

All the children at MCS4 (excluding the second twin, and second and third triplets) were included in the analysis in Chapter 8. All of the variable codes 1 to 8, as mentioned above were included to understand if the characteristics and behaviours of non-responders to the aspirations question were different from responders, as mentioned in section 3.2.1.1. The

classification of children's aspirations by realism and the maturity of children's aspirations (codes 1 to 5) were used in the analysis conducted in Chapters 5 and 9.

All the responses to the aspiration question were coded so the data could be deposited by the Centre for Longitudinal Studies (CLS). The coding of occupational aspirations defined by the major one-digit SOC, the femininity/masculinity of the aspiration and the extrinsic/intrinsic motive of the aspiration were attached to cohort member's records and made available for public use. This thesis focuses on the first response given by the child, regardless of the content. As highlighted in section 3.2.1.1 where a response was given most (92.06%) children only gave one response to the aspiration question.

3.2.2 Emotional and behavioural problems

Children's emotional and behavioural problems were measured using the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ is a short instrument of psychosocial problems for children aged 2-17 years old. Although The Child Behaviour Check List (CBCL; Achenbach, 1991) has been viewed the "gold standard" in assessing childhood problems, the SDQ is a screening questionnaire measuring problem behaviours, as well as competencies. The SDQ is an updated version of the Rutter Questionnaires (Rutter, 1967), using criteria from the Diagnostic and Statistical Manual of mental disorders, fourth edition (American Psychiatric Association, 1994) and the International Classification of Diseases, tenth edition (World Health Organisation, 1992). In addition, a prosocial scale was added to make the assessment more balanced for use with community samples (Goodman, 1994).

The SDQ consists of 25 items which are divided equally, 5 items, within 5 scales; conduct problems, hyperactivity, emotional symptoms, peer problems and pro-social behaviour. The 25 items, along with which items form the content of the 5 subscales, the internalising and externalising subscales, and the total difficulties scale are shown in Table 3-5. For all items (except for those with an asterisk (*) which are reversed scored) the score is 0 for 'not true', 1 for 'somewhat true', and 2 'for certainly true'. The particular SDQ scales of interest in this thesis are the four subscales; conduct problems, hyperactivity, emotional symptoms, and peer problems and the externalising and internalising problem scales. The scores for internalising and externalising problems ranged from 0 to 20, and the four subscales 0 to 10. Where scores were incomplete on one or two sub-scales the Goodman approach was employed, using the means of the sub-scales given to calculate sub-scales (www.sdqinfo.com).

Table 3-5: Strength and Difficulties Questionnaire scales

Total difficulties				
Externalising problems		**Internalising problems**		
Conduct problems	**Hyperactivity**	**Emotional symptoms**	**Peer problems**	**Pro-social behaviour**
Often has temper tantrums	Restless, overactive, cannot stay still for long	Complains of headaches, stomach-aches, sickness	Tends to play alone	Considerate of others' feelings
Generally obedient*	Constantly fidgeting	Often seems worried	Has at least one good friend*	Shares readily with others
Fights with or bullies other children	Easily distracted	Often unhappy	Generally liked by other children*	Helpful if someone is hurt, upset or ill
Can be spiteful to others	Can stop and think before acting*	Nervous or clingy in new situations	Picked on or bullied by other children	Kind to younger children
Often argumentative with adults	Sees tasks through to the end*	Many fears, easily scared	Gets on better with adults, than other children	Often volunteers to help others

*Items were reverse coded

There are several versions of the SDQ, including parents and teachers report, and a self-report version for children aged 11 or over. Having multiple informants in reporting on the SDQ is useful because psychosocial problems may be highly situational (Achenbach et al., 1987). The informant's perception of the situation may influence the ratings and also, children's behaviour may change in different situations. The inter-informant agreement for parents and teachers in various studies investigating emotional and behavioural problems is moderate, ranging from r = .27 to r = .50 (Collishaw, Goodman, Ford, Rabe-Hesketh, & Pickles, 2009).

In this thesis the SDQ scales were used as continuous variables. However, there are clinically relevant cut-off points for problem behaviours. The bandings of normal (80%), borderline (10%) and abnormal (10%) were defined based on a population based UK survey. The table below shows the abnormal SDQ scores for the parent and teachers self-completion questionnaire (www.sdqinfo.com).

Table 3-6: Abnormal problem behaviour SQD scores in UK

SDQ scale	Parent report	Teacher report
Total difficulties	17 – 40	16 – 40
Conduct problems	4 – 10	4 – 10
Hyperactivity	7 – 10	7 – 10
Emotional symptoms	5 – 10	6 – 10
Peer problems	4 - 10	5 – 10

Psychometric properties of the SDQ have been found in both community and clinical samples of children (Becker, Woerner, Hasselhorn, Banaschewski, & Rothenberger, 2004; Goodman, Meltzer & Bailey, 1998; Koskelainen, Sourander, & Kaljonen, 2001). The reliability and validity of the measure has also been established across multiple countries and a range of children by age (Goodman, 1997; Goodman, 2001). Internal consistency and test-retest reliability have been found for both the parent and teacher versions (Goodman, 2001; Stone et al., 2010). In studies using low-risk general populations, there is not always a clear-cut distinction between the four sub-scales; conduct, hyperactivity, and emotional and peer problems (Goodman, Lamping & Ploubidis, 2010). As discussed in Chapter 2 previous studies have found both homotypic and heterotypic comorbidity in young people.

The internalising and externalising problems scales as reported by the main respondent when the child was aged 5, and aged 7 (the outcome variable) were used in the analysis of results in Chapter 8. The four difficulties subscales, hyperactivity, conduct problems, emotional symptoms and peer problems as reported by both the parent and teacher were outcome variables in the models analysed in Chapter 9.

3.3 Other measures

This section outlines the other variables used in this thesis. It covers the other main child, family, school, and neighbourhood level variables. At the beginning of each of the results chapters a brief outline of the measures relating to the analysis in the specific chapter are also given.

3.3.1 Other child level variables

Other child level measures used in this thesis were gender, age of the child in years, ethnicity, birth order, cognitive ability, the child's temperament and the child's school engagement. The latent [9]variables cognitive ability, temperament and school engagement are outlined below, and briefly in the appropriate results sections along with the covariates.

3.3.1.1 Cognitive ability

In the MCS measures of cognitive ability are available at MCS2, MCS3 and MCS4 when the children were aged 3, 5 and 7. This thesis mainly focuses on the child's cognitive ability at age 5, when children were asked to complete age relevant British Ability Scales – Revised Edition (BASII). The BASII is a battery of individual tests of cognitive ability and educational achievements, which was revised in the mid 1990's to reflect more contemporary psychological theories of intelligence (Elliott, Smith & McCulloch, 1996; 1997) and to increase the relevance of the tests to children from diverse backgrounds (Hill, 2005). The content of BASII assessments are influenced by the theory of fluid and crystallized intelligence (Horn & Cattell, 1966) which comprise innate general ability including abstract reasoning, problem solving and memory, as well as the ability to use learned skills, knowledge and experience to form an overall general intelligence, known as G.

Children's cognitive ability at age 5 was measured with the BASII core scales at MCS3 of Naming Vocabulary, Pattern Construction, and Picture Similarities (Elliott et al., 1996). The Naming Vocabulary scale measures expressive language ability and knowledge of nouns. The child is shown coloured pictures of objects one at a time and asked to verbally name the objects out loud. The Pattern Construction and Picture Similarities scales measure non-verbal ability, specifically spatial realisation and problem solving, respectively. In the Pattern Construction test the child is asked to construct the design/pattern using coloured squares, and scores are based on speed and accuracy (Hansen et al., 2014). In the Picture Similarities test the child is shown a row of four pictures on a page and asked to place a fifth underneath one of the four pictures that best matches it. This tests the child's inductive reasoning, visual perception and analysis, attaching meaning to pictures and developing and testing hypothesis. In this thesis the standardised age-adjusted T-score was used for all measures.

Children's cognitive ability measures at age 5, naming vocabulary, pattern construction and picture similarities were used to form a latent construct 'cognitive ability' used in the analysis in Chapters 5, 7 and 9. The observed variables measuring verbal cognitive ability at age 7 (BAS II

[9] A latent variable is a variable which is not measured directly or can be observed, but is made up of a number of individual observed variables and is often used to reflect abstract concepts, as discussed in Chapter 4.

Word Reading scale) was used in the analysis of results in chapter 8. The Wording Reading scale assesses children's English reading ability, by asking the child to read out words presented on a card. Children's scores were adjusted for their age according to the mean scores of the BAS norming group, and were computed using the BAS manual's conversion tables.

3.3.1.2 Infant temperament

Temperament was assessed by the main respondent at MCS1 when the child was 9 months with fourteen items from the Carey Infant Temperament Scale (Carey & McDevitt, 1978). The items included three dimensions of the baby's temperament, namely mood, approachability and rhythmicity as shown in the table below. The Carey Infant Scale is a simplified version of the Thomas and Chess (1977) scheme, which subdivides temperament into nine categories (activity, rhythmicity, approach, adaptability, intensity, mood, persistence, distractibility and threshold). Thomas and Chess (1977) viewed temperament as individuals behavioural styles which emerges early in infancy and is presumed to have an innate biological basis. More recent work suggests the nine dimensions are not empirically distinct, but there is some support for their broad typology of temperament (Shiner et al., 2012). Infants are classified into groupings of difficult (arrhythmic, withdrawing, low adaptability, intense and negative), easy temperaments (the opposite characteristics) and slow to warm. However, not all temperament traits are stable early in life, and become more consistent with age, showing considerable stability by the preschool years (Shiner et al., 2012).

Table 3-7: Carey Infant Temperament Scale (1978)

Easy temperament		
Mood	**Approachability/Adaptability**	**Rhythmicity**
Happy sounds during nappy changing	Shy on first meeting another child*	Milk feeds at about the same time
Pleasant or calm with minor injuries	Object to bathing/different place/person*	Sleepy at about the same time each evening
Pleasant during hair brushing etc.	Fretful in a new place/ situation*	Naps about the same length
Content during interruptions of feeding	Wary of strangers after 15 min*	Solid food at about the same time
Pleasant first arriving in unfamiliar places	Bothered at first by different sleeping place	

*Items were reverse coded

The latent construct of ‘infant temperament’ was used in the analysis of results in Chapter 5.

3.3.1.3 School engagement

In sweep 4 of the MCS, when the children were age 7 they completed a self-completion questionnaire, which included a series of questions on how they feel about school. The following seven items were rated by the children using a three-point scale and form the school engagement measure.

How much do you like….

- ..school
- ..reading
- ..doing number work
- ..science
- ..answering questions in class

How often....

- ..is school interesting
- ..do you get fed up at school.

The items above were adapted from the ‘All about you at school’ questionnaire which was devised for the Effective Pre-School, Primary and Secondary Education Project (EPPSE)[10]. The school engagement measure is similar to constructs used in other studies (Solomon, Battistich, Watson, Schaps, & Lewis, 2000; Sammons et al., 2008).

3.3.2 Family level variables

Family level measures used in this thesis were family structure, status, involvement, values and maternal well-being. A number of different measures of family status were used in the results chapters and are outlined in section 3.3.2.1. The variables used to represent parental involvement in home-based leaning and values, and mother’s well-being are described thereafter.

[10] The EPPSE project is a large-scale, longitudinal study of the progress and development of children from pre-school to post-compulsory education. It considers the aspects of pre-school provision which have a positive impact on children's attainment, progress and development and is based at the Institute of Education, University College London.

3.3.2.1 Family social and economic status

Throughout this thesis a number of different manifest variables and latent constructs were used to measure social status and socio-economic status of the cohort child's family. Manifest variables representing family status were used in Chapters 6 and 8, while latent constructs were used in the analysis conducted in Chapters 5, 7 and 9. In Chapter 6 a single manifest variable of social class (NS-SEC), as described in section 3.2.1.4, for each of the maternal and paternal parents and grandparents at sweep 4 were used, to reflect the child's classed aspirations. In Chapter 8, mother's highest social class (NS-SEC) and highest academic qualification at sweep 4, as described below and family poverty was measured. Family poverty was measured (as in Malmberg & Flouri, 2011) by a four-item summative index of the following socio-economic disadvantages: overcrowding, non-ownership of home, receipt of income support and income (below the poverty line). The index ranges from 0 to 4, reflecting a family's level of material deprivation and social exclusion.

In Chapters 5, 7 and 9 latent constructs consisting of combinations of at least four measures including mothers and partners academic qualifications, and either the mothers and partners social class (NS-SEC) or mothers and partners SOC(2000)[11] were used as shown in Table 3-8 below[12]. In Chapter 7 the measure also included family income.

Table 3-8: Latent constructs used to represent family status

Low family socio-economic status (SES) – Chapter 5	Low Family Socio-Economic Status (SES) – Chapter 7	Social disadvantage – Chapter 9
Mother's highest qualification at sweep 1	Mother's highest qualification at sweep 2	Mother's highest qualification at sweep 1
Partner's highest qualification at sweep 1	Partner's highest qualification at sweep 2	Partner's highest qualification at sweep 1
Mother's highest NS-SEC at sweep 1	Mother's highest NS-SEC at sweep 2	Mother's highest SOC at sweep 1
Partner's highest NS-SEC at sweep 1	Partner's highest NS-SEC at sweep 2 Family income at sweep 2*	Partner's highest SOC at sweep 1

*Items were reverse coded

[11] The SOC(2000) measure used is described in section 3.2.1.4

[12] Although NS-SEC and SOC are conceptually different, the mothers NS-SEC and SOC at sweep 1 (r=.80, p <.01) and the partners NS-SEC and SOC at sweep 1 (r=.77, p<.01) were highly correlated.

Mothers and partners highest academic qualifications

The highest academic qualification had seven categories ranging from 1 ‘higher degree’ to 7 ‘no qualifications’ as shown below:

1 Higher degree

2 First degree

3 Diploma in HE / A levels

4 O level / GCSE grades A-C

5 O level / GCSE grades D-G

6 Other academic qualifications

7 No qualifications

Mother’s and partners highest NS-SEC

The concept of NS-SEC and the three class version (used in Chapter 6) are described in section 3.2.1.4. The seven class version of NS-SEC, as shown below was also used as one of the items in the latent construct of ‘low family SES’ in Chapters 5 and 7[13].

1 Higher managerial and professional occupations

2 Lower managerial and professional occupations

3 Intermediate occupations

4 Small employers and own-account workers

5 Lower supervisory and technical occupations

6 Semi-routine occupations

7 Routine occupations

The ‘low family SES’ construct analysed in Chapter 7, also included a measure of family income. The sweep 2 OECD equivalised scales were used which sets families into quantiles from 1 to 5, where 1 is the lowest income quintile and 5 is the highest (Hansen et al., 2014).

[13] Never worked are not included in the seven class version. The latent constructs in chapters 5 and 7, also included level of education and in chapter 7 income, any remaining cases with missing data would be adjusted by FIML.

3.3.2.2 Parental involvement in home-based learning

In the MCS parental involvement in home-based learning was measured at sweeps 2, 3, and 4 when the children were aged 3, 5 and 7 respectively. In this thesis, parental involvement in home-based learning was measured at age 3 (the earliest opportunity) and age 5. In chapter 9, parental involvement in home-based learning was measured with four items rating how frequently anyone at home engaged in the following activities with the child: learning the ABC or the alphabet; teaching numbers or counting; teaching songs, poems or nursery rhymes; and painting or drawing. All items were measured on a 5-point scale (1='never' to 5='every day').

In chapters 5 and 7 parental involvement in home based learning was measured at age 5 with four items, for each of the main carer and their partner. Using a 6-point scale (1='never' to 6='every day') both were asked how frequently they engaged in the following with the child: 'doing musical activities'; 'telling stories'; 'drawing, painting or making things'; and 'playing with toys or games'.

3.3.2.3 Parental values

Parental values were measured in MCS2 when the child was age 3. The main parent was asked to choose the most important quality for the child to learn in order to prepare him/her for life, from the following: 'well-liked or popular', 'think for themselves', 'work hard', 'help others when they need help', 'obey their parents' and 'learn religious values'. The qualities, with the exception of 'learn religious values' were the same as the set of parental values used in previous studies (Alwin, 1990). The reference category was 'think for themselves', the most popular response. The measure was used in the analysis of results in Chapter 9.

3.3.2.4 Mother's well-being

Well-being of the child's mother was measured using different scales in this thesis. In Chapter 8, Kessler's (2003) 6-item measure of psychological distress (K6) was used to measure mother's depressed mood in MCS3, when the cohort child was aged 5. The K6 measures depressive and anxiety symptoms experienced in the last 30 days by asking how often the respondent felt: so depressed that nothing could cheer them up; hopeless; restless or fidgety; that everything was an effort; worthless; and nervous. The scale ranges from 0 to 24, each question is on a five point scale, ranging from "all of the time" (4 points) to "none of the time" (0 points).

In chapter 9, mother's well-being was measured using a modified version of the 24 item Malaise Inventory assessing psychological distress or depression (Rutter, Tizard & Whitmore, 1970). Rutter stated 'the inventory differentiates moderately well between individuals with and without

psychiatric disorder' (Rutter et al., 1970, p160). In MCS1, a 9-item version was asked when the children were age 9 months. The 9 'yes-no' items were:

- Do you feel tired most of the time?
- Do you often feel miserable or depressed?
- Do you often get worried about things?
- Do you often get into a violent rage?
- Do you often suddenly become scared for no good reason?
- Are you easily upset or irritated?
- Are you constantly keyed up and jittery?
- Does every little thing get on your nerves and wear you out?
- Does your heart often race like mad?

3.3.3 Schools and neighbourhoods

This section covers the school and neighbourhood level variables used in the analysis of results in chapter 7. These variables were linked to the MCS dataset from other sources. The school level data was taken from the Pupil Level Annual School Census (PLASC) a national pupil and school level administrative census derived from state maintained schools in England. (Similar data is not available in the MCS for the other three countries). The neighbourhood level data was the Indices of Multiple Deprivation (IMD), which is provided within all sweeps of the MCS as 'geographically linked data' for all four countries[14]. Deprivation is defined as 'a lack of non-financial requisites, including health, education, crime and access to services such as hospitals' (pg. 3, ONS, 2013). In this thesis the analysis of school and neighbourhood level data was conducted for England only.

3.3.3.1 School level variables

The PLASC school level data was merged with the appropriate year dataset in MCS3 and MSC4 and included measures such as school type, pupil-teacher ratio, proportion of child receiving free school meals (FSM), and January 2008 Key Stage 1 (KS1) Average Point Scores (APS). Two school level variables were used in this thesis, the proportion of children at the school receiving FSM (an indicator of poverty), and the school's KS1 scores (an indicator of school quality) in England at MSC3, when the children were aged 5. Prior to merging, the

[14] There are difficulties in using the IMD to make comparisons across the four countries and the indices should not be combined to form a single UK index because the indices in each country are based on different domains, weights, reporting dates and inconsistent geographies (Office for National Statistics, 2013).

schools census data was banded into quintiles, where 1 was equal to the bottom quintile and 5 was equal to the top quintile.

3.3.3.2 Neighbourhood level variables

The neighbourhood definition for the IMD in England and Wales is based on Lower layer Super Output Areas (LSOAs[15]). There are 32,482 LSOAs in England, containing a minimum of 1,000 residents (400 households), with an average population size of 1,500 at the 2001 census (ONS, 2012). The IMD covers a number of domains in England including, income deprivation, employment deprivation, health deprivation and disability, educations skills and training deprivation, barriers to housing and services, living environment deprivation and crime.

In this thesis three IMD measures from MCS1, when the child was aged 9 months were used to form a latent construct 'low neighbourhood socio-economic status' to reflect the 'low family SES' construct described in section 3.3.2.1. The three IMD measures were income deprivation, employment deprivation and education, training and skills deprivation deciles ranked from 1 to 10, where 1 was equal to the top quintile (the least deprived) and 10 was equal to the bottom quintile (the most deprived).

3.3.4 Data limitations

Although the MCS is a very rich data source and the use of a cohort is an important strength, there were limits to the scope of the questions included in MCS. In MCS4 the children were given the opportunity to describe their aspirations in as much detail as they wished. However, many children only gave a single response, with no clarification about the motives or meaning behind their responses. The children were not asked about the reasons for their choices. Therefore a number of assumptions had to be made about what for example, aspiring to be a "teacher" or "a footballer" means to a 7 year old child, and what the motive was behind the aspiration.

Further, as the 7 year olds in MCS were not asked what they expected or thought they would be, it is not clear how 'aligned' or 'misaligned' the children's aspirations were with their expectations. As discussed in Chapter 2, by definition aspirations tend to be unrealistic and high whereas expectations can be more realistic and aligned. Without asking directly about expectations, it is not clear whether some of the children really believed they would be 'footballers' or 'fairies', for example in the future.

[15] LSOAs are the lowest level of Output Areas. The largest are Super Output Areas, which were built from groups of 2001 Census Output Areas and designed to improve the reporting of small area statistics. The Middle Layer Super Output Areas (MSOAs) were clusters of LSOAs, there are 6,781 in England with a minimum population of 5,000.

In addition, the fully coded aspirations data at the time of writing is currently only available at one sweep, so no validation or clarification across sweeps can be made. The aspirations question was asked in MCS5 when the children were aged 11, but the age 11 in-depth coded data were not available to be included in the analysis of this thesis. Further, at the time of conducting analysis for this thesis, the MCS5 age 11 SDQ data was not available. Therefore in this thesis the aspirations and emotional and behavioural problems were all recorded at age 7, and therefore causal inferences are difficult to defend.

There are a number of predictors of aspirations identified in other studies, as discussed, which unfortunately could not be tested in this thesis. For example, at MCS4 parental expectations of their child's future occupation was not asked, but parental educational aspirations were asked. However, mothers in the MCS had high aspirations for their 7 year olds, with 97 per cent saying that they wanted their child to attend university (Hansen & Jones, 2010). Also, there was no difference in mothers' aspirations between families in poverty and families not in poverty. Therefore the measure was not predictive. In addition, there were few questions asking how the child perceives their own abilities in school or at home to elicit the child's level of self-esteem or self-efficacy. The only question that is asked of the child (in MCS4) that relates to self-efficacy is whether the child believes the "teacher thinks they are clever".

Chapter 4 Method

This chapter briefly describes issues pertaining to conducting longitudinal research with secondary data, followed by an outline of the types of analysis used in the research in this thesis. As the main statistical approach used in this thesis is structural equation model (SEM), the chapter covers the types of models fitted, weighting, estimators, missingness and model fit indicators. It concludes with an outline of mediation and moderation analysis in SEM.

4.1 Research design

4.1.1 Longitudinal research with secondary data

As outlined in chapter 3, the research in this thesis is based on the secondary analysis of longitudinal data from the MCS. The development of aspirations is a lifetime process, and life stage is important in determining aspirations. The use of secondary data available in cohort studies is an important source for analysing children's development. A longitudinal design, compared to a cross-sectional research design can allow some insight into the time order of variables and therefore can help in understanding casual inferences over time (Bryman, 2004). For example, in cross-sectional designs there is ambiguity about the direction of the causal inference, whereas in longitudinal designs a variable identified at T_1, if there are any supposed effects at T_2 or later, the direction of the inference may be inferred. However, by using only one cohort study, one cannot detect cohort effects because all the MCS children were born at a similar time. Therefore, the results in this thesis cannot take account of historical contextual effects. A major limitation and feature of longitudinal design is missing data as discussed below.

4.1.2 Missing data

Missing data, as discussed in section 3.1.3 is a particularly troublesome feature of longitudinal secondary data sets, and therefore should be accounted for in data analysis in order to draw valid conclusions from findings. There are three main missing data mechanisms; data missing completely at random (MCAR), data missing at random (MAR), and data not missing at random (NMAR; Little & Rubin, 2002). Data is MCAR when the reasons for missingness are not related to underlying values of missing data. An MAR mechanism occurs when the probability of missing data on a variable X is related to another measured variable in the analysis model but not to the values of X itself. Enders (2010) suggests that the definition implies that MAR is automatically satisfied when a correlate of missingness is a variable in the data set. NMAR is when the probability of missing data on a variable X is related to the values of X itself, even after controlling for other variables. It is possible to test whether data is MCAR, however it is not possible to identify if the data is NMAR because the true values of the missing data are

unknown (Jelicic, Phelps & Lerner, 2009). Schafer & Graham (2002) have argued that serious violations of MAR are relatively rare, but the only way to evaluate the MAR assumption is to collect follow-up data from the missing respondents (Enders, 2010).

There are a number of ways of dealing with missing data; listwise deletion, pairwise deletion, multiple imputation (MI) and maximum likelihood (ML). The main procedure employed in this thesis is full information maximum likelihood (FIML). Statistical procedures such as MI and FIML are based on a theoretical framework for missing data estimation and preserve the characteristics of the entire data set (Jelicic, Phelps & Lerner, 2009). FIML commonly used in SEM includes data from partially completed cases which contribute to the estimation of parameters that involve the missing portion of data as well. During the analysis FIML produces probable implied values for the missing data, by the relationship between the observed values of other variables in the data set with the missing data (Schafer & Graham, 2002). In contrast, MI produces a number of datasets with different imputed values that are randomly drawn from a distribution of credible missing values (Enders, 2010). Using 'Rubin's rules (Rubin, 1987) for combining the datasets, the imputed datasets are pooled together to provide single parameter estimate and standard error[16]. In theory, these two methods are equivalent when identical models are tested, dependent on the number of imputations used in MI and whether auxiliary[17] variables are used (Graham, Olchowski, & Gilreath, 2007).

The use of auxiliary variables in MI is fairly straightforward, however in FIML incorporating AVs can be problematic. According to Graham (2003) a saturated correlates model is required, however this can run into problems (i.e. convergence) if the model is large and underidentified (Savalei & Bentler, 2009). There are also theoretical problems in deciding which auxiliary variables, if any, should be included. A useful AV is either a potential cause or correlate of missingness. However, if not chosen carefully the AV can increase bias in the model. According to Collins, Schafer and Kam (2001) the trade-off of using inclusive or restrictive strategies is challenging. In dealing with missing data, the analysis in this thesis used a restrictive strategy i.e. does not include AVs in any models.

[16] In MI the variance of estimation is partitioned into the within imputation variance (the sampling variability) and the between imputation variance (variability due to missing data) (Graham, Olchowski, & Gilreath, 2007).

[17] Auxiliary variables (AVs) are variables that are not in the model of interest, but whose inclusion in the analysis can be beneficial. These variables can be related either to the variables containing missing values or to the cause of missingness itself, or both (Savalei & Bentler, 2009).

4.1.3 Sample selection

Each of the studies in this thesis had an analytic sample based on the aims of the study, the outcome of interest, the number of MCS sweeps included in the analysis, and restrictions of using a secondary data source. In the first instance only families productive at sweep 4 (n = 13,857), when the children completed the aspirations question were included in any of the analyses. And then, for example in chapter 7 only families residing in England could be included because of the incompatibility of the IMD measures across countries and the availability of school data for English state schools only. At the start of each results section there is an outline of the analytic strategy for each study and a comparison of the analytic versus non-analytic sample to identify if there were particular characteristics of families excluded from the analysis.

4.2 Types of analysis

The main statistical approach used in this thesis is Structural Equation Modelling (SEM). SEM was an obvious choice, it takes a confirmatory approach to analysis, allows both unobserved (i.e. latent constructs often used in psychology and the social sciences) and observed variables to be incorporated and allows for longitudinal data to be applied to pathway models, which can reflect events over time i.e. across childhood. Other statistical analysis conducted in this thesis was bivariate analysis and multiple regression. The different statistical approaches are outlined below.

4.2.1 Descriptive

All bivariate analysis was conducted using SPSS v20-22. The descriptive analysis included cross-tabulations and correlations of the main variables used in this thesis. To take account of the MCS sample design features Complex Samples Plans (CS Plans) were set up. The CS Plans were dependent on the MCS sweeps and countries included in the specific analysis (Jones & Ketende, 2010) determining the stratification, clustering, a finite population correction and weighting design variables included in the plan.

4.2.2 Multiple Regression

The multiple regression conducted in chapter 8 was linear as the outcome variable was continuous. The equation can be written as follows:

$$Y_i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + ...+ \beta_x x_x + e_i$$

Where, Y_i is the dependent variable, X1, X2,…Xp are independent variables, β0 is the estimated constant (intercept), β1, β2, … β_x are estimated partial slopes, and e_i is the error term.

A number of models were fitted to understand if the predictors explained the association of the variable of interest, children's aspirations on children's externalising and internalising problems.

In the study using multiple linear regression in chapter 8 a multiple imputation (MI) approach to handling missing data was adopted. In the first instance, using SPSS 20 the patterns of missing data were explored and the analytic sample was tested to identify whether the missing data was MCAR or not using Little's chi-square statistic (Little & Rubin, 2002) in SPSS 20. If the value is less than 0.05, the data are not MCAR, the data could be MAR or NMAR. In the analysis in chapter 8 the level of missingness was very low and a MI was conducted using five imputed datasets (Graham et al., 2007). The MI's were generated in SPSS 20 using the Markov Chain Monte Carlo procedure. The imputation included all the variables in the model, with the exception of the outcome variables. The models were fitted in SPSS which pooled the results from the analyses carried out in each imputed dataset.

As a result of using MI in SPSS 20 there were certain restrictions on the analysis. A CS plan could not be used in the analysis therefore some of the non-response adjustments could not be made, and as the multiple regression model was single level, sample clustering could not be taken care of (unlike in multilevel models). However, a stratification variable was included in the analysis which controlled for the nine different strata in the MCS design[18]. As the MI data was pooled, there was no model summary available and parameters were restricted to unstandardized beta coefficients and standard errors.

4.2.3 Structural Equation Modelling (SEM)

4.2.3.1 Introduction

The statistical technique most employed in this thesis was structural equation modelling (SEM). SEM is a complex, multivariate technique that is suited to testing various hypothesis or proposed relationships between variables. SEM permits consideration of multiple outcomes, and allows the testing of hypothesis using observed or manifest and latent variables. Observed or manifest variables are scores that can be derived directly from a measurement instrument i.e. gender, social class, children's aspirations. Latent variables are abstract phenomena that are constructed using a number of manifest variables, which are indicators of the underlying

[18] See the results of Chapter 7 on the effect of taking account and not taking account of complex survey designs on standard errors and significant results.

construct they are presumed to represent i.e. infant temperament, child ability, Family SES (Byrne, 2012a). SEM consists of two parts, a measurement model and a structural model. The measurement model specifies the relations between manifest variables and latent variables, usually by testing the fit of the indicators to the construct in a confirmatory factor analysis (CFA). The structural model specifies the relations among latent variables (i.e. how they directly or indirectly influence changes in the values of other latent variables in the model) and regressions of latent variables on observed variables (Byrne, 2012a).

There are a number of advantages of SEM over other multivariate techniques (Byrne, 2012a). SEM takes a confirmatory approach to hypothesis testing by specifying the relationship among variables a priori, which lends itself to the analysis of data for inferential purposes. In other techniques, for example regression analysis the potential error in all the independent variables is ignored, which can lead to inaccurate results. SEM provides explicit estimates of the error variance parameters. Also, SEM can incorporate both latent and observed variables, as well as multiple outcomes. In SEM the measurement of latent variables may better depict underlying theoretical constructs compared to single observed variables (Kline, 2011). Finally, SEM can model both the direct and indirect effects of variables, thus enabling the mediating effects of manifest and/or latent variables to be examined.

There are five main steps in SEM application; model specification, model identification, parameter estimation, model fit and model respecification (Bollen & Long, 1993). The first is formulating a hypothesised model, often conceptualised by diagrams (see section 2.6) based on theory and findings from previous studies. The second step model identification, relates to deriving a unique value for each unknown parameter in the model using the variance/covariance matrix of the measured variables that are known. The model, is identifiable when the degrees of freedom are positive i.e. there are more data points than the number of parameters to be estimated. The next step is parameter estimation, there are a number of different estimators available, the most widely used is maximum likelihood, based on data normality, sample size and the type of data i.e. continuous, categorical, multinomial etc. The estimators, approximate population parameters by minimising the difference between the observed variance/covariance matrix and the model predicted variance/covariance matrix. The estimators used in this thesis are discussed below in section 4.2.3.3. The fourth step is model fit, the degree to which the model fits the data examined, the smaller difference the better. The model fit statistics are outlined in section 4.2.3.5. The final step is model re-specification to improve the model-data fit, based on theory, by for example deleting statistically insignificant paths or adding paths to the model.

The statistical SEM software used in this thesis was Mplus version 7 (Muthen & Muthen, 1998-2012). There are a number of advantages of Mplus compared to other SEM packages (Byrne,

2012b) Mplus can be used in the modelling of different types of outcome e.g. continuous, ordinal, nominal as well as a combination of different types. The software can handle various incomplete data, non-normality and complex survey data. As well as single level models, Mplus can handle multilevel SEM and SEM using a Bayesian approach. The application of SEM using Mplus, as well as some of the restrictions of the software regarding the analysis conducted in Chapters 5, 6, 7 and 9 are discussed in the following sections.

4.2.3.2 Types of models

In this thesis a number of different types of models were used including individual level SEM with continuous and unordered ordinal outcomes in Chapters 5 and 9, and a path analysis model in Chapter 6. In Chapter 7, as well as an individual level SEM, two-level SEM models were conducted and a multilevel cross-classified model was used to deal with the MCS sample design.

Path analysis

A path analysis model, as shown in section 2.6.2, uses only observed or manifest variables (depicted in SEM diagrams as a square or rectangle ▭) there are no latent variables or constructs (depicted in SEM diagrams as a circle or ellipse ⬭) . Therefore, only the structural element of SEM is used, the regression paths. A path analysis allows for multiple regressions to be conducted in one model, allowing for the simultaneous estimation of all relationships within the model, including both direct and indirect effects (Menard, 2010).

SEM models

The SEM models fitted in this thesis are mainly at the individual child and family level, although in chapter 7 in order to investigate school and neighbourhood effects hierarchical multi-level and two-level cross-classified SEM was conducted. As discussed, SEM consists of two parts, the structural model as described above in path analysis and the measurement model which allows for both manifest and latent variables / constructs. In the measurement model, the latent variables were constructed using confirmatory factor analysis (CFA). CFA is a theory-driven technique where a priori hypothesis about the structure of the relations between the observed variables and the underlying factors is tested statistically (Byrne, 2012a). For example, the SDQ outlined in section 3.2.2 could be modelled using a number of different factors. Table 3-5 (in section 3.2.2) outlines the SDQ scales, a priori specification of the SDQ would allow the difficulties scales to be modelled using first order CFA which could comprise all 20 SDQ difficulties items loading onto a single common factor - total difficulties, or 2 sets of 10 SDQ items loading onto two dimensions of SDQ – internalising and externalising problems, or 4 sets of 5 SDQ items loading onto four dimensions of SDQ – hyperactivity, conduct problems,

emotional symptoms and peer problems. The model is then evaluated by statistical means to determine the adequacy of its goodness of fit to the sample data (Brown, 2006) as outlined in section 4.2.4. CFAs can also be second-order (e.g. the four first order factors of hyperactivity, conduct problems, emotional symptoms and peer problems load onto a second order factor – total difficulties) and third order CFA and so forth. All latent constructs used in this thesis were tested for model fit and were first-order CFAs.

Two-level SEM

Before conducting multilevel modelling the Variance Partition Coefficient (VPC) was calculated. This represents the proportion of the variance attributable to factors operating at the contextual level i.e. schools or neighbourhoods. The VPC is calculated by dividing the between-group variance by the total variance, the sum of the between-group variance and the within-group variance (Snijders & Bosker, 2012).

For parsimonious and other empirical reasons[19] two-level random intercept models were fitted. In random intercepts models[20] only the intercept (the mean) is allowed to vary between the contextual level variable (neighbourhood or school). In the structural part of the SEM, the notation of the two-level random intercept model can be written as

$$Y_{ij} = \beta_{0j} + \beta_1 x_{ij} + e_{ij}$$

$$\beta_{0j} = \beta_0 + u_{0j}$$

which is the equivalent of

$$y_{ij} = \beta_0 + \beta_1 x_{ij} + u_{0j} + e_{ij}$$

where $(\beta_0 + \beta_1 x_{ij})$ is the fixed part of the model and $(u_{0j} + e_{ij})$ is the random part, with

Y_{ij} is response Y for the ith individual in the jth group

β_0 = overall intercept

β_1 = overall slope

β_{0j} = intercept (mean of y) for a given group j

e_{ij} = individual level residuals (difference between y_{ij} and β_{0j})

u_{0j} =group level residuals (difference between β_{0j} and β_0)

x_{ij} = continuous explanatory variable for which values vary between individuals within a group

The overall relationship between y and x is a straight line with the intercept β_0 and a slope β_1.

[19] One of the aims of chapter 7 was to test the impact on results of not taking account of the MCS complex survey design

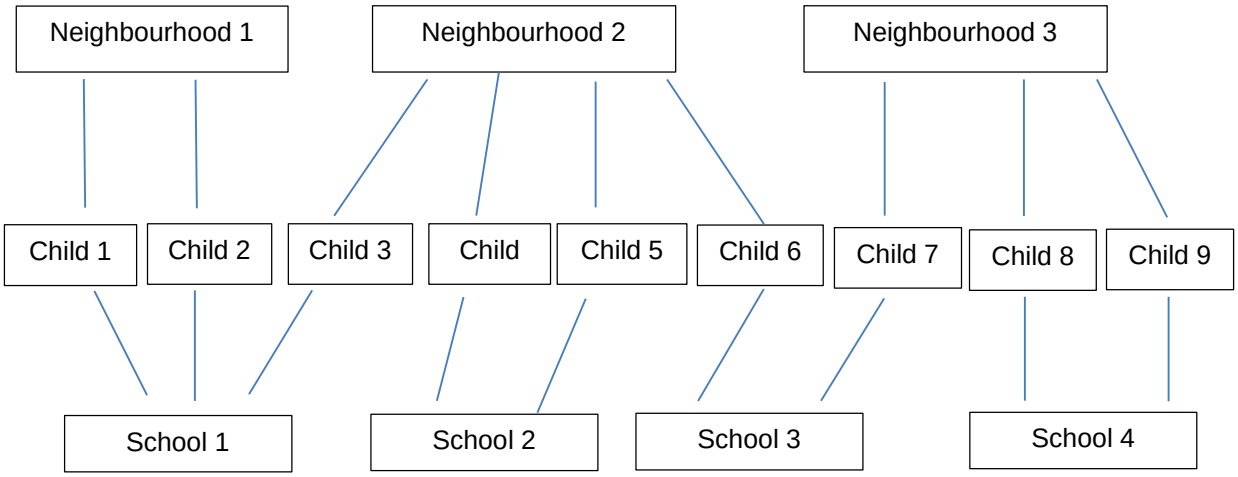
[20] A more complex multilevel model would be a random slopes or random coefficients model where both the slope and the intercept vary between groups (Snijders & Bosker, 2012).

Cross-classified SEM

In cross-classified models, the data in the lower level units does not belong to only one higher level unit. Lower level units belong to pairs or combinations of higher level units formed by crossing two or more higher level classifications with one another.

As discussed in the data section, in the MCS[21] schools and neighbourhoods are not strictly nested within one another. For example as shown in Figure 4-1, child 3 and child 4 live in the same neighbourhood, but go to different schools, while child 6 and child 7 go to the same school, but live in different neighbourhoods. Rather than being nested within one another, schools and neighbourhoods form a cross-classification at level 2 within which children are nested (Leckie, 2009). Cross-classified models allow the response variation between children, schools and neighbourhoods to be partitioned correctly.

Figure 4-1: Cross-classified data structure*



*modified from Snijders & Bosker (2012)

If the non-hierarchical structure of the data is ignored, the model could be underspecified because there are sources of variation that have not been included in the model. This can lead to underestimation of the standard errors. The variance components obtained from simple hierarchical models or sets of hierarchical models may change if the non-nested structures are included in a single or two-level model (Rasbash & Browne, 2008).

[21] This is true of most representative school and neighbourhood data in the UK which forms non-hierarchical data structures.

Extending the two-level random intercept model above, the structural part of the two-level cross-classified random intercepts SEM can be written as

$$y\, i(j_1, j_2) = X\, i(j_1, j_2)\, \beta + u0j_1 + u0j_2 + e0i\, (j_1, j_2)$$

In cross-classified models the cell combinations of the two factors on level 2 (school and neighbourhood) need to be accounted for. If j_1 denotes the first classification and j_2 denotes the second, level 2 units are identified by the combinations of two units on each factor (j_1, j_2). An additional residual term for the second unit $u0j_2$ has also been added (Fielding & Goldstein, 2006).

To a certain extent the types of models conducted and the structure and distribution of the data used define the appropriate estimators, weighting, model fit and dealing with missingness that can be applied to the analysis in Mplus as described below.

4.2.3.3 Weighting, estimators and missingness

Types of statistical inferences

In this thesis two types of statistical inferences were used. The main method was the classic frequentist approach, however in order to model cross-classified data in Chapter 7 a Bayesian approach was needed. The two paradigms, frequentist and Bayesian offer different views of hypothesis testing (Schoot et al., 2014). There is much debate about the two different paradigms, which is beyond the scope of this thesis. However, briefly, there are some fundamental differences regarding the two approaches, on probability, estimation and inference. Bayesian approaches allow researchers to incorporate background knowledge into their analysis instead of testing the null hypothesis, allowing previous research findings to be evaluated in relation to new data. In this thesis, no prior information is used. A Bayesian approach was applied because a frequentist approach could not accommodate the complexity involved in fitting models with cross-classified data structures. Bayesian analysis allows the use of computational algorithms denoted as Markov chain Monte Carlo (MCMC) methods which can deal with complicated modelling and data structures.

In Mplus, if a Bayesian approach with non-informative prior distribution is used, in large samples the results will be analogous to a model using a frequentist maximum likelihood approach (Browne & Draper, 2006; Muthen, 2010). By not specifying the prior this allows the data (the likelihood) to require a uniform prior distribution, where no parameter values are more probable than others (Schoot et al., 2014). However, it is different from frequentist estimation because the interpretation is expressed in terms of the probability of the parameters given the data,

rather than in frequentist probability where the probability is applied to the frequency of random events or observations over an infinite series of observations. The Bayesian approach treats parameters in θ[22] as random or variable across a range of possible values, while the observed data in y is treated as fixed or constant. Whereas, in null hypothesis significance testing (NHST) used by frequentists the data in variable z are treated as random and the population parameters are assumed fixed, so the null hypothesis is treated as a single value to compute a p value for the observed data. Therefore, in frequentist statistics the p values is the probability of observing the same data assuming that the null hypothesis is true in the population, whereas in Bayesian statistics the p value is the probability of the hypothesis. Regarding estimated intervals, frequentists use confidence intervals, which are established over an infinity of samples taken from the population, 95% of these contain the true population value. Inversely Bayesian statistics uses credibility intervals, which propose that the population value is within the limits of the interval.

Weighting

As explained in Chapter 3, the MCS uses a complex survey data. In Mplus for most types of models, there are options for dealing with stratification, clustering, unequal probabilities of selection (sampling weights) and subpopulation analysis (Muthen & Muthen, 1998-2012). In most SEM and path models in this thesis the TYPE=COMPLEX command was used along with the stratification, cluster and weight options. The stratification option deals with stratum within country in the MCS design, while the cluster option specifies the primary sampling units at electoral ward level, as outlined previously in section 3.1.2. The weight variables are used when the attrition and non-response adjustment are not made

As outlined in section 3.3.3 the neighbourhood data linked to MCS is based on LSOAs and not electoral wards. And schools were not perfectly nested into wards, therefore, only the clustering specifications i.e. school and/or neighbourhood could be used and not the full options with the TYPE=COMPLEX command as specified in the previous paragraph. In order to test the impact of not dealing with the stratification, cluster and weights in the two-level and cross-classified models in Chapter 7 a number of different types of models were run to examine the effect of not dealing with sampling design on the standard errors in the models. The first models were single level with and without survey design, followed by two-level models one between schools and the other between neighbourhoods. The final model was a two-level cross-classified model of schools and neighbourhoods.

[22] Θ represents a parameter or parameters for any statistical model (covariances, correlations, β's)

Model estimators and missingness

An estimator is a method to solve model equations and produce parameter values. In Mplus frequentist analysis uses maximum likelihood and weighted least square estimators. As discussed above, Bayesian analysis uses Markov chain Monte Carlo (MCMC) algorithms. The estimator used in most models in this thesis is the maximum likelihood estimation with robust standard errors (MLR)[23].

In Mplus the MLR provides parameter estimates with standard errors and a chi-square test statistic that are robust to non-normality and non-independence of observations when used with TYPE=COMPLEX (see section 4.2.1.4) (Muthen & Muthen, 1998-2012). When using MLR, FIML is used to estimate unbiased parameter estimates and standard errors for missing data. FIML works by estimating a likelihood function for each individual based on the variables that are present so that all available data is used. Mplus provides maximum likelihood estimation under MCAR (missing completely at random), and MAR (missing at random) for the types of data used in this research i.e. continuous, binary, unordered categorical or combinations of these types (Little & Rubin, 2002).

In the analysis in chapter 9, a latent categorical outcome (parental values for their child to learn) formed part of the hypothesised model therefore the weighted least squares estimator (WLSMV) was used. In Mplus the weighted least squares estimator (WLSMV) uses a diagonal weight matrix with standard errors and mean and variance adjusted chi-square statistic that use a full weight matrix (Muthen & Muthen, 1998-2012).The WLSMV estimator gives accurate test statistics, parameter estimates, and standard errors across a number of different distributions, samples and sizes (Flora & Curran, 2004; Beauducel & Herzberg, 2006). Under MCAR and MAR using WLSMV with categorical outcomes allows missing data to be a function of the observed covariates (Asparouhov & Muthen, 2010).

In the cross-classified model with school and neighbourhood fitted in chapter 7, a Bayesian estimator was used and the default two independent Markov chain Monte Carlo (MCMC) chains (Muthen & Muthen, 1998-2012). MCMC is an iterative process, where in this thesis[24] posterior values for each parameter are estimated in iterations which build up and define the posterior distribution. In this case the MCMC was carried out from two starting points (i.e. two chains) to ensure the convergence of the iteration process on a stable estimate of posteriors. Convergence can be evaluated by calculating the potential scale reduction (PSR)[25] , which indicates when there is very little variance between chains when compared to within chains. In

[23] MLR is used in the analysis conducted in chapters 5,6 and 7
[24] A prior distribution was not specified
[25] The PSR is the ratio of total variance across chains / pooled variance within chain

Mplus the fbiterations option is used to increase the number of iterations to check convergence and that the PSR has not increased (Muthen & Muthen, 1998-2012).

4.2.4 Model fit

In SEM there are a number of statistical measures used to establish a well fitted model. When using continuous variables and frequentist inference, several measures of goodness of fit of the model to the data were used (i.e., the $\chi 2$ statistic, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI) and the Tucker Lewis Index (TLI) and Standardised Root Mean Square Residual (SRMR)). The $\chi 2$ statistic is well used, but sensitive to model misspecification when sample sizes are large as in the analytic samples used in this thesis. The two other types of model fit indices are predictive such as the Root Mean Square Error of Approximation (RMSEA; Steiger, 1990) and comparative such as the Comparative Fit Index (CFI; Bentler, 1990) and Tucker Lewis Index (TLI; Tucker & Lewis, 1973). The RMSEA determines how well the hypothesized model fits the sample data and is sensitive to the complexity of the model (Byrne, 2012a). A value of zero indicates a perfect fit, and values less than .05 a good fit (Steiger, 1990). The CFI and TLI measure the proportionate improvement in model fit by comparing the hypothesized model with the less restricted baseline model. Values are restricted from zero to 1.00, with values close to 1.00 being indicative of a well-fitting model. Values greater than .90 are considered representative of a reasonable model fit (Bentler & Bonett, 1980). Unlike the CFI, the TLI is a non-restricted index, so values can be greater than one, but like the CFI values close to 1.00 indicate a well-fitted model. The TLI also considers model complexity and lower TFIs can indicate models with parameters that contribute minimally to improving model fit (Byrne, 2012a). The SRMR like other measures, ranges from zero to 1.00, with a well fitted model identified as nearer to zero (0.05 or less), however the SRMR is preferable for models with small sample sizes (Hu & Bentler, 1998). In MPLUS, the overall model fit statistics as described above are not currently available in Mplus for models with categorical outcomes and cross-classified models.

4.3 Mediation and moderation

4.3.1 Mediation

SEM and path analysis naturally lend themselves to identification of variables as mediators. A mediator variable is one that explains how or why another variable affects the outcome (Baron & Kenny, 1986). In mediation analysis effects are considered direct and indirect. Indirect effects are mediated through other variables and are therefore also referred to as mediated effects (MacKinnon, 2008). In full mediation, the direct effect between the predictor and outcome is no

longer significant when a mediator is introduced. In partial mediation, the direct effect between the predictor and outcome is still present but reduced when a mediator variable is introduced.

By nature a mediational model is causal as it suggests a direction of influence, however unless the research has an experimental design, causal conclusions cannot be made. However, longitudinal data allows temporal models such as some of those used in this thesis to specify a time based sequence of events rather than a causal sequence of events. Using cross-sectional data restricts further the level of inference that can be made between variables and does not rule out bidirectional pathways.

There are a number of methods for testing mediation effects in SEM, including bootstrapping and the Sobel test. The bootstrap procedure is recommended as it is more powerful and does not make assumptions regarding the shape of the sampling distribution (MacKinnon, 2008). However, the bootstrap procedure is computationally demanding, and in Mplus bootstrapping is not available when using a variety of commands including the COMPLEX[26] command and specifying multilevel models. Therefore the Sobel test was used in Chapter 6, to test the mediated effects via parent's social class on all the grandparent-grandchild pathways (Hayes, 2009; Sobel, 1982).

4.3.2 Moderation

A moderator is a variable that influences the strength or the direction of a relationship between a predictor and an outcome variable (Rose, Holmbeck, Coakley & Franks, 2004). A moderator effect is an interaction whereby the effect of one variable depends on the level of another. Interactions are tested by creating new variables that represent the product terms of the predictor variables. Although interactions can be used to test moderation variables, in path analysis and SEM, moderation is also tested using multi-group analysis. Multi-group analysis is used on some of the models in this thesis, to test group differences (i.e. by gender) where appropriate along some of the pathways from and to aspirations.

In order to use multi-group analysis in SEM the latent constructs need to be tested for measurement invariance (MI) across the groups (Byrne, Shavelson & Muthen, 1989). If MI does not hold then groups respond differently to the items and as a consequence means cannot be compared, without knowing if differences are as a result of the group or the measurement instrument. There are a number of steps in testing measurement invariance as follows (Byrne, 2012a).

[26] As discussed in section 4.2.3.4, the COMPLEX command takes account of the MCS sample design.

1. Models are run for each of the groups to establish well-fitted baseline models termed the configural model. This allows for parameters to be estimated for all groups at the same time. The fits of the configural model provides the baseline model against which all subsequently specified invariance models are compared.
2. A model is run where only the factor loadings are equal across groups and the intercepts are allowed to differ between groups. This tests whether the respondents across groups attribute the same meaning to the latent constructs and is called metric invariance.
3. A model is run where only the intercepts are equal across groups, and the factor loadings are allowed to differ. This is called intercept invariance and tests whether the meaning of the underlying items are equal.
4. In the next model, known as scalar invariance both loadings and intercepts are constrained to be equal. Therefore the construct and the items are equal in both groups.
5. The final model, full uniqueness MI is the same as the scalar invariance model, but in addition the residual variances are fixed to be equal. Therefore, the latent construct is measured identically across the groups.

For interpretations of latent means and correlations across groups ideally, scalar invariance should be achieved. However, partial MI can be established if only the loadings or intercepts are different across the groups, valid inferences can be made if the item causing MI not to hold is identified and constrained in the model (Schoot, Lugtig & Hox, 2012).

In Chapters 5 and 9 in order to conduct multi-group analysis by gender, some of the models were tested for measurement invariance. However, for all models tested the latent constructs were not equivalent across gender. In this thesis multi-group analysis by gender was conducted for one of the SEM models (Chapter 5, model 1) along all the direct pathways to children's aspirations. However, results should be viewed with extreme caution, any differences in gender identified could be as a result of gender difference or as a result of differences in the measurement of the latent constructs for boys and girls (Byrne, 2012a). In path analysis, there is only a structural model and no latent constructs, therefore there is no need to check for measurement equivalence prior to conducting multi-group analysis. The study in Chapter 6 uses path analysis. To test for gender and ethnic differences in the 'effects' of parent and grandparent social class on the child's aspirations, multi-group analysis was conducted. Multi-group differences were tested for each of the pathways using the MODEL TEST command in Mplus which tests linear restrictions on the parameters in the model using the Wald chi-square test. Exactly the same model is run, except for the restriction in the MODEL TEST, for each individual pathway separately.

In Chapter 9, interactions were used to test gender differences using the interaction terms between child's sex and each of the three variables measuring aspirations (in models 1 and 2). In Chapter 6, interactions were also used to understand if grandparents' social class moderated the effect of parents class on their grandchild's classed aspirations.

The following chapters comprise the results of the studies conducted in this thesis. Chapters 5 to 7 include the results of the individual and contextual determinants of children's aspirations, while chapters 8 and 9 investigate the association between children's aspirations and emotional and behavioural problem.

Chapter 5 Individual level predictors of young children's aspirations

5.1 Introduction

This chapter examines the individual level predictors of children's aspirations, including the influence of gender, ethnicity, infant temperament, child cognitive ability, school engagement, as well as family SES and parental involvement in home-based learning. Other predictors, such as parental values, the influence of grandparents and context are explored in later results chapters. In this chapter children's aspirations were classified in a number of ways, by prestige of the occupation, masculinity/femininity and extrinsic/intrinsic motivation, and by the realism and maturity of the children's responses.

This chapter firstly outlines the aims of the research and is followed by a brief description of the method pertaining to this chapter, the results and a brief summary of the findings and conclusions. The results section covers a bivariate analysis of aspirations by gender, ethnicity, the parents' education and NS-SEC, and correlations of the key observed variables, followed by SEM, and multi-group analysis of the pathways to aspirations by gender.

5.1.1 Study aims

The first of this study's aims was to investigate the pathways to occupational, masculine/feminine, and extrinsic/intrinsic aspirations at age 7. The study predicted that, as with older children, gender and ethnicity would be key determinants of these three ways of classifying young children's aspirations. The study also expected lower family SES to be related directly to lower aspirations and indirectly via less parental involvement in home based learning and lower cognitive ability. Easy infant temperament would be related directly (and indirectly, via parental involvement in home-based learning and cognitive ability) to high, intrinsic and feminine aspirations. Parental involvement in home-based learning would be related to school engagement and high aspirations. Cognitive ability and school engagement would be associated with high, intrinsic and feminine aspirations. In line with findings from studies on adolescents, aspirations were expected to be higher in girls and ethnic minority children, girls to be more likely than boys to have intrinsic aspirations, and both boys and girls to show preference for gender-typical occupations.

The second aim was to explore these pathways to aspirations, classified by their realism and the children's maturity. The study expected that young children who had occupational aspirations would have an easier temperament compared to children who, instead, had non-occupational aspirations - including fantasy or descriptive (e.g., 'tall', 'big') - or uncertain

aspirations. Magical thinking may be an escape from the stresses of everyday life (Nuttin & Lens, 1985), and seven-year-olds who express a fantasy or a descriptive aspiration may be falling behind developmentally. It was therefore expected that these children had lower cognitive ability, more difficult temperament and less attachment to school. It was also expected that aspirations for rare as opposed to common occupations, likely reflecting higher competence perceptions, would be related to both higher parental involvement in home-based learning and higher cognitive ability. Finally, in line with previous research, girls were expected to be less likely than boys to have fantasy aspirations and dreams for rare occupations.

5.2 Method

5.2.1 Participants

In this study, data from the first four sweeps of the MCS were used, with information from the main respondent (usually the mother), their partner and the child themselves. As discussed in chapter 3, in total 13,857 families took part at MCS4 (age 7 years), when aspirations were assessed. Data from singletons and only the first-born twin or triplet were used so there was only one cohort member per family. As most (92.5%) children, gave only one aspiration, this study focused on the first or only aspiration expressed. There were two analytic samples, one for each study aim. The analytic sample for the first aim (model 1) was 11,656 children whose first aspiration could be coded by occupational prestige, femininity/masculinity and intrinsic/extrinsic motivation. The analytic sample for the second aim (model 2) was the 12,275 children who gave an interpretable response to the aspiration question. For model 2, aspirations were grouped into five categories, non-rare occupations, rare occupations, and fantasy, descriptive or uncertain aspirations. In this study, children's aspirations were therefore coded using several classification systems.

5.2.2 Measures

In model 1, *Occupational aspirations* were classified, using the one-digit SOC2000 code from the Standard Occupational Classification 2000 into nine major groups, with 1 indicating the highest occupational status (Managers and Senior Officials) and 9 the lowest (Elementary Occupations)[27]. *Masculine/ feminine aspirations* were coded using the proportion of UK working-age women in that occupation (SOC2000) according to Quarter 2 (April-June) 2008 Labour Force Survey (LFS), around the time of MCS4 fieldwork. The following bandings were

[27] For comparison purposes children's occupational aspirations in Tables 5-2, 5-3, 5-5, 5-8 and 5-9 were grouped into high, medium and low occupational aspirations. Generally, the children's aspirations were very high (SOCs 1 to 3), therefore to illustrate differences in the children's aspirations by gender, ethnicity and social class, the classifications were as follows; high (SOC 1&2), medium (SOC 3) and low (SOC 4 to 9). Therefore, the categories reflect children's aspirations at age 7.

applied: “masculine” (<25% women), “integrated” (25% to 49.9% women), “feminine” (50% to 74.9% women), and “ultra-feminine” (>=75% women). Non-occupational future states were also allocated an appropriate gender category where possible (e.g., masculine for ‘Superman’). *Extrinsic/intrinsic aspirations* were coded into four categories: “extrinsic”, “extrinsic-intermediate”, ‘neutral’ or “intrinsic-intermediate”.

In model 2, children’s aspirations were grouped into five categories, non-rare occupations, rare occupations, and fantasy, descriptive or uncertain aspirations. ‘Rare’ occupations were answers such as ‘sports person’, ‘vet’, ‘pop star’ or ‘spy’. ‘Non-rare’ occupations were jobs such as ‘teacher’, ‘police’, ‘doctor’, ‘hairdresser’ or ‘builder’. ‘*Fantasy*’ aspirations were ‘magical’ and not achievable (such as ‘royalty’, ‘superhero’ or ‘fairy’). ‘*Descriptive*’ aspirations were responses reflecting states of mind (such as ‘happy’, ‘helpful’, ‘normal’, ‘good’) or future states (such as ‘an adult’, ‘tall’, ‘a man’, ‘a mum’). ‘*Uncertain*’ aspirations combined the ‘don’t know’ (n=597) and the few ‘nothing’ (n=22) responses.

Infant temperament was assessed at 9 months with fourteen items from the Carey Infant Temperament Scale (Carey & McDevitt 1978). The items measure three dimensions of the baby’s temperament, namely mood (measured with five items such as ‘is pleasant’), approachability/adaptability (measured with five items such as ‘is fretful in a new place’) and rhythmicity (measured with four items such as ‘gets milk feeds at about the same time’). Cronbach’s alpha was $\alpha = .55$, $\alpha = .67$, and $\alpha = .71$, respectively.

Family socio-economic status (SES) at age 9 months was measured using, for each parent, the highest academic qualification (in seven categories ranging from 1 ‘higher degree’ to 7 ‘no qualifications’) and social class (in seven categories of the National Statistics Socio-economic Classification (NS-SEC) ranging from 1 ‘Higher managerial, administration and professional occupations’ to 7 ‘routine occupations’).

Parental involvement in home-based learning was measured at age 5 with four items, for each of the main carer and their partner, on how frequently the parent engaged in the following with the child: doing musical activities; telling stories; drawing, painting or making things; and playing [$\alpha = 0.64$ (main carer), $\alpha = 0.65$ (partner)]. All items were on 6-point scales (1=‘never’ to 6=‘every day’).

Child’s cognitive ability was measured at age 5 with the second edition of the British Ability Scales of Naming Vocabulary, Pattern Construction, and Picture Similarities (Elliott et al., 1996). The Naming Vocabulary scale measures expressive language ability and knowledge of nouns. The Pattern Construction and Picture Similarities scales measure non-verbal ability, specifically spatial realisation and problem solving, respectively.

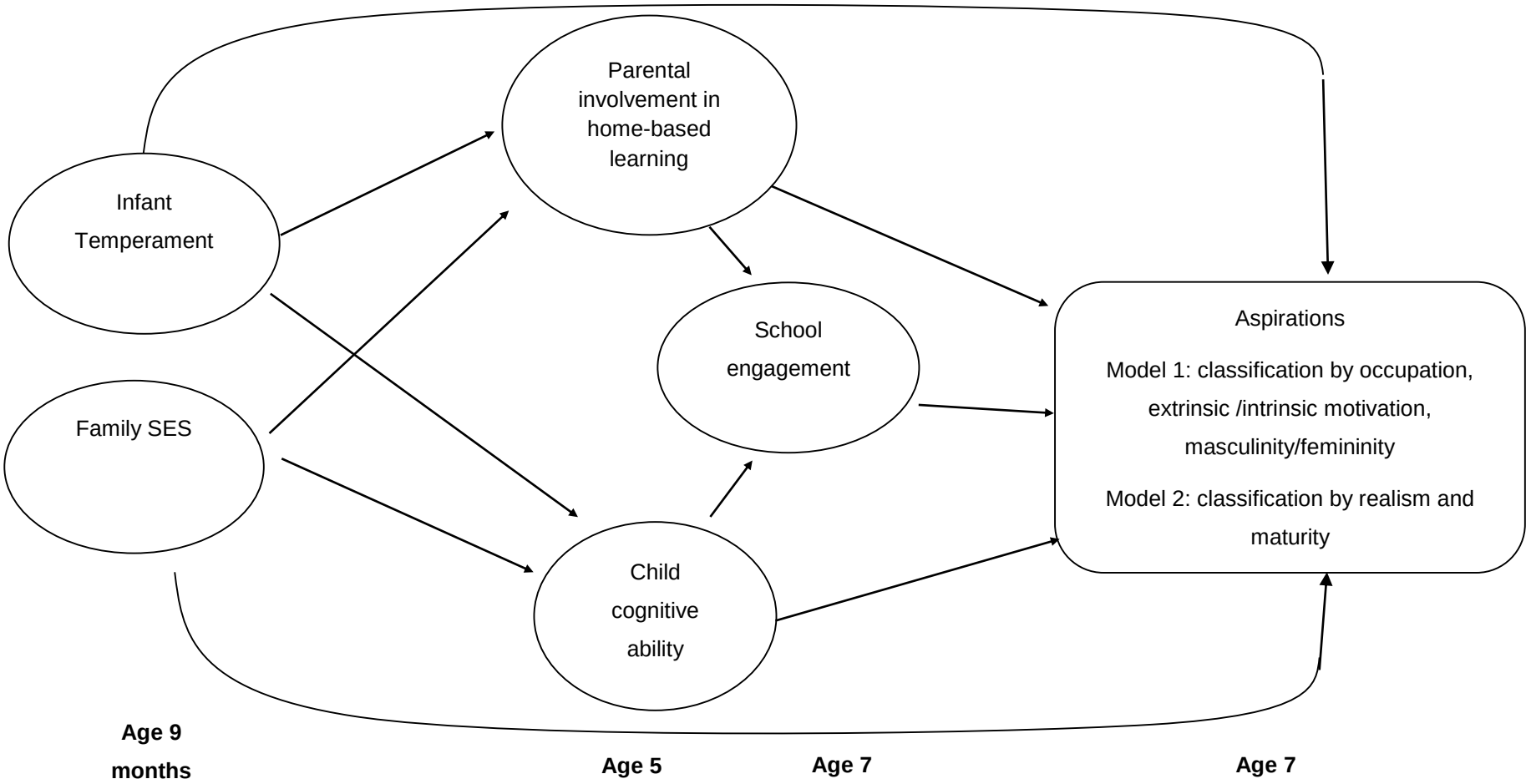
School engagement at age 7 was measured with seven items (α=.73) on a three-point scale. Items were taken from the same child questionnaire as the aspiration question and asked children how much they liked 'school', 'reading', 'number work', 'science' and 'answering questions in class', and how often they 'thought school was interesting' and 'got fed up at school'.

Control factors were the child-level variables of gender, birth order, ethnicity and exact age at Sweep 4. Ethnicity was grouped into six categories: white, Indian, Pakistani/Bangladeshi, black, mixed, and other.

5.2.3 Analytic approach and hypothesised model

Both datasets tested whether families and their children in the analytic sample (Model 1: n = 11,656; Model 2: n = 12,275) differed from those families and children not in it (Model 1: n = 2,201; Model 2: n = 1,582) on the covariates. Then, any differences in aspirations by gender, ethnicity and the mother's and her partner's social class and education were examined, before assessing correlations among the primary variables for each of the samples in the study. Structural equation models (SEMs) were then fitted in Mplus 7.3 (Muthen & Muthen, 1998-2012). The hypothesised model is shown in Figure 5-1. Two models were fitted, the first (model 1) on children's occupational, masculine/feminine and intrinsic/extrinsic aspirations, and the second (model 2) on aspirations classified by realism and maturity. For comparison purposes the two models were identical with the exception of the operationalisation of the response variables (aspirations) and the resulting sample size. Infant temperament, SES, parental involvement in home-based learning and school engagement were latent constructs loading on their scale items. In both models, covariances were specified for parental involvement in home-based learning and child cognitive ability (also latent), and for aspirations in model 1. Infant temperament, parental involvement in home-based learning, child cognitive ability, school engagement and aspirations were controlled for gender and ethnicity. Also, parental involvement in home-based learning and child cognitive ability were adjusted for birth order, and aspirations for age.

Figure 5-1: Hypothesised SEM predicting aspirations[28]



Covariances specified for parental involvement in home-based learning and child cognitive ability at age 5, and aspiration classifications at age 7 in model 1.The use of arrows in the pathway diagrams used in Structural Equation Modelling (SEM) visually implies causality. Causal inference cannot be made as the research is not experimental and the pathways from school engagement to aspirations are cross-sectional i.e. are not temporal.

In model 1, the response variables were treated as continuous. In model 2, the aspiration taxonomy was an unordered categorical variable, with non-rare occupational aspirations as reference. As a multinomial logistic regression was used in model 2, for comparison purposes, unstandardized regression coefficients are reported in both models. Standardised regression coefficients are given where appropriate. For both models, the estimator was maximum likelihood with robust standard errors (MLR) using a numerical integration algorithm. Maximum likelihood allows missingness to be a function of the observed covariates and outcomes and is robust to non-normality and non-independence of observations when used with TYPE=COMPLEX in Mplus. The COMPLEX command along with the stratification, cluster and weight options were used to take account of disproportionate, and stratified clustering in the MCS sample design. In model 1, several measures of goodness of fit of the model to the data were used (i.e., the χ^2 statistic, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI) and the Tucker Lewis Index (TLI)). In order to conduct multi-group analysis by gender, measurement invariance was tested for each of the main instruments. However, the latent constructs were not equivalent across gender (see Appendix III). Although, in this study multi-group analysis was conducted in model 1 along all the direct pathways to children's aspirations, results should be viewed with extreme caution. Any differences in gender identified could be as a result of gender difference or as a result of differences in the measurement of the latent constructs for boys and girls (Byrne, 2012a). Multi-group differences were conducted using the MODEL TEST command which tests linear restrictions on the parameters in the model using the Wald chi-square test.

5.3 Results

5.3.1 Descriptives and correlations

5.3.1.1 Analytic sample

In both datasets, compared to the excluded cases, the analytic sample comprised more girls and children from white backgrounds as well as children with higher cognitive ability and more school engagement, and parents with higher qualifications and social class (Appendix IV and V).

5.3.1.2 Gender

Tables 5-1 and 5-2 show the aspiration categories by gender. Overall, for most children (91.2%) the first reported aspiration was occupational. The most popular aspirations for boys were sports player, police officer, fireman and scientist, and for girls teacher, vet, hairdresser and singer/entertainer. As expected, children aspired to gender-typical occupations; 71.7% of boys' occupational aspirations were masculine (e.g. builder, train driver, police officer, fireman), while

62.8% of girls' were feminine (e.g. fashion designer, teacher, vet) or ultra-feminine (e.g. beautician, hairdresser, nurse). Similarly, girls were more likely to have intrinsic (e.g. to care for people and animals) than extrinsic (e.g. fame, wealth and image) aspirations, while boys favoured extrinsic over intrinsic aspirations. Occupational aspirations tended to be high with 31.2% of children aspiring to managerial and professional jobs. As found in studies with older children, girls had higher occupational aspirations than boys. A large proportion (35.6%) aspired to rare occupations, and very few (1.2%) children gave fantasy (e.g. fairy, superhero, TV character) aspirations. Boys were more likely to aspire to rare occupations (e.g., sports person, astronaut, and spy) and girls to non-rare occupations (e.g., teacher, doctor, and hairdresser).

Table 5-1: Percentage of children's aspired occupations (weighted data) by gender

Aspired occupation	**Total** (n=11,220) % [95% CI]	**Boys** (n=5,538) % [95% CI]	**Girls** (n=5,682) % [95% CI]
Sports player [3411][29]	18.7 [17.7-19.7]	32.7 [31.1-34.3]	4.8 [4.1-5.5]
Teacher [2310]	12.5 [11.7-13.3]	3.0 [2.5-3.6]	21.9 [20.5-23.3]
Police officer [3312]	7.5 [7.0-8.1]	12.0 [11.0-13.1]	3.1 [2.6-3.7]
Vet [2216]	6.7 [6.2-7.2]	1.5 [1.2-1.8]	11.8 [10.9-12.8]
Actor/singer/entertainer [3413]	5.8 [5.3-6.4]	3.4 [2.9-4.0]	8.3 [7.5-9.1]
Hairdresser [6221]	4.5 [4.1-5.0]	0.1 [0.0-0.2]	8.9 [8.1-9.8]
Doctor [2211]	4.1 [3.6-4.6]	2.3 [1.9-2.8]	5.8 [5.0-6.8]
Artist [3411]	4.0 [3.6-4.6]	2.3 [1.9-2.8]	5.8 [5.0-6.7]
Animal carer [6139]	3.1 [2.7-3.5]	2.1 [1.7-2.6]	4.0 [3.5-4.7]
Scientist [2110]	2.8 [2.4-3.2]	4.4 [3.8-5.1]	1.2 [0.9-1.6]
Fire services [3313]	2.5 [2.2-2.8]	4.4 [3.9-5.1]	0.5 [0.4-0.8]
Nurse [3211]	1.8 [1.6-2.2]	0.1 [0.0-0.2]	3.6 [3.1-4.2]
Dancer [3414]	1.7 [1.5-2.0]	0.2 [0.1-0.4]	3.3 [2.8-3.8]
Builder [5319]	1.7 [1.5-2.0]	3.4 [2.9-4.0]	0.1 [0.0-0.2]
Armed forces [3311]	1.4 [1.2-1.7]	2.8 [2.3-3.4]	0.0 [0.0-0.2]
Other occupations	21.1 [20.2-22.1]	25.5 [24.1-26.9]	16.8 [15.8-17.9]

[29] Major Group Standard Occupational Classification 2000 (SOC2000)

Table 5-2: Percentage of children's aspirations (weighted data) by gender

Aspiration assignment by	Total % [95% CI]	Boys % [95% CI]	Girls % [95% CI]
Occupational aspiration	(n=11,220)	(n=5,538)	(n=5,682)
High [SOC 1&2][30]	31.2 [29.9-32.5]	17.9 [16.6-19.3]	44.4 [42.6-46.2]
Medium [SOC 3]	48.9 [47.7-50.2]	63.7 [62.2-65.2]	34.2 [32.6-36.0]
Low [SOC 4 – 9]	19.9 [18.8-21.0]	18.4 [17.0-19.8]	21.4 [19.9-22.9]
Extrinsic/intrinsic	(n=11,656)	(n=5,760)	(n=5,896)
Extrinsic	5.2 [4.7-5.7]	4.8 [4.2-5.4]	5.6 [4.9-6.3]
Extrinsic-intermediate	24.0 [23.0-25.0]	29.4 [27.9-30.8]	18.6 [17.5-19.8]
Neutral	41.0 [39.9-42.1]	55.8 [54.2-57.5]	26.1 [24.8-27.5]
Intrinsic-intermediate	29.9 [28.8-31.1]	10.1 [9.2-11.0]	49.7 [48.1-51.4]
Masculinity/femininity	(n=11,501)	(n=5,663)	(n=5,838)
Masculine	39.8 [38.6-40.9]	71.7 [70.0-73.2]	8.2 [7.4-9.0]
Integrated	23.5 [22.5-24.5]	17.8 [16.6-19.1]	29.1 [27.6-30.6]
Feminine	23.3 [22.4-24.3]	7.9 [7.0-8.8]	38.7 [37.2-40.2]
Ultra-feminine	13.4 [12.6-14.3]	2.6 [2.2-3.2]	24.1 22.7-25.6]
Maturity and realism	(n=12,275)	(n=6,105)	(n=6,170)
Non-rare occupation	55.6 [54.3-56.9]	48.0 [46.3-49.6]	63.3 [61.7-64.9]
Rare occupation	35.6 [34.4-36.9]	42.6 [40.8-44.3]	28.6 [27.2-30.1]
Fantasy	1.2 [1.0-1.4]	1.4 [1.1-1.8]	0.9 [0.7-1.3]
Descriptive	2.4 [2.1-2.7]	2.3 [1.9-2.7]	2.6 [2.1-3.0]
Uncertain	5.2 [4.7-5.8]	5.8 [5.1-6.6]	4.6 [3.9-5.3]

5.3.1.3 Ethnicity

Table 5-3 shows the aspiration categories by ethnicity. Children from Indian, Pakistani/Bangladeshi and other ethnic minority backgrounds had higher occupational aspirations than children from white and mixed ethnic backgrounds. White children had the highest proportion of low occupational aspirations. Children from Indian and Pakistani/Bangladeshi backgrounds were more likely than those from white backgrounds to

[30] One-digit SOC2000 code

aspire to integrated jobs (e.g. doctors – see Appendix VI) and be certain of what they would like to be when they grow up.

Table 5-3: Percentage of children's aspirations (weighted data) by ethnicity

Aspiration assignment by	Total % [95% CI]	White % [95% CI]	Mixed % [95% CI]	Indian % [95% CI]	Pakistani/ Bangladeshi % [95% CI]	Black % [95% CI]	Other % [95% CI]
Occupational aspiration	(n=11,214)	(n=9,455)	(n=297)	(n=292)	(n=659)	(n=362)	(n=149)
High [SOC 1&2]	31.2 [29.9-32.5]	29.2 [28.0-30.3]	34.7 [28.3-41.6]	41.3 [36.0-46.9]	55.3 [48.8-61.6]	35.9 [30.0-42.3]	49.8 [41.4-58.2]
Medium [SOC 3]	48.9 [47.7-50.2]	49.6 [48.4-50.9]	51.2 [44.4-57.9]	50.1 [43.2-57.0]	32.2 [26.7-38.2]	52.4 [46.4-58.3]	42.9 [34.6-51.5]
Low [SOC 4-9]	19.9 [18.8-20.9]	21.2 [20.1-22.4]	14.2 [10.1-19.5]	8.5 [5.6-12.8]	12.5 [10.0-15.5]	11.6 [8.5-15.7]	7.4 [3.4-15.3]
Extrinsic/intrinsic	(n=11,650)	(n=9,815)	(n=309)	(n=301)	(n=691)	(n=379)	(n=155)
Extrinsic	5.2 [4.7-5.7]	5.2 [4.7-5.8]	7.3 [4.2-12.3]	2.0 [0.9-4.2]	3.7 [2.3-5.9]	5.7 [3.5-9.2]	2.3 [0.7-6.9]
Extrinsic-intermediate	24.0 [23.0-25.0]	24.5 [23.4-25.7]	23.3 [18.9-28.3]	25.6 [19.9-32.3]	12.7 [9.6-16.5]	29.5 [24.2-35.3]	13.3 [9.2-19.0]
Neutral	41.0 [39.9-42.0]	41.6 [40.4-42.9]	40.5 [35.0-46.2]	39.4 [32.6-46.6]	36.3 [32.2-40.5]	30.5 [25.6-36.0]	42.0 [31.9-52.7]
Intrinsic-intermediate	29.9 [28.8-31.1]	28.6 [27.6-29.7]	29.0 [23.6-35.1]	33.0 [27.9-38.6]	47.3 [41.8-53.0]	34.3 [28.2-41.0]	42.4 [33.6-51.9]
Masculinity/femininity (boys)	(n=5,660)	(n=4,792)	(n=136)	(n=150)	(n=308)	(n=199)	(n=75)
Masculine	71.7 [70.0-73.2]	72.9 [71.2-74.5]	70.5 [61.1-78.4]	66.3 [57.9-73.8]	58.4 [50.9-65.5]	63.7 [54.6-72.0]	63.0 [48.-75.7]
Integrated	17.8 [16.6-19.1]	16.6 [15.4-17.9]	21.4 [14.4-30.6]	28.8 [21.7-37.2]	31.1 [23.7-39.6]	21.1 [16.2-26.9]	25.7 [15.8-39.0]
Feminine	7.9 [7.0-8.8]	7.6 [6.8-8.5]	7.5 [3.7-14.5]	3.8 [1.9-7.2]	10.0 [7.0-14.2]	14.3 [7.0-26.9]	9.7 [2.7-29.8]
Ultra-feminine	2.6 [2.2-3.2]	2.9 [2.4-3.5]	0.6 [0.1-4.0]	1.1 [0.2-5.0]	0.5 [0.1-1.7]	0.9 [0.3-3.0]	1.6 [0.4-6.0]
Masculinity/femininity (girls)	(n=5,835)	(n=4,901)	(n=165)	(n=150)	(n=368)	(n=174)	(n=77)
Masculine	8.2 [7.3-9.0]	8.2 [7.4-9.1]	12.3 [7.4-19.9]	2.4 [1.0-5.3]	4.7 [2.6-8.5]	8.5 [4.2-16.4]	13.6 [6.1-27.6]
Integrated	29.1 [27.6-30.6]	27.1 [25.6-28.7]	35.4 [26.8-45.0]	49.2 [39.5-59.0]	40.3 [33.3-47.7]	38.5 [29.7-48.1]	48.3 [37.3-59.5]
Feminine	38.7 [37.2-40.2]	38.8 [37.2-40.4]	36.8 [28.7-45.6]	35.6 [26.7-45.6]	40.9 [34.2-47.9]	37.5 [29.8-45.9]	34.9 [26.1-45.0]
Ultra-feminine	24.1 [22.7-25.6]	25.9 [24.4-27.4]	15.5 [10.1-23.2]	12.8 [7.7-20.5]	14.1 [10.0-19.6]	15.4 [10.4-22.4]	3.1 [1.2-8.0]
Maturity and realism	(n=12,269)	(n=10,369)	(n=329)	(n=308)	(n=714)	(n=391)	(n=158)
Non-rare occupation	55.6 [54.3-56.9]	54.3 [52.9-55.7]	49.6 [43.8-55.4]	63.8 [57.0-70.1]	75.9 [71.7-79.7]	58.3 [50.8-65.5]	70.5 [61.4-78.2]
Rare occupation	35.6 [34.4-36.9]	36.7 [35.3-38.0]	40.9 [35.4-46.7]	31.9 [26.1-38.4]	17.0 [13.5-21.1]	35.3 [28.7-42.4]	22.1 [16.7-28.8]
Fantasy	1.2 [1.0-1.4]	1.2 [1.0-1.4]	0.7 [0.1-3.3]	0.5 [0.2-1.5]	1.6 [0.7-3.4]	0.4 [0.1-1.3]	1.6 [0.4-6.0]
Descriptive	2.4 [2.1-2.7]	2.4 [2.1-2.7]	3.3 [1.6-6.7]	2.0 [0.8-4.7]	2.7 [1.6-4.6]	2.5 [1.5-4.0]	2.4 [0.7-7.7]
Uncertain	5.2 [4.7-5.8]	5.5 [4.9-6.1]	5.5 [3.3-9.0]	1.7 [0.7-4.2]	2.8 [1.7-4.5]	3.6 [2.1-6.0]	3.3 [0.8-12.9]

5.3.1.4 Parent's social class (NS-SEC)

Table 5-4 and 5-5 show the aspiration categories split by the mother's and partner's social class (NS-SEC). There were social class differences by the child's specific job aspirations (mother's NS-SEC: $\chi^2(24.3) = 161.97$, p = <.001; partner's NS-SEC: $\chi^2(24.8) = 168.86$, p = <.001). A higher proportion of children aspiring to be police officers or hairdressers had mothers and her partner in the routine and elementary class compared to the managerial and professional classes. In contrast, a higher proportion of children with a mother and her partner in the managerial and professional classes aspired to be an artist or scientist compared to children with mothers or her partner in the routine and elementary class.

Table 5-4: Percentage of children's aspired occupations (weighted data) by social class

	Mother's NS-SEC				Partner's NS-SEC			
Aspiration category	**Total % (n=9,810)**	**Managerial and professional % (n=3,228)**	**Intermediate % (n=2,302)**	**Routine and elementary % (n=4,280)**	**Total % (n=8,207)**	**Managerial and professional % (n=3,364)**	**Intermediate % (n=1,476)**	**Routine and elementary % (n=3,367)**
Sports player	18.8 [17.8-19.8]	19.2 [17.7-20.8]	18.7 [17.0-20.4]	18.5 [17.0-20.1]	18.9 [17.9-20.0]	20.3 [18.9-21.7]	19.3 [16.9-21.9]	17.3 [15.8-19.0]
Teacher	12.1 [11.3-12.9]	12.2 [10.9-13.6]	11.4 [9.9-13.2]	12.3 [11.3-13.5]	12.2 [11.2-13.1]	11.3 [10.1-12.6]	12.0 [10.3-13.9]	13.2 [11.8-14.7]
Police officer	7.3 [6.7-7.9]	4.9 [4.1-5.9]	7.0 [5.9-8.2]	9.2 [8.2-10.3]	6.8 [6.2-7.5]	4.8 [4.1-5.8]	6.9 [5.6-8.4]	9.0 [8.0-10.1]
Vet	6.9 [6.4-7.6]	7.5 [6.5-8.7]	7.5 [6.2-9.0]	6.2 [5.4-7.1]	6.9 [6.2-7.6]	7.4 [6.5-8.5]	6.8 [5.3-8.6]	6.3 [5.5-7.3]
Actor, singer, entertainer	6.1 [5.5-6.7]	6.6 [5.6-7.7]	6.1 [5.1-7.3]	5.7 [4.8-6.6]	6.1 [5.5-6.7]	6.5 [5.6-7.6]	7.4 [5.8-9.3]	5.0 [4.2-5.9]
Hairdresser	4.8 [4.3-5.3]	3.8 [3.2-4.6]	5.0 [4.0-6.1]	5.4 [4.7-6.2]	4.3 [3.9-4.9]	3.6 [2.9-4.3]	4.4 [3.4-5.7]	5.2 [4.4-6.0]
Doctor	3.2 [2.8-3.7]	2.7 [2.1-3.4]	3.3 [2.5-4.2]	3.6 [3.0-4.3]	3.5 [3.1-4.1]	2.9 [2.3-3.7]	4.1 [3.0-5.5]	3.9 [3.2-4.9]
Artist	4.2 [3.7-4.8]	5.6 [4.8-6.7]	3.9 [2.9-5.4]	3.3 [2.8-4.0]	4.1 [3.6-4.7]	5.4 [4.5-6.5]	3.1 [2.3-4.2]	3.2 [2.6-3.9]
Animal carer	3.2 [2.8-3.6]	3.8 [3.1-4.7]	3.0 [2.3-3.9]	2.8 [2.3-3.5]	3.2 [2.8-3.7]	4.1 [3.3-5.0]	2.3 [1.6-3.4]	2.7 [2.1-3.4]
Scientist	2.9 [2.6-3.3]	4.4 [3.6-5.2]	3.3 [2.6-4.2]	1.7 [1.3-2.2]	3.1 [2.7-3.6]	3.9 [3.2-4.6]	3.2 [2.2-4.6]	2.2 [1.7-2.8]
Fire services	2.5 [2.2-2.9]	2.0 [1.5-2.6]	2.2 [1.6-3.0]	3.1 [2.5-3.7]	2.3 [2.0-2.8]	1.8 [1.3-2.4]	2.3 [1.6-3.3]	3.0 [2.4-3.7]
Nurse	1.8 [1.5-2.1]	1.4 [1.0-2.0]	1.8 [1.3-2.5]	2.0 [1.6-2.6]	1.7 [1.4-2.1]	1.2 [0.9-1.7]	1.7 [1.2-2.6]	2.3 [1.7-3.0]
Dancer	1.8 [1.5-2.1]	1.7 [1.2-2.3]	2.0 [1.4-2.8]	1.8 [1.4-2.3]	1.8 [1.5-2.1]	1.6 {1.2-2.2]	1.5 [1.0-2.5]	2.0 [1.5-2.7]
Builder	1.8 [1.5-2.1]	1.6 [1.2-2.2]	2.0 [1.4-2.7]	1.8 [1.4-2.4]	1.8 [1.5-2.1]	1.6 [1.2-2.1]	1.8 [1.2-2.6]	2.0 [1.5-2.7]
Armed forces	1.4 [1.2-1.7]	1.4 [1.0-1.9]	1.2 [0.8-1.8]	1.5 [1.1-2.1]	1.4 [1.1-1.7]	1.2 [0.9-1.7]	1.4 [0.9-2.3]	1.5 [1.1-2.1]
Other occupation	21.1 [20.2-22.2]	21.2 [19.4-23.1]	21.6 [19.9-23.5]	21.0 [19.4-22.6]	21.9 [20.7-23.0]	22.5 [20.7-24.4]	21.8 [19.5-24.3]	21.2 [19.6-22.9]

A higher proportion of children with mothers in the routine and elementary classes (18.1%, 95% CI: 16.4, 19.9) had low occupational aspirations, compared to children with mothers in the managerial and professional classes (21.9%, 95% CI: 20.4, 23.6). There were also mother and partner class differences in the masculinity and femininity of the child's aspirations. Masculine aspirations were more popular for boys with parents in the routine and elementary class, compared to the managerial and professional class. A high proportion of girls had ultra-feminine aspirations if their mother was in the routine and elementary than managerial and professional classes. Neither the mother ($\chi^2(5.8) = 2.56$, $p = .926$) or her partner's ($\chi^2(5.8) = 7.12$, $p = .501$) NS-SEC determined the extrinsic/intrinsic motivation of the child's aspiration. However, a higher proportion of children with mothers and their partners in the managerial and professional class had rare occupational aspirations, compared to children with a parent in the routine and elementary classes.

Table 5-5: Percentage of children's aspirations (weighted data) by social class

	Mother's NS_SEC				Partner's NS-SEC			
Aspiration assignment by	Total %	Managerial and professional %	Intermediate %	Routine and elementary %	Total %	Managerial and professional %	Intermediate %	Routine and elementary %
Occupational aspiration	(n=9,810)	(n=3,228)	(n=2,302)	(n=4,280)	(n=8,207)	(n=3,364)	(n=1,476)	(n=3,367)
High [SOC 1&2]	30.2 [29.0-31.4]	32.1 [30.2-34.2]	30.2 [27.9-32.6]	28.8 [27.1-30.6]	31.2 [29.8-32.6]	32.1 [30.3-34.0]	30.9 [27.9-34.1]	30.4 [28.2-32.6]
Medium [SOC 3]	49.4 [48.2-50.6]	49.8 [47.5-52.0]	49.2 [46.9-51.5]	49.2 [47.5-50.9]	49.0 [47.6-50.4]	49.6 [47.5-51.7]	50.3 [47.0-53.6]	47.8 [45.9-49.8]
Low [SOC 4-9]	20.4 [19.3-21.6]	18.1 [16.4-19.9]	20.6 [18.7-22.5]	21.9 [20.4-23.6]	19.8 [18.6-21.0]	18.3 [16.6-20.1]	18.8 [16.3-21.5]	21.8 [20.1-23.7]
Extrinsic/intrinsic	(n=10,169)	(n=3,344)	(n=2,373)	(n=4,452)	(n=8,505)	(n=3,484)	(n=1,525)	(n=3,496)
Extrinsic	5.1 [4.6-5.7]	5.2 [4.4-6.2]	5.4 [4.5-6.5]	4.9 [4.2-5.8]	5.1 [4.5-5.6]	5.5 [4.7-6.5]	5.3 [4.1-6.8]	4.5 [3.8-5.3]
Extrinsic-intermediate	24.4 [23.4-25.5]	23.6 [21.9-25.4]	24.7 [22.8-26.7]	24.9 [23.3-26.5]	24.3 [23.2-25.5]	24.3 [22.7-26.0]	24.4 [21.8-27.2]	24.3 [22.6-26.0]
Neutral	41.4 [40.2-42.5]	41.6 [39.8-43.4]	41.1 [38.7-43.5]	41.3 [39.4-43.2]	41.2 [40.0-42.5]	41.3 [39.4-43.1]	42.2 [39.4-45.0]	40.8 [38.8-42.7]
Intrinsic-intermediate	29.1 [28.0-30.2]	29.6 [27.9-31.3]	28.8 [26.6-31.1]	28.9 [27.2-30.6]	29.4 [28.1-30.7]	28.9 [27.1-30.7]	28.2 [25.4-31.1]	30.5 [28.6-32.5]
Masculinity/femininity (Boys only)	(n=4,950)	(n=1,617)	(n=1,165)	(n=2,168)	(n=4,150)	(n=1,731)	(n=734)	(n=1,685)
Masculine	72.1 [70.4-73.7]	68.3 [65.6-70.8]	72.1 [68.6-75.3]	74.6 [72.3-76.9]	71.3 [69.6-72.9]	66.6 [64.1-69.1]	74.4 [70.3-78.1]	75.2 [72.9-77.4]
Integrated	17.5 [16.3-18.8]	20.0 [17.7-22.4]	16.7 [14.4-19.3]	16.2 [14.4-18.2]	18.1 [16.9-19.5]	20.7 [18.6-22.9]	18.5 [15.5-22.0]	15.1 [13.4-17.0]
Feminine	7.8 [6.9-8.8]	8.4 [7.1-10.0]	8.8 [6.5-11.8]	6.9 [5.8-8.2]	7.7 [6.8-8.8]	8.7 [7.4-10.2]	6.2 [4.3-8.9]	7.3 [6.0-8.8]
Ultra- feminine	2.6 [2.2-3.2]	3.3 [2.5-4.4]	2.4 [1.6-3.7]	2.2 [1.5-3.2]	2.8 [2.3-3.5]	4.0 [3.1-5.2]	0.9 [0.4-1.9]	2.4 [1.6-3.5]

	Mother's NS_SEC				Partner's NS-SEC			
Masculinity/femininity (Girls only)	(n=5,094)	(n=1,692)	(n=1,184)	(n=2,218)	(n=4,254)	(n=1,715)	(n=770)	(n=1,769)
Masculine	7.9 [7.1-8.8]	7.8 [6.4-9.4]	8.6 [6.9-10.7]	7.7 [6.6-9.0]	7.9 [7.1-8.8]	7.3 [6.0-8.8]	9.7 [7.5-12.4]	7.7 [6.4-9.4]
Integrated	28.6 [27.1-30.2]	30.1 [27.6-32.8]	29.2 [25.8-32.8]	27.2 [25.0-29.4]	29.5 [27.7-31.4]	31.4 [28.9-34.0]	29.7 [25.5-34.1]	27.4 [25.1-30.0]
Feminine	38.4 [36.8-40.1]	40.3 [37.6-43.0]	37.5 [34.5-40.7]	37.6 [35.1-40.1]	38.7 [36.9-40.6]	38.8 [36.3-41.4]	38.3 [34.1-42.8]	38.9 [36.0-41.8]
Ultra- feminine	25.0 [23.5-26.6]	21.8 [19.8-24.1]	24.7 [22.2-27.3]	27.5 [25.3-29.9]	23.8 [22.2-25.6]	22.5 [20.2-25.1]	22.3 [19.1-25.9]	25.9 [23.5-28.6]
Maturity and realism	(n=10,732)	(n=3,558)	(n=2,505)	(n=4,669)	(n=8,978)	(n=3,677)	(n=1,627)	(n=3,674)
Non-rare occupation	54.8 [53.4-56.1]	52.6 [50.5-54.8]	54.8 [52.3-57.2]	56.3 [54.5-58.1]	54.9 [53.4-56.3]	52.5 [50.5-54.6]	53.7 [50.9-56.5]	57.9 [55.9-59.9]
Rare occupation	36.4 [35.2-37.7]	38.3 [36.3-40.3]	37.5 [35.2-39.9]	34.5 [32.9-36.2]	36.5 [35.1-38.0]	39.2 [37.2-41.3]	36.9 [34.1-39.9]	33.4 [31.6-35.3]
Fantasy	1.1 [0.9-1.3]	1.3 [0.9-1.7]	0.7 [0.5-1.1]	1.2 [0.9-1.6]	1.1 [0.9-1.3]	1.3 [1.0-1.8]	0.8 [0.4-1.5]	1.0 [0.7-1.4]
Descriptive	2.3 [2.0-2.6]	1.9 [1.4-2.4]	2.0 [1.4-2.7]	2.8 [2.2-3.4]	2.2 [1.9-2.6]	1.9 [1.4-2.5]	2.5 [1.8-3.5]	2.5 [1.9-3.2]
Uncertain	5.4 [4.9-6.1]	6.0 [5.1-6.9]	5.0 [4.1-6.2]	5.2 [4.5-6.2]	5.3 [4.7-6.0]	5.1 [4.3-5.9]	6.0 [4.7-7.7]	5.2 [4.4-6.3]

5.3.1.5 Parent's education

Table 5-6 and 5-7 show the aspiration categories split by the mother's and partner's education. The differences in children's aspirations by parent's education are reflective of the differences in the parent's NS-SEC, as shown in Appendix VII & VIII. A higher proportion of children with less educated parents aspired to be police officers and hairdressers, while children of more educated parents liked to be artists and scientists. A higher percentage of boys with parents educated to at least degree level were more likely than boys with less educated parents to aspire to integrated occupations and less likely to aspire to masculine aspirations. However, this pattern did not apply to girls.

Table 5-6: Percentage of children's aspirations (weighted data) by mother's education

Aspiration assignment by	Total %	Degree +	A level's	5 GCSE	GCSE	Other	None
Occupational aspiration	(n=10,806)	(n=1,982)	(n=2,054)	(n=3,717)	(n=1,067)	(n=268)	(n=1,718)
High [SOC 1&2]	31.2 [29.9-32.5]	35.4 [33.2-37.7]	31.5 [29.4-33.8]	28.8 [27.0-30.6]	28.3 [25.1-31.8]	38.5 [31.7-45.9]	32.3 [28.7-36.2]
Medium [SOC 3]	48.8 [47.5-50.0]	48.2 [45.8-50.7]	50.0 [47.6-52.4]	48.9 [47.1-50.7]	49.5 [45.8-53.3]	47.6 [39.9-55.4]	47.1 [43.7-50.6]
Low [SOC 4-9]	20.1 [19.0-21.2]	16.4 [14.4-18.5]	18.5 [16.7-20.4]	22.3 [20.7-24.0]	22.1 [19.1-25.5]	13.9 [9.6-19.7]	20.5 [18.1-23.2]
Extrinsic/intrinsic	(n=11,220)	(n=2,056)	(n=2,136)	(n=3,835)	(n=1,116)	(n=280)	(n=1,797)
Extrinsic	5.1 [4.6-5.6]	5.4 [4.4-6.5]	5.7 [4.7-6.9]	5.1 [4.4-5.9]	3.8 [2.6-5.4]	2.9 [1.3-6.1]	5.1 [3.9-6.6]
Extrinsic-intermediate	24.0 [23.0-25.1]	21.0 [19.1-23.1]	25.2 [22.9-27.6]	26.0 [24.4-27.7]	22.7 [19.9-15.8]	21.6 [15.4-29.4]	22.7 [20.1-25.6]
Neutral	41.1 [40.0-42.2]	43.4 [41.0-45.9]	39.9 [37.7-42.1]	39.8 [38.0-41.7]	44.0 [40.5-47.5]	44.5 [37.7-51.6]	40.5 [37.7-43.4]
Intrinsic- intermediate	29.8 [28.7-31.0]	30.2 [28.1-32.4]	29.2 [27.0-31.5]	29.1 [27.5-30.8]	29.5 [26.7-32.5]	31.0 [24.6-38.2]	31.6 [28.4-35.1]
Masculinity/femininity (Boys only)	(n=5,438)	(n=984)	(n=1,045)	(n=1,877)	(n=556)	(n=130)	(n=846)
Masculine	71.9 [70.3-73.5]	63.2 [59.8-66.5]	70.3 [67.3-73.2]	73.7 [71.2-76.0]	78.0 [73.9-81.7]	68.5 [59.6-76.1]	75.0 [70.9-78.8]
Integrated	17.7 [16.5-19.0]	23.8 [20.9-26.9]	20.5 [17.9-23.2]	15.7 [14.0-17.6]	11.6 [8.9-14.9]	24.2 [17.3-32.7]	15.9 [13.1-19.2]
Feminine	7.9 [7.0-8.9]	10.2 [8.4-12.3]	6.9 [5.3-8.8]	7.6 [6.3-9.3]	7.3 [5.0-10.4]	5.4 [2.6-10.8]	8.0 [5.7-11.2]
Ultra- feminine	2.5 [2.1-3.0]	2.8 [1.9-4.2]	2.3 [1.5-3.6]	3.0 [2.2-4.1]	3.1 [1.8-5.4]	2.0 [0.5-7.9]	1.0 [[0.5-2.1]

Aspiration assignment by	Total %	Degree +	A level's	5 GCSE	GCSE	Other	None
Masculinity/femininity (Girls only)	(n=5,636)	(n=1,049)	(n=1,060)	(n=1,918)	(n=544)	(n=144)	(n=921)
Masculine	8.0 [7.2-8.8]	7.7 [6.0-9.8]	7.8 [6.0-10.0]	7.7 [6.4-9.2]	9.9 [7.1-13.5]	5.8 [3.0-11.0]	8.1 [6.2-10.5]
Integrated	29.0 [27.5-30.5]	31.1 [28.1-34.3]	28.9 [25.7-32.2]	27.0 [24.8-29.2]	24.5 [20.3-29.2]	42.1 [33.6-51.0]	32.1 [28.8-35.7]
Feminine	38.5 [36.9-40.0]	41.0 [37.7-44.3]	39.6 [36.5-42.8]	38.4 [35.8-41.1]	38.6 [34.3-43.0]	36.4 [29.0-44.5]	34.9 [30.8-39.1]
Ultra-feminine	24.6 [23.1-26.2]	20.2 [17.6-23.0]	23.7 [20.8-26.9]	26.9 [24.6-29.3]	27.1 [23.1-31.5]	15.7 [9.8-24.4]	24.9 [21.4-28.7]
Maturity and realism	(n=11,823)	(n=2,198)	(n=2,273)	(n=4,012)	(n=1,179)	(n=290)	(1,871)
Non-rare occupation	55.5 [54.2-56.9]	52.8 [50.3-55.3]	52.7 [50.0-55.4]	54.8 [52.8-56.8]	57.5 [54.4-60.5]	62.8 [55.9-69.2]	61.0 [57.9-64.0]
Rare occupation	35.7 [34.4-37.0]	38.0 [35.7-40.4]	36.8 [34.1-39.5]	38.0 [36.1-39.9]	32.1 [29.2-35.1]	30.2 [23.2-38.2]	30.1 [27.4-33.0]
Fantasy	1.2 [1.0-1.4]	1.3 [0.8-1.9]	1.4 [0.9-2.0]	0.8 [0.6-1.2]	1.1 [0.6-1.9]	1.1 [0.4-3.3]	1.6 [0.9-2.6]
Descriptive	2.4 [2.1-2.7]	1.8 [1.3-2.5]	2.5 [1.8-3.4]	2.1 [1.6-2.7]	3.0 [2.1-4.5]	2.2 [1.0-5.0]	3.0 [2.2-4.0]
Uncertain	5.3 [4.7-5.9]	6.1 [5.0-7.4]	6.7 [5.6-8.1]	4.3 [3.6-5.2]	6.3 [4.7-8.5]	3.7 [1.8-7.3]	4.3 [3.2-5.9]

Table 5-7: Percentage of children's aspirations (weighted data) by the mother's partner's education

Aspiration assignment by	Total %	Degree +	A level's	5 GCSE	GCSE	Other	None
Occupational aspirations	(n=8,266)	(n=1,781)	(n=1,429)	(n=2,617)	(n=806)	(n=198)	(n=1,435)
High [SOC 1&2]	31.4 [30.0-32.8]	35.4 [32.8-38.0]	32.7 [30.1-35.5]	28.6 [26.7-30.6]	28.4 [24.9-32.1]	35.2 [27.7-43.5]	31.7 [28.3-35.3]
Medium [SOC 3]	48.9 [47.5-50.3]	49.0 [46.2-51.8]	47.9 [44.7-51.2]	50.2 [48.1-52.2]	48.0 [44.5-51.5]	47.9 [39.2-56.8]	48.1 [44.7-51.5]
Low [SOC 4-9]	19.7 [18.5-21.0]	15.6 [13.5-18.0]	19.3 [16.9-22.1]	21.2 [19.4-23.1]	23.7 [20.4-27.3]	16.9 [11.3-24.5]	20.2 [17.6-23.1]
Extrinsic/intrinsic	(n=8,570)	(n=1,844)	(n=1,491)	(n=2,698)	(n=835)	(n=209)	(n=1,493)
Extrinsic	5.2 [4.6-5.7]	5.1 [4.1-6.3]	5.5 [4.3-6.9]	5.4 [4.5-6.5]	5.0 [3.6-6.9]	4.1 [1.8-8.8]	4.7 [3.6-6.2]
Extrinsic-intermediate	24.2 [23.1-25.4]	22.2 [20.2-24.3]	24.1 [21.7-26.7]	25.5 [23.8-27.4]	25.1 [22.0-28.6]	24.7 [18.1-32.7]	23.7 [21.2-26.4]
Neutral	41.2 [39.9-42.4]	43.7 [41.3-46.2]	40.2 [37.5-43.1]	40.3 [38.3-42.3]	41.1 [37.4-44.8]	43.1 [35.1-51.4]	40.6 [37.8-43.4]
Intrinsic-intermediate	29.4 [28.2-30.7]	29.0 [26.7-31.4]	30.2 [27.5-33.0]	28.8 [27.0-30.7]	28.8 [25.3-32.5]	28.1 [21.4-36.0]	31.1 [28.0-34.3]
Masculinity/femininity (Boys only)	(n=4,178)	(n=890)	(n=725)	(n=1,360)	(n=404)	(n=103)	(n=696)
Masculine	71.4 [69.7-73.1]	62.8 [59.5-66.0]	70.3 [66.2-74.0]	74.1 [71.3-76.7]	76.0 [71.7-79.9]	65.0 [52.4-75.8]	76.4 [72.6-79.8]
Integrated	18.2 [16.9-19.7]	24.8 [21.8-28.2]	19.4 [16.3-22.9]	15.6 [13.5-18.0]	14.0 [10.8-18.0]	25.8 [16.5-37.9]	15.6 [12.7-18.9]
Feminine	7.6 [6.7-8.7]	8.9 [7.1-11.1]	7.1 [5.3-9.4]	7.6 [6.0-9.6]	7.7 [5.2-11.3]	8.6 [4.7-15.3]	6.6 [4.6-9.3]
Ultra- feminine	2.7 [2.2-3.3]	3.4 [2.4-5.0]	3.3 [2.0-5.2]	2.7 [1.9-3.8]	2.3 [1.2-4.2]	0.6 [0.1-4.0]	1.5 [0.7-3.3]

Aspiration assignment by	Total %	Degree +	A level's	5 GCSE	GCSE	Other	None
Masculinity/femininity (Girls only)	(n=4,289)	(n=932)	(n=747)	(n=1,300)	(n=422)	(n=104)	(n=784)
Masculine	7.9 [7.0-8.8]	7.6 [5.8-9.8]	7.4 [5.5-9.8]	8.1 [6.7-9.9]	7.2 [5.0-10.3]	10.1 [5.3-18.5]	8.4 [6.3-11.1]
Integrated	29.4 [27.7-31.2]	32.3 [29.0-35.7]	30.2 [26.3-34.4]	27.8 [25.1-30.7]	26.4 [21.6-31.9]	40.0 [29.4-51.6]	28.8 [25.4-32.4]
Feminine	38.8 [37.0-40.6]	40.6 [37.4-43.9]	39.2 [35.2-43.4]	38.3 [35.2-41.6]	39.8 [34.4-45.5]	36.8 [28.4-46.2]	36.7 [32.6-41.0]
Ultra-feminine	23.9 [22.2-25.6]	19.5 [16.6-22.9]	23.2 [20.0-26.7]	25.7 [23.1-28.6]	26.6 [21.6-32.2]	13.1 [7.3-22.4]	26.1 [22.4-30.2]
Maturity and realism	(n=9,043)	(n=1,968)	(n=1,571)	(n=2,841)	(n=881)	(n=223)	(n=1,559)
Non-rare occupation	55.0 [53.4-56.5]	52.3 [49.4-55.2]	52.8 [50.0-55.6]	53.7 [51.4-55.8]	56.8 [52.6-61.0]	58.4 [49.4-66.8]	61.9 [58.6-65.0]
Rare occupation	36.4 [35.0-37.9]	38.4 [35.8-41.0]	38.3 [35.5-41.3]	38.3 [36.2-40.5]	34.3 [30.3-38.5]	30.9 [23.2-39.9]	30.1 [27.4-32.9]
Fantasy	1.2 [0.9-1.4]	1.1 [0.7-1.7]	1.3 [0.8-2.1]	1.1 [0.7-1.7]	1.1 [0.5-2.3]	2.7 [1.2-5.9]	1.0 [0.6-1.7]
Descriptive	2.2 [1.8-2.6]	2.1 [1.5-3.0]	2.5 [1.8-3.5]	2.0 [1.5-2.7]	2.0 [1.1-3.4]	1.2 [0.4-3.5]	2.6 [1.8-3.7]
Uncertain	5.3 [4.7-5.9]	6.2 [5.0-7.6]	5.1 [4.0-6.4]	4.9 [4.1-5.9]	5.8 [4.1-8.0]	6.9 [3.5-13.2]	4.4 [3.3-6.0]

5.3.2 Pairwise correlations of key observed variables

Tables 5-8 and 5-9 show the pairwise correlations for the main variables in both analytic samples. As expected, low- occupational aspirations were correlated albeit very weakly with low family SES. Low, extrinsic and masculine aspirations were weakly negatively associated with cognitive ability and school engagement. Both Intrinsic aspirations were very weakly related to more mother and partner involvement in painting and drawing, and extrinsic and masculine aspirations with more partner involvement in play. Feminine aspirations were very weakly related to more mother and partner involvement in musical activities, and more mother involvement in painting and drawing. In the classification by realism and the child's maturity sample, all the correlations with the antecedents of aspirations were very weak. Non-rare job and descriptive aspirations were correlated with low SES, while aspirations for rare jobs and uncertain aspirations were related to high SES. Aspirations for non-rare jobs were associated with school engagement, low cognitive ability and difficult infant temperament. Aspirations for rare jobs were correlated with low school engagement, high cognitive ability and easy infant temperament. Low school engagement was also correlated with fantasy and uncertain aspirations. Descriptive aspirations were associated with low cognitive ability.

Table 5-8: Pairwise correlations of key observed variables for model 1 (N = 11,656)
(Aspirations classified by occupation, extrinsic/intrinsic motivation, masculinity/femininity)

	1	2	3	4a	4b	4c	4d	5	6a	6b	6c	6d	7a	7b	7c	7d
1. Low occupational aspirations	-															
2. Extrinsic aspirations	.22**	-														
3. Masculine aspirations	-.10**	.38**	-													
4. Family SES																
a) Low maternal qualifications	.04**	-.01	02	-												
b) Low paternal qualifications	.05**	.01	.01	.51**	-											
c) Low maternal social class	.03**	.00	.01	.56**	.40**	-										
d) Low paternal social class	.04**	-.01	.01	.44**	.59**	.42**	-									
5. Infant temperament	-.00	.02	.01	-.13**	-.07**	-.11**	-.08**	-								
6. Mother involvement in learning																
a) Telling stories	-.00	-.02	-.01	-.06**	-.01	-.04**	.02	.04**	.-							
b) Doing musical activities	.01	-.01	-.07**	-.07**	-.03**	-.01	-.02	.09**	.28**	-						
c) Painting/drawing	-.00	-.03**	-.07**	-.06**	-.05**	-.03*	-.03*	.06**	.29**	.32**	-					
d) Playing games/with toys	.01	-.01	-.01	-.08**	-.07**	-.05**	-.03**	.09**	.27**	.31**	.42**	-				
7 Partner involvement in learning																
a) Telling stories	-.02*	-.01	.01	-.05**	-.04**	-.04**	-.02	.02	.23**	.11**	.10**	.09**	.-		.	
b) Doing musical activities	.00	-.01	-.06**	-.05**	-.03**	-.04**	-.02	.05**	.11**	.22**	.13**	.10**	.32**	-		
c) Painting/drawing	-.00	-.03**	-.01	-.02	-.05**	-.03*	-.01	.04*	.11**	.10**	.22**	.14**	.33**	.34**	-	
d) Playing games/with toys	-.01	.04**	.10**	-.08**.	-.08**	-.06**	-.03**	.07**	.10**	.11**	.14**	.22**	.30**	.29**	.40**	-
8 Child cognitive ability																
a) Naming vocabulary	-.01	.01	-.03**	-.34**	-.27**	-.27**	-.26**	.14**	.06**	.10**	.10**	.13**	.05**	.06**	.04**	.09**
b) Pattern construction	-.03**	-.03**	-.07**	-.19**	-.16**	-.15**	-.16**	.06**	.01	.03**	.07**	.07**	.00	.00	.05**	.04**
c) Picture similarities	-.03**	-.03**	-.05**	-.16**	-.13**	-.12**	-.11**	.06**	.03**	.03**	.06**	.04**	.05**	.02	.03**	.02
9 School engagement	-.08**	-.12**	-.12**	.00	-.01	-.02	-.00	-.00	.04**	.03**	.03**	.03**	.05**	.07**	.06**	.02*
N	11,220	11,656	11,501	11,220	8,570	10,169	8,505	6,811	11,118	11,116	11,119	11,117	8,061	8,063	8,063	8,063
Mean	3.28	2.02	2.88	4.76	4.70	4.04	3.76	56.86	3.63	4.78	3.86	4.50	3.52	4.09	3.40	4.44
SD	1.60	.86	1.08	1.99	2.11	2.04	2.09	6.39	1.55	1.29	1.21	1.19	1.49	1.47	1.22	1.11

Table 5-8 (continued)

	8a	8b	8c	9
8. Child cognitive ability				
a) Naming vocabulary	-	.		
b) Pattern construction	.33**	-		
c) Picture similarities	.30**	.33**	-	
9. School engagement	-.00	.04**	.05**	-
N	11,062	11,052	11,074	9,669
Mean	55.95	50.84	54.50	16.60
SD	10.15	9.76	10.94	3.07

Table 5-9: Pairwise correlations of key observed variables for model 2 (N = 12,275)

(Aspirations classified by realism and the child's maturity)

	1a	1b	1c	1d	1e	2a	2b	2c	2d	3	4a	4b	4c	4d
1. Aspirations[31]														
a. Non-rare occupations														
b. Rare occupations														
c. Fantasy														
d. Descriptive														
e. Uncertain														
2. Family SES														
a. Low maternal qualifications	.06**	-.04**	-.01	.02*	-.04**	-								
b. Low paternal qualifications	.06**	-.05**	.00	.00	-.03**	.51**	-							
c. Low maternal social class	.04**	-.04**	-.01	.02*	-.02*	.56**	.40**	-						
d. Low paternal social class	.05**	-.05**	-.01	.02	-.01	.44**	.59**	.42**	-					
3. Infant temperament	-.04**	.04**	-.01	.01	.00	-.13**	-.07**	-.11**	-.09**	-				
4. Mother involvement														
a) Telling stories	.02	-.00	-.01	-.00	-.02**	-.05**	-.01	-.04**	.02	.04**	.-			
b) Doing musical activities	.00	.00	.00	-.00	-.01	-.07**	-.04**	-.00	-.02	.09**	.28**	-		
c) Painting/drawing	.01	-.01	.00	-.00	.01	-.06**	-.05**	-.02*	-.02*	.06**	.29**	.32**	-	
d) Playing games/with toys	-.01	.00	.01	.00	.01	-.08**	-.07**	-.05**	-.03**	.09**	.27**	.31**	.42**	-
5. Partner involvement :														
a) Telling stories	.01	.01	-.01	-.02*	-.02	-.05**	-.04**	-.03**	-.02	.02	.23**	.10**	.10**	.09**
b) Doing musical activities	.01	.01	.00	-.02	-.03**	-.05**	-.03**	-.04**	-.02	.05**	.10**	.22**	.12**	.10**
c) Painting/drawing	.03**	-.02	-.00	-.02*	-.01	-.02	-.05**	-.02	-.01	.04*	.11**	.10**	.22**	.14**
d) Playing games/with toys	-.04**	.05**	.00	-.02	-.01	-.07**.	-.08**	-.05**	-.03**	.07**	.10**	.11**	.14**	.22**
6. Child cognitive ability:														
a) Naming vocabulary	-.05**	.06**	-.01	-.07**	.03**	-.34**	-.28**	-.27**	-.26**	.14**	.05**	.10**	.09**	.12**
b) Pattern construction	-.03**	.03**	-.01	-.04**	.03**	-.19**	-.16**	-.15**	-.16**	.06**	.00	.03**	.07**	.07**
c) Picture similarities	-.01	.02	-.02	-.03**	.01	-.16**	-.13**	-.12**	-.11**	.06**	.03**	.03**	.06**	.04**
7. School engagement	.07**	-.04**	-.03**	-.02	-.04**	-.00	-.01	-.02	-.00	-.00	.04**	.04**	.04**	.02**
N	12,275	12,275	12,275	12,275	12,275	11,823	9,043	10,732	8,978	7,172	11,704	11,702	11,705	11,703
Mean	.57	.35	.01	.02	.05	4.74	4.70	4.03	3.75	56.86	3.62	4.78	3.86	4.50
SD	.50	.48	.11	.15	.22	1.99	2.12	2.04	2.09	6.40	1.55	1.29	1.21	1.19

[31] For summary purposes each aspiration category was defined as 0/1

Table 5-9 (continued)

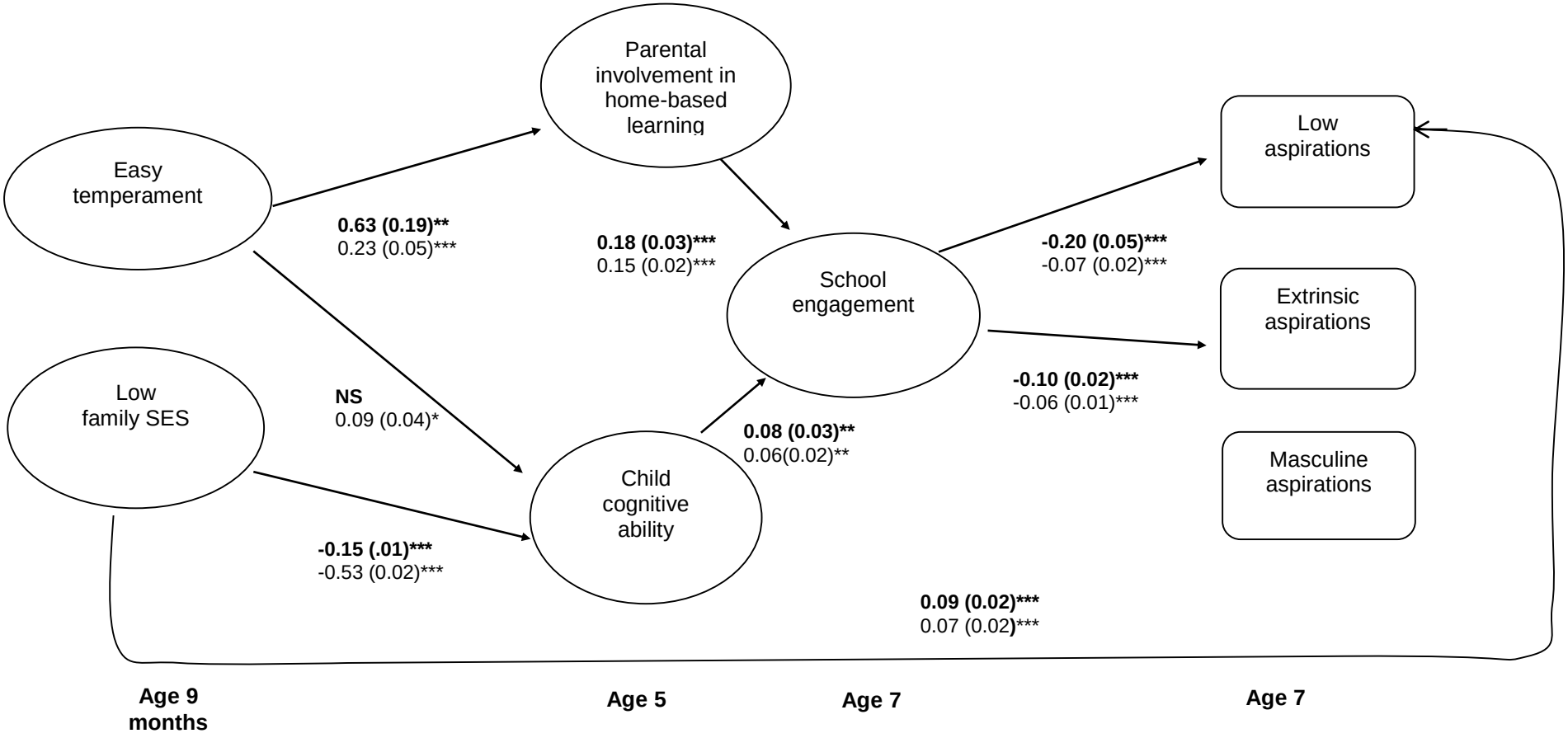
	5a	5b	5c	5d	6a	6b	6c	7
5. Partner involvement in learning								
a) Telling stories	-							
b) Doing musical activities	.33**	-						
c) Painting/drawing	.29**	.34**	-					
d) Playing games/with toys	.04**	.30**	.40**	-				
6. Child cognitive ability								
a) Naming vocabulary	.05**	.07**	.04**	.08**	-	.		
b) Pattern construction	-.00	.01	.05**	.04	.33**	-		
c) Picture similarities	.04**	.02	.02**	.02	.31**	.33**	-	
7. School engagement	.04**	.07**	.05**	.02	-.00	.05**	.05**	-
N	8,497	8,499	8,499	8,499	11,643	11,629	11,654	10,172
Mean	3.51	4.08	3.39	4.44	55.98	50.91	54.58	16.57
SD	1.49	1.47	1.22	1.11	10.16	9.76	10.96	3.08

5.3.3 SEM paths

Figure 5-2 shows the path diagram of the SEM for the predictors of the occupational, feminine/masculine and intrinsic/extrinsic aspirations (model 1), while Figure 5-3 that of the taxonomy of aspirations by realism and maturity (model 2). The statistically significant findings for both models are outlined below. The overall fit for model 1 was good ($\chi^2(976) = 6560.95$, $p < .001$; RMSEA = .022; CFI = .905; TLI = .893). As the response variable in model 2 was an unordered categorical variable, no model fit information was available.

After controlling for all the covariates, observed variables and latent constructs in SEM there were gender, ethnic and age differences in determining children's aspirations. In model 1 (not shown in Figure 5-2- see Appendix IX for covariates), boys compared to girls had lower, more extrinsic and more masculine aspirations. All ethnic minority children had higher aspirations than white children. Compared to white children, Pakistani/Bangladeshi and 'other' children had more intrinsic aspirations, and children of mixed and 'other' ethnicity had more masculine aspirations. In model 2 (not shown in Figure 5-3 see Appendix X for covariates), boys were more likely than girls to have rare occupational, fantasy and uncertain aspirations, compared to non-rare occupational aspirations. Age was negatively related to fantasy aspirations, compared to non-rare occupational aspirations. Indian children were less likely than white children to have uncertain or fantasy aspirations, compared to non-rare occupational aspirations. Black, Pakistani/Bangladeshi and 'other' children were more likely than white children to have non-rare occupational aspirations, compared to fantasy aspirations.

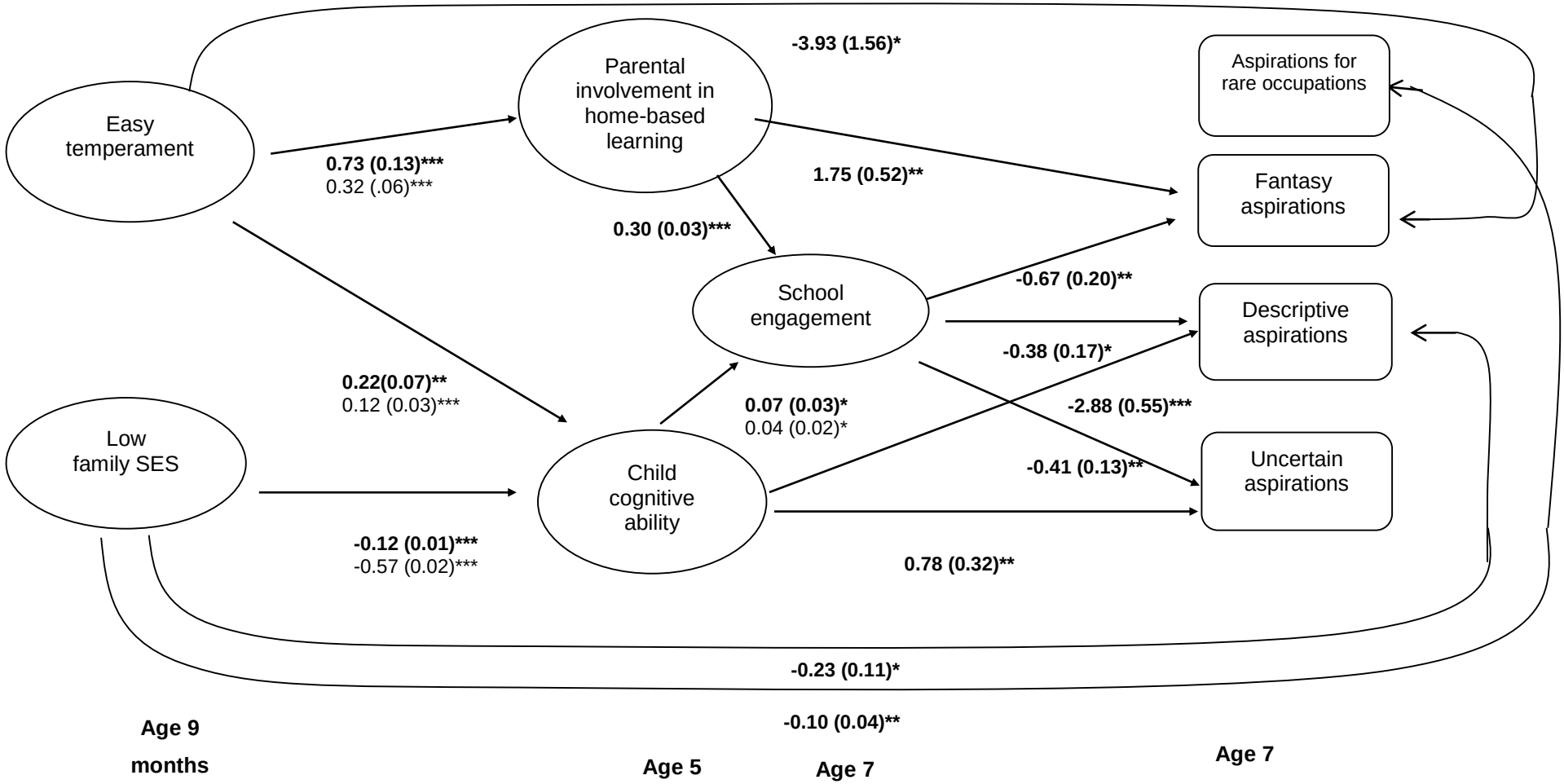
Figure 5-2: SEM (Model 1) classification of aspiration by occupation, extrinsic/intrinsic motivation and masculinity/femininity



N = 11,656; $\chi^2(976) = 6560.95$, p<.001; RMSEA = .022; CFI = .905, TLI = .893, SRMR = .034

Note: Diagram shows unstandardised regression coefficients and standard errors in bold. Standardised coefficients and standard errors are non-bolded. Only statistically significant (*p < .05; **p < .01; ***p < .001) results are shown. Infant temperament, cognitive ability, parental involvement, school engagement and aspirations were controlled for by gender and ethnicity. Aspirations were also controlled by age and cognitive ability, and parental involvement in home-based learning was also controlled by birth order. Covariances specified for parental involvement in home-based learning and child cognitive ability at age 5, and aspiration classifications at age 7.

Figure 5-3: SEM (Model 2) taxonomy of aspirations by realism and child's maturity



N = 12,275. Note: See Figure 5-2. Covariances specified for parental involvement in home-based learning and child cognitive ability at age 5.

In both models, most of the antecedents of young children's aspirations were not or were weakly related to all the classifications of aspiration. As can be seen from the significant pathways in model 1, low SES was directly related to low (less prestigious) occupational aspirations. In model 2, SES was related positively to descriptive and rare occupational aspirations, compared to non-rare occupational aspirations. Easy infant temperament was negatively associated with fantasy aspirations, compared to non-rare occupational aspirations. In model 1, school engagement, directly related to both parental involvement in home-based learning and child cognitive ability, was negatively associated with low and extrinsic aspirations. There was no direct relationship between parental involvement in home-based learning and cognitive ability with aspirations. In model 2, parental involvement in home-based learning was positively and school engagement was negatively related to fantasy aspirations, compared to non-rare occupational aspirations. Both cognitive ability and school engagement were negatively related to descriptive aspirations. Cognitive ability was positively related to uncertain aspirations, but school engagement and uncertain aspirations were negatively associated. As expected, SES was associated with child cognitive ability, and easy infant temperament with both parental involvement in home-based learning and child cognitive ability.

In general (Appendix IX and X) examining the covariates in the models, SES was lower in Pakistani/Bangladeshi compared to white families, infant temperament was easier in boys compared to girls and in all non-white ethnic groups compared to white children. Also, cognitive ability was higher in girls and children with no or fewer older siblings, but lower in Indian, Pakistani/Bangladeshi, black and 'other', compared to white children. Parental involvement in home-based learning was higher for girls and children lower in birth order, and lower in Pakistani/Bangladeshi, compared to white children. Girls compared to boys, and all ethnic minority children compared to white, had higher school engagement.

In model 1, multi-group analysis by gender was conducted on the pathways to and from aspirations[32]. In model 1, gender differences were found in some of the pathways to aspirations (see Appendix XI). In boys, masculine aspirations at age 7 were related to low family SES at age 9 months ($\beta = .09$, $p < .01$), while in girls masculine aspirations were related to high family SES ($\beta = -.06$, $p < .05$; $\chi^2(1) = 16.03$, $p = .0001$). For girls, school engagement at age 7 was negatively related to lower occupational aspirations at age 7 ($\beta = -.10$, $p < .001$), whereas for boys it was not ($\beta = -.03$, $p > .05$; $\chi^2(1) = 9.09$, $p = .003$). School engagement for girls at age 7 was also negatively related to extrinsic aspirations at age 7 ($\beta = -.08$, $p < .001$). For boys, that relationship was not as strong ($\beta = -.05$, $p < .01$; $\chi^2(1) = 4.31$, $p = .04$).

[32] These results should be treated with caution as the latent constructs were not equivalent across gender.

5.4 Conclusions

This study explored whether gender, ethnicity and family background were key determinants of primary school children's aspirations, and investigated the individual pathways to occupational, masculine/feminine and extrinsic/intrinsic aspirations, and aspirations classified by their realism and the children's maturity. For 91.2% of the children in the sample, aspirations involved an adult occupation, suggesting that at age 7 children already have ideas for future careers. The most popular aspirations were 'sports player', 'teacher', 'police officer', 'vet' and actor/singer. A large proportion (55.6%) of the children aspired to occupations that are common (e.g. 'teacher', 'police officer', 'doctor', 'hairdresser') in the UK population. This shows that for primary school children not all aspirations are as fantastical and unrealistic as previous studies had deemed typical. Some (36.8%) children expressed unrealistic aspirations for rare occupations (e.g., 'sports person', 'pop star'), but as Gottfredson's model would predict very few aspirations (1.2%) were fantastical (e.g. 'superhero', 'fairy').

There were important demographic differences, too. In general, most aspirations were gender-typical; 71.7% of boys gave masculine and 62.8% of girls gave feminine and ultra-feminine aspirations. The most popular choices for boys were 'sports person', 'police officer', and 'fireman', and for girls 'teacher', 'vet' and 'hairdresser'. And girls favoured more intrinsic and boys more extrinsic aspirations. Girls had higher occupational aspirations than boys, and white children had lower occupational aspirations than other children and were more likely to be uncertain of what they would like to be when they grow up. Indian and Pakistani/Bangladeshi children were more likely to aspire to integrated jobs (e.g. doctor) compared to white children. Children from lower socio-economic backgrounds aspired to low and more gender-typical occupations (e.g. 'police officers', 'hairdressers'), compared to children from higher socio-economic backgrounds. Many of these demographic differences were still significant after controlling for other covariates in the models. Multi-group analysis was carried out to test for gender differences in the pathways to aspirations, although the results should be treated with caution. For both boys and girls, low family SES was related to gender stereotypical aspirations (more masculine aspirations for boys and more feminine for girls). For girls, compared to boys, school engagement was related to higher occupational and more intrinsic aspirations.

Few pathways predicted occupational or extrinsic/intrinsic aspirations and none the masculinity/femininity of the aspiration. School engagement was the strongest predictor of children's aspirations, although still weak, was related to higher occupational and intrinsic aspirations. Family SES influenced children's occupational both directly albeit weakly and indirectly via child cognitive ability and school engagement, as proposed by the family investment model. However, surprisingly, SES was not directly related to parental involvement

in home-based learning as expected in the family investment model, and parental involvement in home-based learning was not associated with the prestige, femininity/masculinity or motivation of the aspiration. In this study, the antecedent of parental involvement in home-based learning was child temperament, in line with previous findings (Bates, Schermerhorn & Peterson, 2012). However, infant temperament was, in general, unrelated to later aspirations, with the exception of the association of difficult infant temperament with fantasy aspirations. Few (1.2%) children had fantasy aspirations, fantasy aspirations are not typical for 7-year-olds, and may reflect developmental difficulties.

Unexpectedly, child cognitive ability at age 5 was not directly associated with the prestige, femininity/masculinity or motivation of the aspiration expressed at age 7, although cognitive ability was very weakly related to school engagement which predicted both more intrinsic and more prestigious aspirations. Also, as expected, compared to non-rare aspirations cognitive ability was associated negatively to descriptive (e.g., 'tall'), and positively to uncertain aspirations. Finally, children with fantasy and descriptive aspirations were less engaged with school, suggesting that, compared to other children, they may have difficulties in learning. Although children with rare occupational aspirations were from higher-SES families, there was no indirect association between family SES and rare aspirations via parental involvement in home-based learning, ability or school engagement.

In summary, at age 7 children already have aspirations for adult occupations, although unrealistic, optimistic and gender typical. Girls had higher, more intrinsic and more feminine aspirations than boys. In this study few antecedents explained children's aspirations. School engagement was associated positively with high and intrinsic aspirations, and negatively with fantasy, descriptive and uncertain aspirations. Family SES was very weakly directly and indirectly related to higher occupational via cognitive ability. And the influence of parental involvement in home-based learning did not explain differences in children's aspirations.

Chapter 6 Grandparents influence on children's social classed aspirations

6.1 Introduction

This chapter examines the influence of maternal and paternal grandparents on children's classed aspirations. The influence of grandparents on the aspirations of younger children in particular could be important, because of the children's life stage, demographic changes in health and longevity of grandparents, and investment of family resources across generations. In this study, children's aspirations were classified by social class, measured using NS-SEC.

This chapter firstly outlines the aims of the research and is subsequently divided into three parts, a brief description of the method specific to this chapter, the results and a brief summary of the findings and conclusions. The results section covers bivariate analysis of children's classed aspirations by gender and ethnicity, parents' NS-SEC by grandparents NS-SEC, and correlations of the key observed variables. The bivariate analysis is followed by two generational and three-generational path analysis. As well as testing for the mediator effects of parents' social class on children's classed aspirations, the moderating effects of parents were also investigated (to test for upward or downward counter mobility). Finally multi-group analysis was conducted to test for gender and ethnic differences in the 'effects' of parent and grandparent social class on the child's aspirations.

6.1.1 Study aims

Previous studies on the effects of grandparent social class on grandchildren have focused either on the social class outcome of the adult grandchild or on the grandchild's school performance such as cognitive test scores or exam results. Furthermore, few studies have explored the role of both maternal and paternal grandparents. This study attempted to fill this gap by investigating the direct and indirect influence of both maternal and paternal grandparents' social class on the classed aspirations of their young (aged seven) grandchildren, as reflected in their choices of aspired future occupation.

The main aim of this study was to investigate the direct association of grandparents' social class with their grandchildren's classed aspirations. Although previous findings are mixed, direct grandparent on grandchild effects have been found in the UK. In this study, children were at an age when grandparents may be more involved with their grandchildren and it is therefore plausible to expect to find direct grandparent effects on children's aspirations. Although findings are mixed, evolutionary theory suggests maternal grandparents tend to invest more in

their grandchildren (Coall & Hertwig, 2011). Therefore, the research hypothesis was that maternal grandparents may be more important than paternal grandparents.

The second aim of the study was to chart indirect effects on the child via the child's parents. It was expected that any effect of grandparents' class on children's aspirations would be both direct and indirect. In other words, any grandparent to grandchild class effects would be mediated, at least in part, by the social class of the parents. The third aim was to test a specific version of what is known as the 'sunken middle-class' hypothesis, that parents who experienced downward mobility, in particular mothers, might have the cultural resources and motivation to influence upward counter mobility in their children's ambitions. And likewise, those parents who achieved upward mobility might not have the resources to influence their children's aspirations to the same social class.

As identified by the results in the previous chapter, younger children's aspirations differ by gender and ethnicity. Girls and ethnic minority children tend to have higher aspirations than boys and white children. The transmission of social class over generations was expected to vary by ethnicity, because of the high aspirations of immigrant parents, and by gender. The fourth and final aim, therefore, was to explore differences in the formation of classed aspirations by gender and ethnicity.

6.2 Method

6.2.1 Participants

Data was used from the first four sweeps of the MCS, when the children were aged nine months, three years, five years and seven years, respectively. Records for only one child per family (singletons and the first-born twin or triplet) were used to avoid having to account for clustering of children within families. Families where the main respondent was not the child's natural mother at Sweep 2 (when the information on grandparent occupation was collected in MCS) were excluded. Occupational (and demographic) information from the child's mother and her partner and from each of the child's grandparents were included. The analytic sample was n = 8,570. The analytic sample comprised all children at age seven giving an occupational aspiration (n = 11,220), and included all cases where the mother's partner was eligible to be interviewed at Sweep 2 (n = 8,701) when the grandparent occupational questions were asked, and where the main respondent was the mother of the child (n = 8,570).

6.2.2 Measures

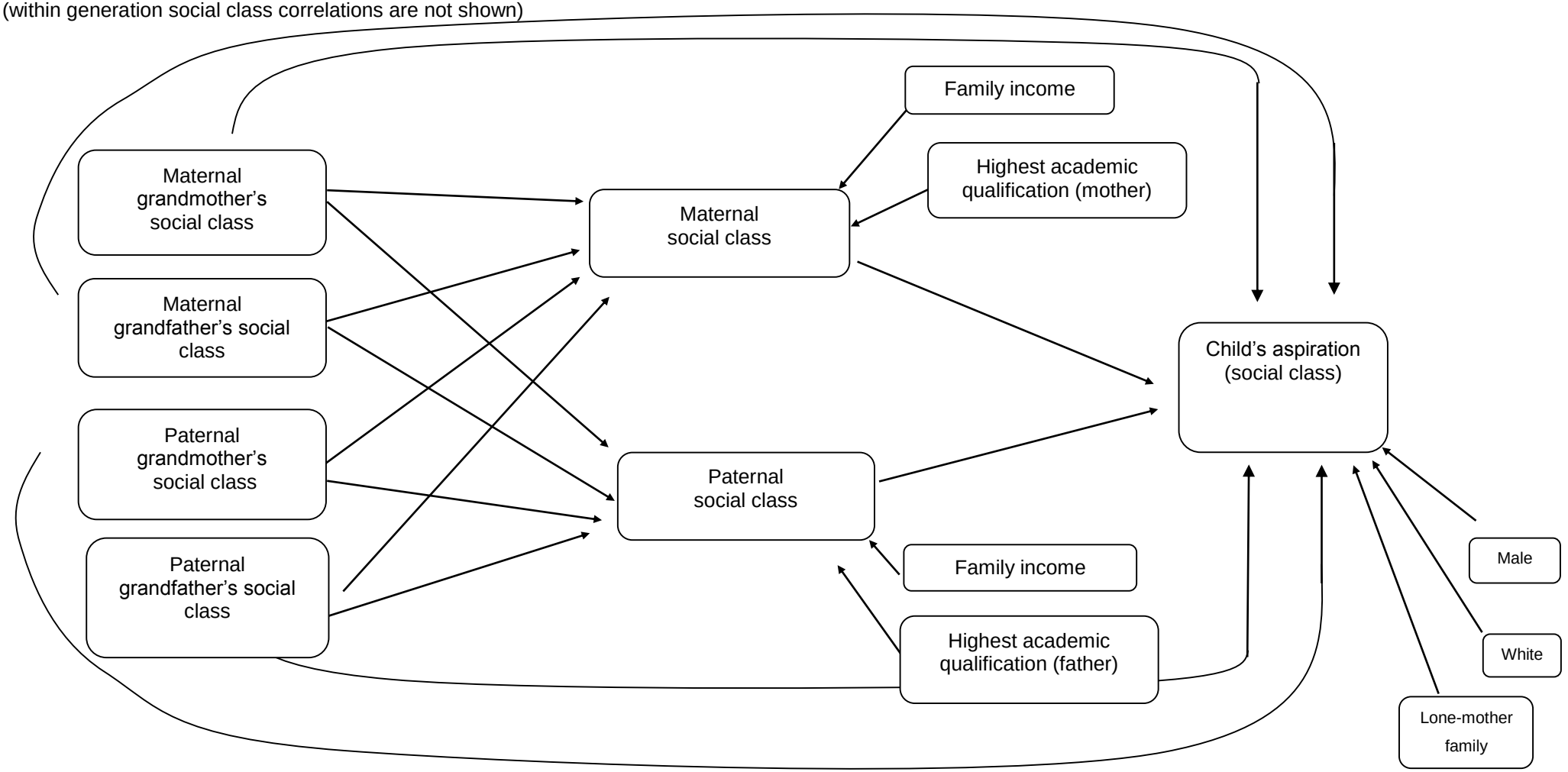
Social class was measured using the three class version of the National Statistics Socio-economic Classification (NS-SEC). The three class version is assumed to form a hierarchy; 1 managerial and professional occupations, 2 intermediate occupations, and 3 routine and manual occupations. In this study the self-employed were included in category two and those who had never worked and the long-term unemployed were included in category three. Mothers' and partners' highest ever NS-SEC was used. Grandparents' NS-SEC was measured at Sweep 2 when both the mother of the child and her partner were asked what work, if any, their mother and father (the child's grandparents) did when they were aged fourteen. *Children's classed aspirations* were measured with their responses to the 'aspiration' question at Sweep 4. Initially all o*ccupational aspirations* were classified to the four-digit Standard Occupational Classification 2000 (SOC2000; see section 3.2.1.4 for more detail). For the purposes of this study NS-SEC was derived from SOC2000 using the guidance issued by the Office for National Statistics. The *parent-level* controls were family income, and the parents' highest academic qualification. As the three-class version of NS-SEC was used, detailed information on parental family income and academic qualifications were included to ensure the confounding effects of parental characteristics were taken into account. Family income was measured in equivalised quintiles (Hansen et al., 2014). Highest academic qualification achieved over all sweeps was used for both mother and partner ranging from 1 'higher degree' to 7 'no qualification'. The *child-level* controls were gender (boy=1, girl=0), any lone mother status in the last seven years (1=lone mother, 0=not a lone mother) and ethnicity (white=1, non-white=0). As sample sizes for the more detailed ethnic classifications were very small, a dichotomous ethnicity variable was used. Although the MCS has data on some further details about *grandparents* (co-residency, geographical distance of residence and frequency of visits), these details could not be included in the models, as the data are not available specifically for each of the four grandparents.

6.2.3 Analytic approach and hypothesised model

Children in the analytic sample (n = 8,570) were examined to see if they differed from children not in it (n = 2,650, i.e., those children who gave an occupational aspiration, but for whom there was no mother and eligible partner present at Sweep 2), before assessing correlations between all the study variables. Path models were then fitted in Mplus 7.11 (Muthen & Muthen, 1998-2012). The hypothesized model is shown in Figure 6-1. Initially two models were run, each focusing on two generations: a parent-child model and a grandparent-grandchild model, not allowing for parents' influence on the child. The final model, a pathway model across the three generations, explored the effect on the child's aspirations of paternal and maternal grandparents' social class, while allowing for maternal and paternal social class to be predicted by grandparent social class and in turn predict the child's aspirations. In all models, where

applicable, covariances were specified for maternal and paternal grandparent social class, and paternal and maternal social class.

Figure 6-1: Hypothesized multigenerational pathway model
(within generation social class correlations are not shown)



As all the study outcome variables were treated as continuous, the maximum likelihood estimation with robust standard errors (MLR) using a numerical integration algorithm was used. Maximum likelihood allows missingness to be a function of the observed covariates and observed outcomes and is robust to non-normality and non-independence of observations when used with TYPE=COMPLEX in Mplus. The TYPE=COMPLEX command was used, along with the stratification, cluster and weight options to take account of disproportionate, stratified clustering in the MCS sample selection. In line with current practice, several measures were used to assess the goodness of fit of the model to the data (i.e., the χ^2 statistic, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), the Tucker Lewis Index (TLI) and the Standardised Root Mean Square Residual (SRMR)).

The indirect (mediated) effects via parents' social class were tested for significance on all the grandparent-grandchild pathways using the Sobel test (Hayes, 2009; Sobel, 1982). To explore the 'sunken middle-class' hypothesis the final model was re-run interacting each of the maternal grandparents' class with the mother's class, and each of the paternal grandparents' class with the partner's class, on the grandchild's classed aspirations. To test for gender and ethnic differences in the 'effects' of parent and grandparent social class on the child's aspirations, multi-group analysis was conducted using the MODEL TEST command. This examines linear restrictions on the parameters in the model using the Wald chi-square test. Both two way (boys v girls; white v non-white) and four way (white boys v non-white boys v white girls v non-white girls) comparisons were tested along all of the parent and grandparent pathways to children's aspirations.

6.3 Results

6.3.1 Descriptives and correlations

The analytic sample comprised more children from white backgrounds and from intact families compared to the non-analytic sample (see Appendix XII). Parents in the analytic sample had higher family incomes and higher academic qualifications and were more likely to be partnered. Although there was no difference in the classed aspirations of children in the analytic compared to the non-analytic sample, maternal and paternal social class as well as maternal grandfathers' and paternal grandparents' social class were higher in the analytic sample. Table 6-1 shows the pairwise correlations between all the study variables. As expected, boys and children from white backgrounds and lone parent households had lower aspirations. Although the social class of the child's aspiration was correlated with that of his/her mother, father, maternal grandmother and paternal grandparents, the association was not strong. As predicted, there was a very strong relationship between social class and family income and academic qualifications for both the mother and her partner. The mothers' and their partners' social class were fairly homologous, but there was a smaller correlation between grandmothers' and grandfathers' social class.

There was an association between maternal and paternal grandparents' social class and their children's social class (the grandchild's parents), and similar cross lineage associations.

Table 6-1: Pairwise correlations of key observed study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Child's aspiration (NS-SEC 1-3)	-												
2. Mother's social class (NS-SEC 1-3)	.06**	-											
3. Partner's social class (NS-SEC 1-3)	.09**	.43**	-										
4. Maternal grandmother's social class (NS-SEC 1-3)	.04**	.23**	.18**	-									
5. Maternal grandfather's social class (NS-SEC 1-3)	.02	.26**	.23**	.23**	-			-					
6. Paternal grandmother's social class (NS-SEC 1-3)	.03*	.17**	.20**	.09**	.13**	-							
7. Paternal grandfather's social class (NS-SEC 1-3)	.04**	.22**	.27**	.12**	.17**	.25**	-						
8. Family income (top (1) to lowest (5) quintile)	.05**	.56**	.49**	.21**	.25**	.19**	.24**	-					
9. Mother's highest academic qualification (1 'higher degree' to 7 'none')	.05**	.57**	.41**	.25**	.31**	.18**	.25**	-.53**	-				
10. Partner's highest academic qualification (1 'higher degree' to 7 'none')	.07**	.40**	.55**	.19**	.23**	.21**	.29**	-.48**	.49**	-			
11. Male	.05**	.00	-.01	.00	.00	-.01	.01	.01	.00	-.01	-		
12. White	.08**	-.16**	-.10**	-.11**	-.06**	-.07**	-.02**	.26**	-.18**	-.07**	.02	-	
13. Lone mother (anytime in last 7 years)	.04**	.14**	.18**	.05**	.09**	.04**	.07**	-.25**	.15**	.10**	.01	.01	-
N	8570	8049	8135	8203	7058	7146	7067	8567	8297	7228	8570	8570	8180
Mean	1.49	1.97	1.94	2.58	2.23	2.57	2.26	3.80	3.81	3.88	.50	.86	.16
SD	.74	.88	.94	.71	.82	.72	.84	1.18	1.62	1.76	.50	.35	.36

As can be seen in Table 6-2, children had high aspirations. Two-thirds of children had aspirations for managerial and professional occupations. Girls were more likely to aspire to managerial and professional occupations than boys, while more boys than girls aspired to intermediate occupations (x^2=397.97, p<0.001). White children had lower aspirations than non-white children (x^2=46.37, p<0.001). Around three-quarters of children from non-white backgrounds aspired to managerial and professional occupations and few wanted to be in routine and manual occupations.

Table 6-2: Children's classed aspirations by gender and ethnicity (weighted data)

	Total %	**Gender**		**Ethnicity**	
Children's aspirations (NS-SEC three-class version)	**(n=8,570)**	**% Boy (n=4,245)**	**% Girl (n=4,325)**	**% White (n=7,368)**	**% Non-white (n=1,202)**
Managerial and professional	66.3	60.3	72.2	65.2	74.1
Intermediate	18.5	26.8	10.2	18.7	17.3
Routine and manual	15.2	12.8	17.6	16.1	8.5

Table 6-3 shows the percentage of parents in the same social class as each other, and the percentage of parents in the same social class as the child's maternal and paternal grandparents. As expected, there was strong marital social class homogamy – i.e. like were married and partnered with like. Over half of couples shared the same occupational social class. Social class homogamy was polarised, i.e. it was stronger at the extremes of the social spectrum than in the middle. Nearly three-quarters of mothers who were in managerial and professional occupations and two-thirds of mothers who were in routine and manual occupations or unemployed had a partner in the same social class. A similar pattern was found in the relationship between parents and grandparents. Between 40% and 47.6% of the child's grandparents had the same social class as the parents. Social reproduction was stronger in the managerial and professional occupations, particularly for the father.

Table 6-3: Percentage of parents with the same social class as the child's maternal and paternal grandparents (weighted data)

Percentage same NS-SEC (%)	Mother	Partner
Mother same NS-SEC (Overall)	-	57.0
1 Managerial and professional %	40.3	72.2
2 Intermediate %	22.1	14.8
3 Routine and manual occupations (and unemployed) %	37.6	66.1
Maternal grandmother same NS-SEC (Overall)	43.2	42.1
1 Managerial and professional %	61.5	66.4
2 Intermediate %	28.0	11.0
3 Routine and manual occupations (and unemployed) %	43.3	44.9
Maternal grandfather same NS-SEC (Overall)	44.7	44.5
1 Managerial and professional %	60.0	71.3
2 Intermediate %	25.1	11.5
3 Routine and manual occupations (and unemployed) %	47.1	48.4
Paternal grandmother same NS-SEC (Overall)	40.0	40.8
1 Managerial and professional %	53.9	67.7
2 Intermediate %	27.4	8.7
3 Routine and manual occupations (and unemployed) %	40.3	43.5
Paternal grandfather same NS-SEC (Overall)	42.9	47.6
1 Managerial and professional %	57.3	72.7
2 Intermediate %	24.3	13.8
3 Routine and manual occupations (and unemployed) %	43.9	49.6

6.3.2 Path models

6.3.2.1 Two generational models

As shown in table 6- 4, the initial analysis tested the relationships between the parents' social class, the grandparents' social class and the child's aspirations. Model 1 was an intergenerational social class parent-child model, and included the parent and child level covariates. Although very small, there were significant intergenerational 'effects' for the mother ($\beta = .05$, $p < .001$) and partner ($\beta = .07$, $p < .001$) and the child after controlling for parental qualifications and income. Model 2 was a direct grandparent 'effects' model not accounting for parent influences. There was a very small degree of class continuity from the maternal grandmother ($\beta = .03$, $p < .05$), the paternal grandmother ($\beta = .04$, $p < .01$) and the paternal grandfather ($\beta = .04$, $p < .05$), but not the maternal grandfather ($\beta = .004$, $p = .75$), to the

grandchild. At age seven, the class of the parents and grandparents explained very little of the variation in children's aspirations.

Table 6-4: Intergenerational and grandparent-grandchild direct effects on children's classed aspirations

	Model 1: Parents only	Model 2: Grandparents only
Mother	0.05***	-
Father	0.07***	-
Maternal grandmother	-	0.03*
Maternal grandfather	-	0.00
Paternal grandmother	-	0.04**
Paternal grandfather	-	0.04*
Parents covariates:		
Mothers highest academic qualification	0.37***	-
Father's highest academic qualification	0.41***	-
Low family income on mother's NS-SEC	0.35***	-
Low family income on father's NS-SEC	0.29***	
Child covariates:		
Male	0.04**	0.04**
White	0.07***	0.07***
Lone mother family	0.01	0.03*

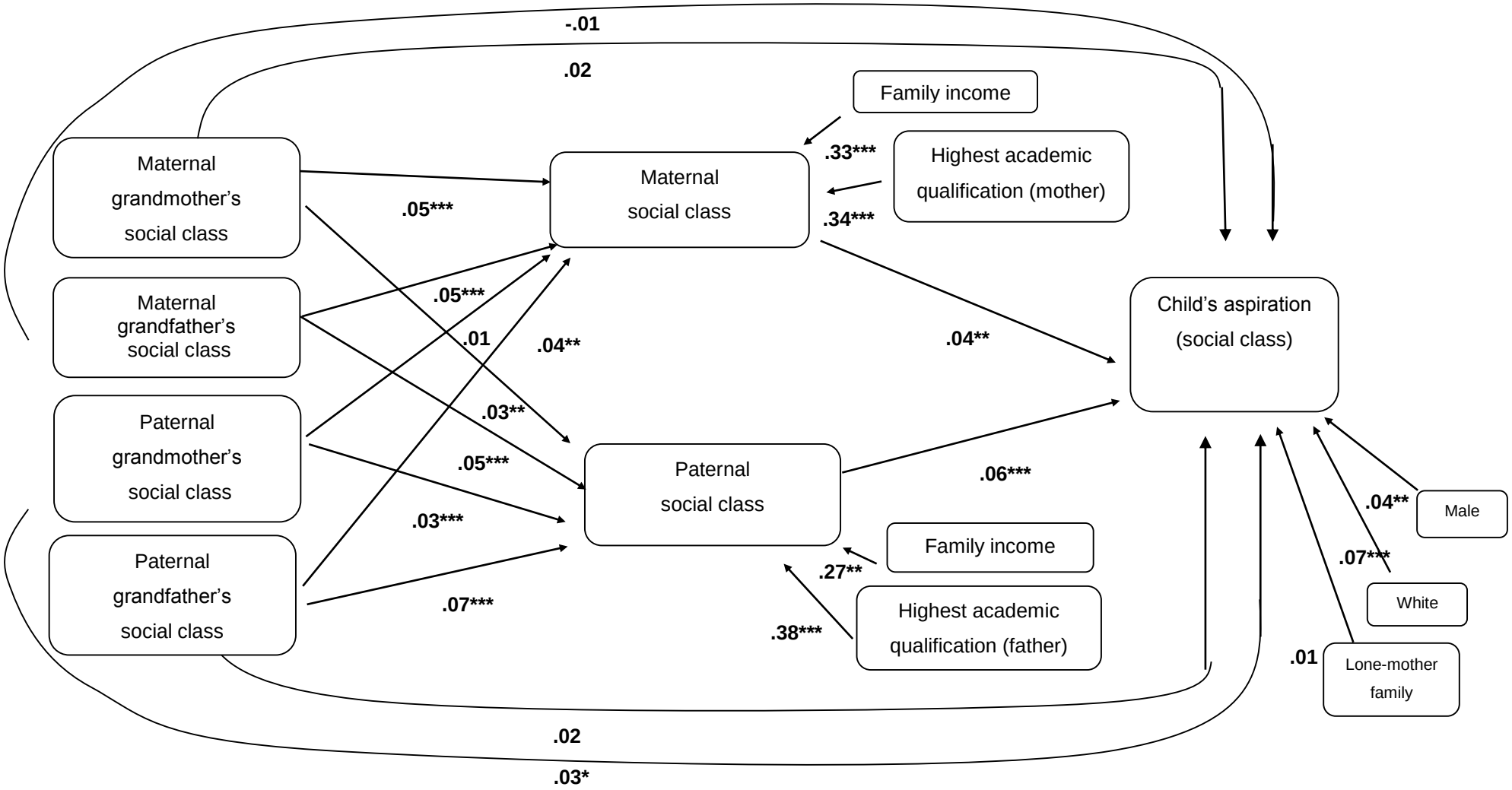
Statistically significant (*p<.05; **p<.01; ***p<.001)

Dependent variable: child class aspirations

6.3.2.2 Three generational model

Figure 6-2 shows the path diagram of the three generational model. The overall fit for the model was very good ($\chi^2(25) = 240.97$, $p < .001$; RMSEA = .032; CFI = .968; TLI = .958; SRMR = .025). Boys and children from white backgrounds had lower classed aspirations. As expected, for both mothers and their partners higher social class was related to higher family income and higher academic qualifications.

Figure 6-2: Model 3: Fitted multigenerational pathway model (standardised regression coefficients)



Direct, indirect and moderated effects of grandparents' class

In the three generational model only the paternal grandmother's class was directly related, although very weakly, to the grandchild's classed aspirations. All other grandparent direct effects were no longer significant when parental influence was included in the model. Both the mother's and her partner's class were related, although weakly, to the child's classed aspirations. Significance tests were used to assess if grandparent effects were mediated via both or either of the parents for all grandparent-grandchild dyads. The maternal grandmother's (mother $\beta = .002$, $p < .01$; partner $\beta = .002$, $p < .05$), maternal grandfather's (mother $\beta = .002$, $p < .05$; partner $\beta = .003$, $p < .01$) and the paternal grandfather's (mother $\beta = .002$, $p < .05$; partner $\beta = .005$, $p < .01$) class had a significant indirect effect on the grandchild's classed aspirations via the mother's and partner's class. Although the paternal grandmother's class had a direct influence on the child's classed aspirations, indirect effects via the parents were also tested. There was a very small indirect effect via the father's class, but not via the mother's (mother $\beta = .001$, $p = .28$; partner $\beta = .002$, $p < .05$).

In testing the 'sunken middle-class' hypothesis there were no significant interactions between grandparents' class and parents' class in predicting children's classed aspirations. Therefore there was no upward or downward counter mobility in children's ambitions.

6.3.2.3 Gender and ethnic differences in social mobility

There were no differences in the influence of grandparents' or parents' class on children's aspirations by gender or ethnicity. However, in the four way comparison of gender x ethnicity, non-white boys' ($\beta = .21$, $p < .01$) were more likely than white girls' ($\beta = .04$, $p = .10$; $\chi^2(1) = 4.27$, $p = .04$) to be influenced by father's social class.

6.4 Conclusions

This study investigated the influence of grandparents' social class on grandchildren's classed aspirations and explored the effect of lineage by considering the social class of all four grandparents for each child. The research examined the direct pathways from grandparents to grandchild and the indirect pathways via parents, while controlling for family income, the mother's and partner's education, lone motherhood, and child ethnicity and gender.

As expected, there was intergenerational social class transmission from the parents' class to the child's classed occupational aspirations. Parents pass on a share of their class advantage or disadvantage to their children, when they are growing up and as adults. This study also showed that social homogamy is the norm in Britain. The parents' and the grandparents' social

class were related within lineage, as well as cross-lineage, both between (grandparent-parent) and within (grandparent-grandparent) generations. As hypothesised, parents' social class mediated the effect of grandparents' class on the grandchild's classed aspirations.

This study found that grandparents' class had a direct effect on children's classed aspirations, net of parents' social class, income and education. However, only the paternal grandmother's social class directly (albeit very weakly) influenced the grandchild's classed aspirations after parental factors were included. This was unexpected, as maternal grandparents are thought to be more influential. There was also no evidence to support the 'sunken middle-class' hypothesis.

As expected, children's class aspirations were lower for boys and children from white backgrounds. However, the multi-group analysis found few differences in the direct pathways from the parents' and grandparents' social class to the grandchild's classed aspirations by gender and ethnicity. In this study, the higher aspirations of girls and non-white children, compared to boys and white children, at age seven was not explained by the social class of their parents or grandparents. There was one significant difference in the father-child intergenerational class pathway. The aspirations of non-white boys compared to those of white girls were more influenced by the class of the father.

This chapter identified a direct effect (although very weak) on children's classed aspirations via the parents and the paternal grandmother's social class, net of parents' income and education. Parents' social class mediated the effect of grandparents' class on the grandchild's classed aspirations.

Chapter 7 Determinants of aspirations: School and neighbourhood level influences

7.1 Introduction

This chapter investigated the role of the broader context i.e. school and neighbourhood on children's aspirations. Contextual factors of neighbourhood SES and school achievement and poverty[33], along with individual level indicators of family SES, parental involvement in home-based learning and the child's cognitive ability were examined as possible predictors of children's aspirations. Aspirations were categorised using the three ways of classifying aspirations, the occupation, the masculinity/femininity of the aspiration, and extrinsic/intrinsic motivation.

This chapter firstly outlines the aims of the research and is subsequently divided into three parts, a brief outline of the method particular to this chapter, the results and a brief outline of the results and conclusions. The results section covers single level SEM with and without accounting for complex survey design, a school two-level random intercept SEM, a neighbourhood two-level random intercept SEM, and a two level cross-classified random intercept SEM. The analysis firstly investigates the intra-class correlations between the two level SEM and then the two-level cross-classified models, and then examines the pathways to children's aspirations in the different models

7.1.1 Study aims

The first of this chapter's aims was to identify if there were any school and/or neighbourhood effects on children's aspirations. As discussed, contextual frameworks in developmental psychology stress the importance of examining the multiple contexts that influence children and their families. However, previous work with older children has found weak neighbourhood effects and stronger school effects on occupational aspirations (Wicht & Ludwig-Mayerhofer, 2014). With the aspirations of younger children, it was expected that the contextual effects would potentially be weaker than school and neighbourhood effects found with older children, because home and the family might be a greater influence on children at this age.

The second aim was empirical, to test the consequence of ignoring complex survey designs in multilevel analysis[34]. As outlined in section 3.1 the MCS uses a complex survey design which if

[33] School poverty is defined by the proportion of children receiving FSM
[34] As discussed in section 4.3.3.1 the TYPE=COMPLEX command in MCS specifying the stratification, cluster and weights could not be used in the two-level and cross-classified models analysed in this Chapter.

ignored in the analysis, can result in the underestimation of standard errors and the risk of Type I errors[35].

The third aim was to examine whether neighbourhood socio-economic status and school characteristics influence young children's aspirations. And to investigate, if neighbourhood socio-economic status and school characteristics contribute to children's aspirations, over and above the pathway from family socio-economic status to children's aspirations. Family socio-economic status was expected to have a greater influence on children's aspirations than neighbourhood socio-economic status, because for children the home is their main situational influence. And schools may be the main pathway through which the influence of neighbourhood is transmitted to children.

7.2 Method

7.2.1 Participants

In this study, data from sweeps 2, 3 and 4 of the Millennium Cohort Study (MCS) was used when the children were aged 3, 5 and 7 years, respectively. Information was used from the main respondent and their partner, the children themselves, school level data from the PLASC and geographically linked data from the IMD. As comparable school and neighbourhood data for the four countries was not available in MCS (see section 3.3.3) this study used data from families living in England. In total in England, 10,050 families took part at MCS2, 9,717 at MCS3, and 8,839 at MCS4 (Hansen et al., 2012). Records for only one child per family (singletons and the first-born twin or triplet) were used to avoid having to account for the clustering of children within families. The analytic sample for the models was n = 6,502 all children whose first aspiration could be coded into at least one of the three aspiration categories (occupation, masculinity and extrinsic motivation) explored (n = 7,442) and where the families were living in England at sweep 2 and sweep 3, so school and neighbourhood data was available (n = 6,575[36]). The school information was only available for state maintained schools, therefore other types of schools could not be included in the analysis.

7.2.2 Measures

Children's aspirations were measured with broad occupational categories; the masculinity/femininity of the detailed occupation or future role; and extrinsic and intrinsic goals.

[35] A type I error occurs when detecting an effect that is not present i.e. the null hypothesis is true, but the null hypothesis is rejected because in this instance the standard errors have been underestimated and are therefore lower than they should be in a representative sample.
[36] A further 73 records were removed because there was no school or LSOA identifier in the sample to allow for multilevel clustering of data.

Occupational aspirations were classified, using the one-digit SOC2000 code from the Standard Occupational Classification 2000 (ONS; www.ons.gov.uk), into nine major groups, with 1 indicating the highest occupation status (Managers and Senior Officials) and 9 the lowest (Elementary Occupations). *Masculine and feminine aspirations* were coded using the proportion female among UK workers (age 16-74) in that occupation (SOC2000) using the Quarter 2 (April-June) 2008 Labour Force Survey (LFS; Office for National Statistics), around the time of MCS4 fieldwork. The following bandings were applied: "masculine" (< 25% women), "integrated" (25% to 49.9% women), "feminine" (50% to 74.9% women), and "ultra-feminine" (>= 75% women). *Extrinsic and intrinsic aspirations* were coded into four categories: "extrinsic", "extrinsic-intermediate", 'neutral' or "intrinsic-intermediate".

Children's cognitive ability was measured as a latent construct at age 5 using the Naming Vocabulary, Pattern Construction and Picture Similarities tests from the second edition of the British Ability Scales (Elliott et al., 1996). The Naming Vocabulary scale measures expressive language ability and knowledge of nouns. The Pattern Construction and Picture Similarities scales measure non-verbal ability, specifically spatial realisation and problem solving, respectively.

Parental involvement in home-based learning was measured at age 5 with four items, for each of the main carer and their partner, on how frequently the parent engaged in the following with the child: doing musical activities; telling stories; drawing, painting or making things; and playing [α = 0.64 (main carer), α = 0.65 (partner)]. All items were on 6-point scales (1='never' to 6='every day').

Family SES at age 3 years was measured as a latent factor comprising five continuous variables, reflecting the latent construct for neighbourhood SES. The measures were the highest academic qualification (7 categories ranging from 1 'higher degree' to 7 'no qualifications') and social class (in seven categories of the National Statistics Socio-economic Classification (NS-SEC) ranging from 1 'Higher managerial, administration and professional occupations' to 7 'routine occupations') for both the mother and partner. Family income was measured using the OECD equivalised scales, where 1 is the highest income quintile and 5 is the lowest (Hansen et al., 2014).

Neighbourhood SES at age 3 years was measured as a latent factor comprising three continuous variables. The three IMD measures were income deprivation, employment deprivation and education, training and skills deprivation deciles ranked from 1 to 10, where 1 was equal to the top quintile (the least deprived) and 10 was equal to the bottom quintile (the most deprived).

School factors were measured using two variables, the Key Stage 1 average points score (KS1 APS) collected in 2006, (an indicator of school quality) and the proportion of children receiving free school meals (an indicator of poverty).

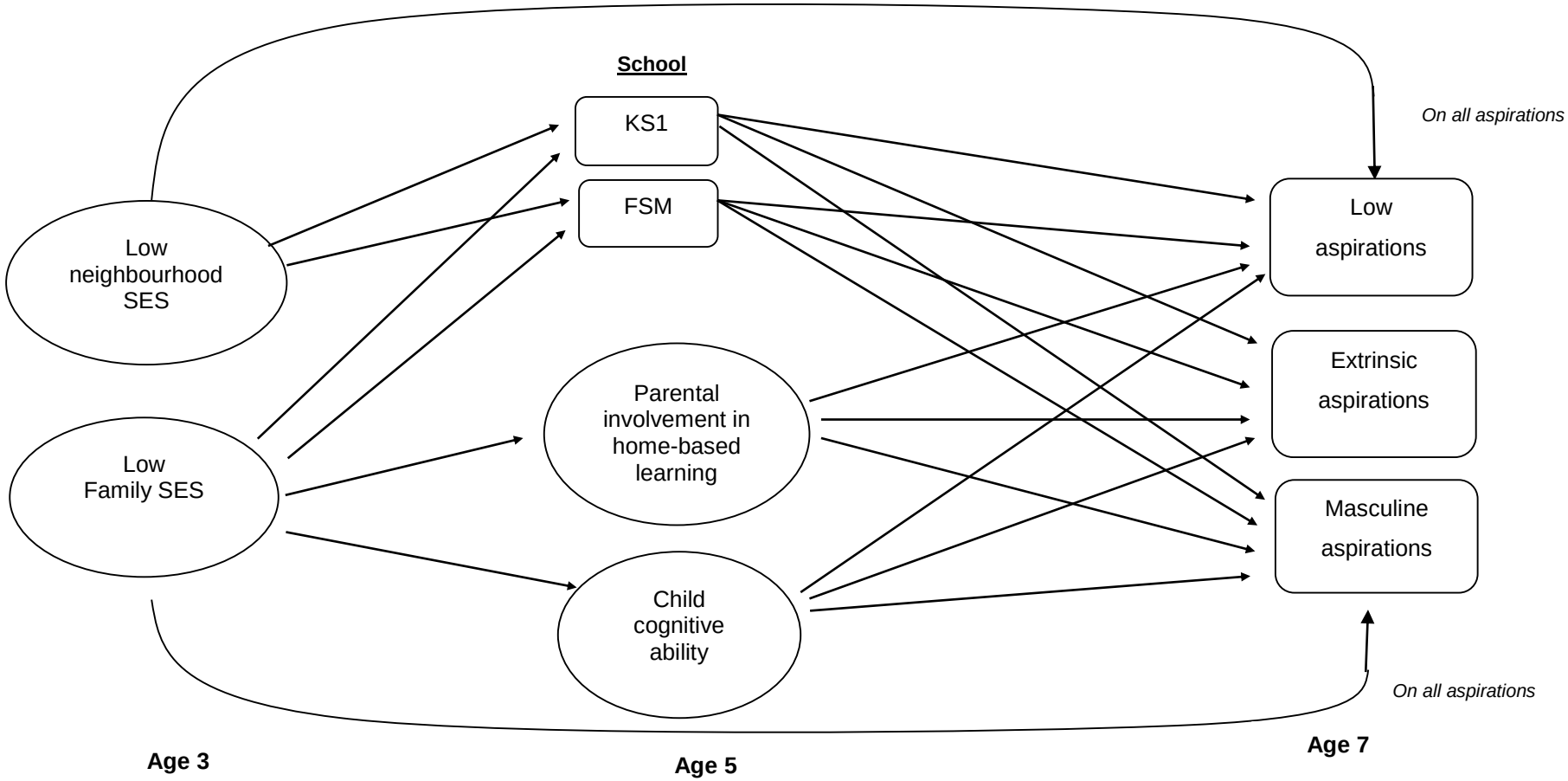
Control factors were the child-level variables of age, gender, birth order and ethnicity on parental involvement in home- based learning and children's cognitive ability, and age, gender, and ethnicity on children's aspirations. Children's ethnicity was grouped into six categories: white, Indian, Pakistani or Bangladeshi, black, mixed, and other ethnicity as per the UK-wide government census classification.

7.2.3 Analytic approach and hypothesised model

Firstly, the families in the analytic sample (n = 6,502) were tested to see if they differed from families not in the sample (n = 2,337) on the covariates. Then, the correlations among the primary variables were examined. Before any multilevel modelling, two-level and cross-classified intra-class correlation coefficients were estimated to establish the proportion of the variance accounted for by the different levels (Snijders & Bosker, 2012). Structural equation modelling (SEM) was then used to test the hypothesised model (Figure 7-1). A number of models were fitted using single level, two-level and cross-classified random intercept models. Firstly, two single level models, one accounting for the MCS complex survey design and the other not, were run to identify the possibility of any Type I errors. The next models were two-level, one individual (family / child level) and school level and the other individual (family/child level) and neighbourhood level. The final model was a cross-classified model which is used to model imperfect hierarchies. In this case, in the MCS not all children in the same school live in the same neighbourhoods nor children living in the same neighbourhoods go to the same schools.

Low neighbourhood SES, low family SES, parental involvement in home-based learning, and the child's cognitive ability were latent constructs loading on their scale items. Covariances were specified among all variables within each sweep with the exception of the school measures with the parental involvement in home-based learning and child's cognitive ability at age 5. The data from the school level measures and the MCS data were collected from different groups of children. Parental involvement in home-based learning and children's cognitive ability were adjusted for gender, birth order and ethnicity. Finally, aspirations were controlled for age, gender and ethnicity.

Figure 7-1: Hypothesised SEM model for school and neighbourhood influences on aspirations



Covariances specified for low neighbourhood and family SES at age 3, KS1 and FSM at age 5, parental involvement in home-based learning and child ability at age 5, and aspiration classifications at age 7

To fit the models, Mplus 7.3 was used (Muthen & Muthen, 1998-2012). In the single level and two-level models the estimator was maximum likelihood with robust standard errors (MLR) using a numerical integration algorithm. Maximum likelihood allows missingness to be a function of the observed covariates and outcomes. In the single level and two-level models several measures were used to assess the goodness of fit of the model to the data (i.e., the χ^2 statistic, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), and the Tucker Lewis Index (TLI)). In Mplus the complex sample design could not be accounted for in the two-level and cross-classified random intercept models[37]. To test the effect of ignoring the disproportionate, stratified clustering in the MCS sample selection, the TYPE=COMPLEX command, along with the stratification, cluster and weight options were used in one of the single level models and the standard errors were compared to the same single level model where the complex sample design was not accounted for in the analysis. The cross-classified model used a Bayesian estimator, and the Gibbs MCMC algorithm to generate the posterior distribution of the parameters (Gelman, Carlin, Stern & Rubin, 2004). There was no prior distribution used in the cross-classified random intercept model and therefore the results are assumed to be very similar to SEM using a maximum likelihood estimator (Rasbash & Browne, 2008).

7.3 Results

7.3.1 Descriptives and correlations

The 2,337 excluded families were compared with the analytic sample (n = 6,502) used in this study (see Appendix XIII). The analytic sample had more girls, children from white backgrounds and with higher cognitive ability. The mothers and their partners had higher qualifications and social class, and higher family income. The families in the analytic sample also lived in neighbourhoods where residents had higher income, qualifications and employment levels. The schools in the analytic sample were also higher achieving and had lower proportions of children receiving free school meals.

[37]In Mplus the standardised coefficients for the random coefficients model are not available.

Table 7-1 shows the pairwise correlations between the main variables in the analytic sample. As expected, more masculine and more extrinsic aspirations, more feminine and lower aspirations, and more extrinsic and lower aspirations were correlated. Lower aspirations were weakly correlated with lower paternal qualifications and social class (but not maternal qualifications and social class), low neighbourhood qualifications and schools with a higher proportion of FSM. More extrinsic aspirations were correlated weakly with higher maternal qualifications and social class, and higher family income. This association was similar at the school and neighbourhood level. More extrinsic aspirations were correlated with higher school achievement and lower proportion of children with FSM, and higher neighbourhood income, employment and qualifications. More masculine aspirations were correlated with lower maternal qualifications, and lower child cognitive ability. As expected, family qualifications, social class and income were strongly correlated with neighbourhood income, employment and education. School measures were more strongly correlated with measures of neighbourhood SES than family SES, suggesting some heterogeneity in the social composition of neighbourhoods.

Table 7-1: Pairwise correlations of key observed study variables

	1	2	3	4a	4b	4c	4d	4e	5a	5b	5c	6a	6b	7a	7b	7c	7d
1. Low occupational aspiration	-																
2. Extrinsic aspiration	.20**	-															
3. Masculine aspiration	-.09**	.40**	-														
4. Low family SES																	
a) Maternal qualifications	.01	-.03*	. 04**	-													
b) Paternal qualifications	.04**	.01	.00	.51**	-												
c) Maternal NS-SEC	.02	-.03*	.01	.56**	.39**	-											
d) Paternal NS-SEC	.03*	-.02	.01	.45**	.57**	.42**	-										
e) Equivalised income (1-5)	.01	-.09*	-.01	.58**	.51**	.58**	.54**	-									
5. Low neighbourhood SES																	
a) Income domain deciles	-.02	-.07**	.02	.43**	.36**	.39**	.42**	.56**	-								
b) Employment domain deciles	-.01	-.06**	.00	.41**	.35**	.37**	.42**	.54**	.91**	-							
c) Education, training and skills domain deciles	.03*	-.05**	.00	.46**	.43**	.42**	.45**	.54**	.82**	.79**	-						
6. School																	
a) KS1	.00	.05**	.00	-.36**	-.30**	-.30**	-.31**	-.40**	-.50**	-.45**	-.47**	-					
b) FSM	-.03*	-.06**	.00	.40**	.32**	.34**	.37**	.50**	.68**	.64**	.56**	-.64**	-				
7. Mother involvement in learning:																	
a) Telling stories	-.02	-.02	-.01	-.04**	-.01	-.03*	.01	.01	.02	.03*	.01	.02	-.00	-			
b) Musical activities	.02	.01	-.06**	-.11**	-.05**	-.02	-.04**	-.07**	-.05**	-.03**	-.02	.05**	-.09**	.27**	-		
c) Painting or drawing	-.01	-.02	-.06**	-.09**	-.08**	-.02	-.06**	-.05**	-.03**	-.01	-.03*	.05**	-.06**	.30**	.33**	-	
d) Play toys or games indoors	.03*	.01	-.01	-.09**	-.07**	-.05**	-.05**	-.10**	-.08**	-.05**	-.05**	.08**	-.10**	.26**	.32**	.43**	-
8. Partner involvement in learning:																	
a) Telling stories	-.02	.01	.02	-.02	-.05**	-.03*	-.02	.02	.04**	.05**	.02	-.01	.03*	.20**	.10**	.09**	.07**
b) Musical activities	.03*	.00	-.05**	-.06**	-.04**	-.06**	-.03*	-.05**	-.01	-.01	-.01	.04**	-.05**	.10**	.23**	.14**	.11**
c) Painting or drawing	.02	-.01	-.00	-.02	-.06**	-.04**	-.02	-.04**	-.01	.00	-.03*	.03	-.02	.10**	.10**	.22**	.15**
d) Play toys or games indoors	.02	.05**	.09**	-.09**.	-.07**	-.07**	-.03*	-.09**	-.07**	-.05**	-.05**	.08**	-.09**	.10**	.12**	.15**	.22**
9. Child cognitive ability:																	
a) Naming vocabulary	.02	.03*	-.05**	-.39**	-.30**	-.31**	-.30**	-.40**	-.35**	-.31**	-.29**	.30**	-.36**	.04**	.15**	.11**	.15**
b) Pattern construction	-.02	-.01	-.07**	-.23**	-.19**	-.19**	-.15**	-.22**	-.19**	-.17**	-.`17**	.17**	-.20**	-.01	.06**	.08**	.10**
c) Pattern similarities	-.02	-.01	-.05**	-.17**	-.16**	-.13**	-.13**	-.15**	-.12**	-.11**	-.13**	.11**	-.10**	.01	.03**	.04**	.04**
N	6247	6502	6414	6482	5411	5702	5552	6483	6502	6502	6502	6121	5959	6499	6497	6500	6498
Mean	3.23	2.03	2.89	4.78	4.73	3.75	3.44	2.66	4.93	5.08	4.86	5.44	5.52	3.50	2.30	3.21	2.57
SD	1.57	.87	1.06	1.99	2.12	2.01	2.02	1.38	2.98	2.94	2.94	2.85	2.83	1.53	1.32	1.21	1.21

Table 7-1 (continued)

	8a	8b	8c	8d	9a	9b	9c
8. Partner involvement in learning:	-						
a) Telling stories	.33**	-					
b) Musical activities	.31**	.34**	-				
c) Painting or drawing	.29**	.30**	.39**	-			
d) Play toys or games indoors							
9. Child cognitive ability:							
a) Naming vocabulary	.03	.08**	.04**	.11**	-		
b) Pattern construction	-.03*	.01	.05**	.06**	.34**	-	
c) Pattern similarities	.04**	.01	.02	.03*	.28**	.32**	-
N	4820	4822	4822	4822	6464	6454	6454
Mean	3.60	2.97	3.66	2.59	54.19	50.89	55.77
SD	1.47	1.47	1.22	1.11	11.23	9.67	9.94

7.3.2 Variance Partition Coefficient (Intra-class correlations (ICC))

The analytic sample (n = 6,502) included 2,681 schools and 2,616 neighbourhoods. The average number of children in the study per school was 2.43 and 62% of schools had only one child in the sample. For neighbourhoods, the average number of children in the study per neighbourhood was 2.49 and 60% of neighbourhoods were represented by only one child. Prior to conducting multilevel SEM the ICC for the two-level and cross-classified models were estimated for the three classifications of aspirations (occupational, masculinity/femininity and extrinsic / intrinsic goals) to establish if the contextual factors had an effect on the outcome. Table 7-2 shows the intra-class correlations for the two-level models[38]. As expected, the variance in children's aspirations was better explained by the child and family than contextual factors. The different schools and neighbourhoods explained less than 1% of the variance in the masculinity/femininity of the aspiration. A very small percentage of the variance in occupational aspirations was explained by different schools (3.1%), but not by the neighbourhood (1.3%). The extrinsic/intrinsic motivation of the aspiration was explained by very small differences in the variance of schools (2.9%) and neighbourhoods (2.6%).

Table 7-2: Two-level models: Intra-class correlations for aspiration outcomes

	Two-level school model			Two level neighbourhood model		
	Coefficient (standard error)	Intraclass correlation	Percentage of variance	Coefficient (standard error)	Intraclass correlation	Percentage of variance
Occupational aspirations (SOC)						
Neighbourhood variance	-	-	-	0.031(0.021)	0.013	1.3%
School variance	0.077(0.027)	0.031	3.1%	-	-	-
Child and family (level 1) variance	2.390(0.070)	0.968	96.8%	2.436(0.071)	0.987	98.7%
Extrinsic/intrinsic aspiration						
Neighbourhood variance	-	-	-	0.020(0.007)	0.026	2.6%
School variance	0.022(0.007)	0.029	2.9%	-	-	-
Child and family (level 1) variance	0.738(0.013)	0.971	97.1%	0.739(0.013)	0.974	97.4%
Masculinity/femininity of aspiration						
Neighbourhood variance	-	-	-	0.010(0.011)	0.009	0.90%
School variance	0.005(0.009)	0.004	0.40%	-	-	-
Child and family (level 1) variance	1.119(0.016)	0.996	99.6%	1.115(0.017)	0.991	99.1%

Table 7-3 shows the results of the unconditional cross-classified school and neighbourhood model exploring the importance of children, schools and neighbourhoods in explaining children's aspirations. The cross-classified model treats children as nested within a cross-classification of schools attended and neighbourhoods resided in. The model produces three intraclass correlations; the intra-neighbourhood correlation (children living in the same neighbourhood, but attending different schools); the intra-school correlation (children attending the same school, but living in different neighbourhoods); and the intra-cell correlation (children living in the same neighbourhood and attending the same school). Similar to the two-level models, the child level explains more variation in children's aspirations than the neighbourhood they live in or the school attended. Contextual factors, although very weak, explained the variation in motivation for the aspiration, more than its prestige or masculinity/femininity. The school and neighbourhood explained 4.86% of the variation in extrinsic/intrinsic motivation. For the prestige of the aspiration the school attended explained the variation in responses, more than the neighbourhood. The contextual factors for masculinity / femininity of the aspiration were very weak. As the ICCs were very weak for the intra-neighbourhood on the prestige and the intra-neighbourhood and the intra-school for the masculinity / femininity of the aspiration, as well as reasons of parsimony[39] these levels were excluded from the cross-classified model.

Table 7-3: Two-level cross classified schools and neighbourhoods unconditional model

	Coefficient	Standard deviation	Intraclass correlation coefficient
Occupational aspirations (SOC)			
Neighbourhood (level 2b) variance	0.016	0.016	0.65%
School (level 2a) variance	0.058	0.028	2.36%
Child and family (level 1) variance	2.388	0.051	96.99%
Overall neighbourhood and school	-	-	3.01%
Extrinsic/intrinsic aspiration			
Neighbourhood (level 2b) variance	0.016	0.003	2.10%
School (level 2a) variance	0.021	0.003	2.76%
Child and family (level 1) variance	0.725	0.014	95.14%
Overall neighbourhood and school	-	-	4.86%
Masculinity / femininity of aspiration			
Neighbourhood (level 2b) variance	0.012	0.004	1.07%
School (level 2a) variance	0.016	0.005	1.42%
Child and family (level 1) variance	1.098	0.021	97.51%
Overall neighbourhood and school	-	-	2.49%

7.3.3 SEM paths for the single level models.

Figure 7-2 shows the path diagram of the single level SEM models of child, school and neighbourhood effects for the three ways of classifying aspirations (occupational,

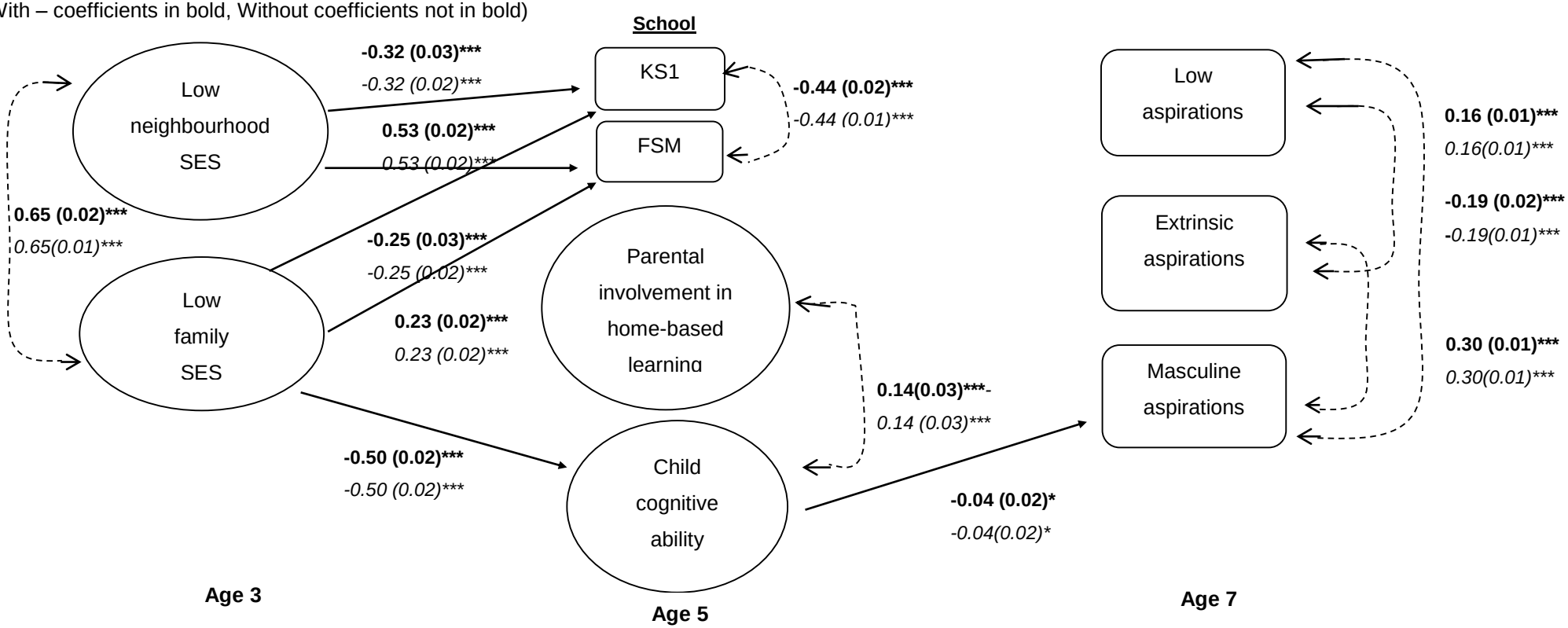
[39] Initial models were tested using all the aspiration outcomes

masculine/feminine and extrinsic/intrinsic). One model accounts for complex survey designs (standard regression coefficients and standard errors highlighted in bold) and the other does not (standard regression coefficients and standard errors not in bold). Below the statistically significant findings of these models are presented, as well as the impact of ignoring the MCS survey design on the results. The overall fit for the models accounting for and not accounting for the complex survey design were very good and similar. The fit for the model accounting for the complex survey design was ($\chi^2(376) = 3115.03$, $p < .001$; RMSEA = .033; CFI = .932; TLI = .915). A similar goodness of fit was obtained for the model not accounting for complex survey design ($\chi^2(376) = 3578.19$, $p < .001$; RMSEA = .036; CFI = .934; TLI = .918), with the exception of the χ^2 statistic which was significantly reduced when the complex survey design was accounted for in the model.

In both models (Figure 7-2), low family SES was directly negatively related to child cognitive ability and school achievement, but positively related to the proportion of children receiving FSMs. Similarly, low neighbourhood SES was associated with low school achievement and higher proportions of children receiving FSMs. Child cognitive ability was very weakly associated with more feminine aspirations. For all measures the significant pathways, covariances and covariates were exactly the same in the models accounting for and not accounting for the complex survey design[40]. Therefore, ignoring the MCS complex sample design did not make much difference to the standard errors and the study could proceed with conducting multi-level models with no adjustment for complex survey design.

[40] Although some of the standard errors (e.g. the pathway from low family SES to KS1 and low neighbourhood SES to KS1) were underestimated, this did not impact on the significant findings of the two different models.

Figure 7-2: Single level SEM predicting aspirations (with and without survey design)
(With – coefficients in bold, Without coefficients not in bold)



Single level with complex survey design n = 6,502; $\chi^2(376) = 3115.03$, $p < .001$; RMSEA = .033; CFI = .932, TLI = .915, SRMR = .043 (BOLD)

Single level no clustering, weights n = 6,502; $\chi^2(376) = 3578.19$, $p < .001$; RMSEA = .036; CFI = .934, TLI = .918, SRMR = .043 (NOT IN BOLD)

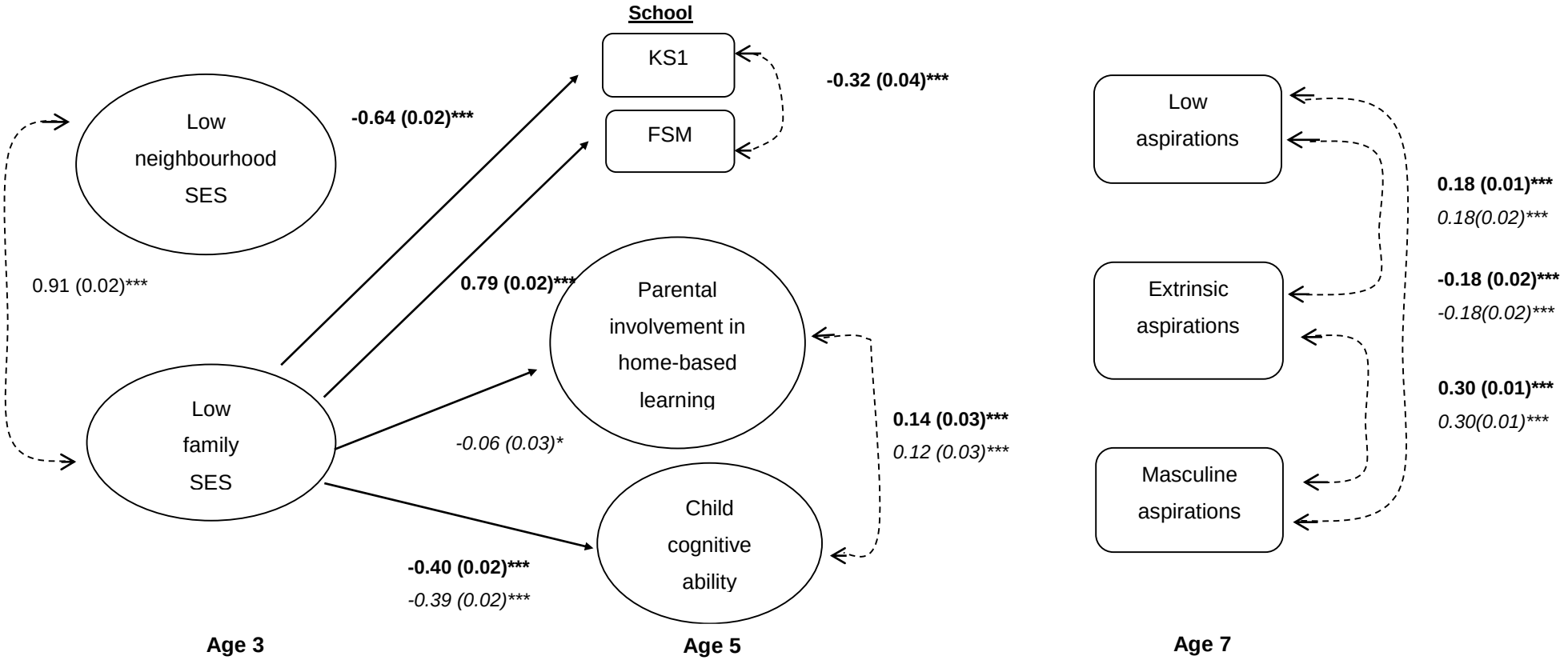
Note: Diagram shows standardised regression coefficients and standard errors. Only statistically significant (*p < .05; **p < .01; ***p < .001) results are shown. Child's ability, parental involvement in home-based learning and aspirations were controlled for the child's gender, age and ethnicity.

7.3.4 SEM paths for the two- level random intercept models.[41]

Figure 7-3 shows the path diagram of the two-level SEM models of children nested in schools and children nested in neighbourhoods. The fit for the two-level children nested in schools model was reasonable ($\chi^2(277) = 2881.58$, $p < .001$; RMSEA = .038; CFI = .908; TLI = .878). A similar goodness of fit was obtained for the two-level children nested in neighbourhoods model ($\chi^2(289) = 3304.62$, $p < .001$; RMSEA = .040; CFI = .914; TLI = .888). In both models (Figure 7-3) and similar to the single level models, low family SES was directly negatively associated with child cognitive ability. In the two-level school model, low family SES was very strongly positively related to the proportion of children receiving FSMs and very strongly negatively related to school achievement. In the two-level neighbourhood model low family SES was very weakly associated with parental involvement in home-based learning. However, in both the two-level school and neighbourhood models neither low neighbourhood SES nor the school measures nor any family or child level factors were related to children's aspirations.

[41] There were a number of reasons random intercept models were chosen instead of random coefficients models. The VPC identified that school and neighbourhood explained less than 5% of the variability in children's aspirations. The average number of children per school was 2.43 and per neighbourhood was 2.49, with so few children within each contextual group modelling the variability could be problematic. In Mplus there are no standardised coefficients available for the random coefficients model, which makes comparisons across the single, two-level and cross-classified models difficult. Therefore a more parsimonious approach was adopted.

Figure 7-3:Two level SEMs predicting aspirations (School level model and neighbourhood level model)



Two-level school model n = 6,502; $\chi^2(277) = 2881.58$, $p < .001$; RMSEA = .038; CFI = .908, TLI = .878, SRMR = .042

Two-level neighbourhood model n = 6,502; $\chi^2(289) = 3304.62$, $p < .001$; RMSEA = .040; CFI = .915, TLI = .889, SRMR = .044

Note: Diagram shows standardised regression coefficients and standard errors. Bold=school level, NOT BOLD=neighbourhood level. Only statistically significant (*p < .05; **p < .01; ***p < .001) results are shown. Child's ability, parental involvement in home-based learning and aspirations were controlled for the child's gender, age and ethnicity.

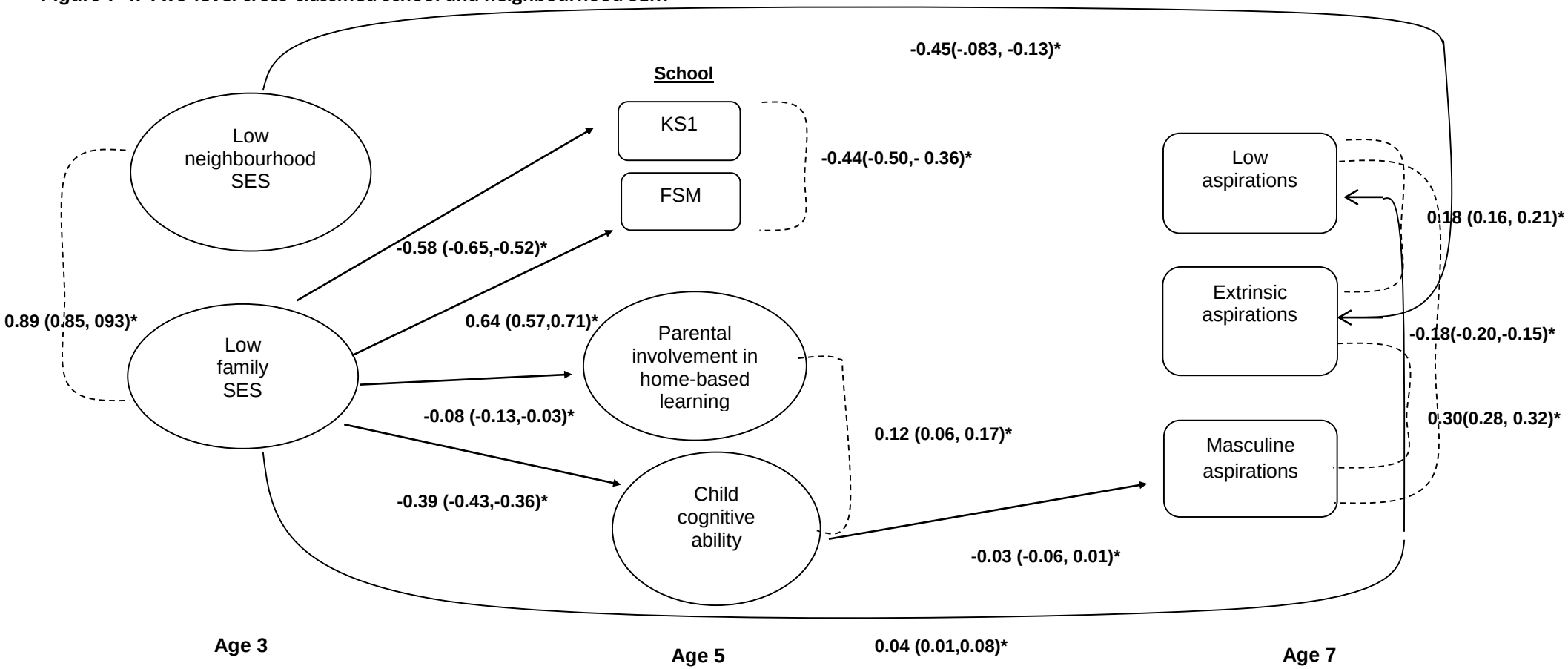
7.3.5 SEM paths for the two- level cross-classified random intercept model.

Figure 7-4 shows the path diagram for the two level cross-classified model, where children are nested within a cross-classification of schools attended and neighbourhoods resided in. There were no model fit statistics available for the model. As with the previous models, low family SES was directly negatively associated with child cognitive ability, parental involvement in home-based learning and school achievement, and positively related to the proportion of children receiving FSMs. Low family SES was also directly positively associated with the prestige of the aspirations, while child cognitive ability was very weakly associated with more feminine aspirations. Similarly to the single level models, child cognitive ability was negatively related to masculine aspirations. However, unlike the single or two-level models[42], in the cross-classified model low family SES was weakly directly positively related to low prestige aspirations, and low neighbourhood SES was directly negatively related to extrinsic aspirations.

The influence of the covariates on the three ways of classifying aspirations was similar across all the levels and types of models (see Appendix XIV). As in the analysis conducted in chapter 5, boys compared to girls had lower, more extrinsic and more masculine aspirations. All ethnic minority children had higher aspirations than white children Compared to white children, Pakistani/Bangladeshi and children from other ethnic groups had more intrinsic aspirations, and children form mixed ethnic backgrounds had more masculine aspirations. There were slight differences in the single, compared to the multi-level models. In the two-level models older children were related to masculine aspirations, and in the cross-classified model to more extrinsic aspirations. In the single level models, compared to white children, children from 'other' ethnic groups had more masculine aspirations.

[42] Although these were not significant findings in the single and two level models, the p-values were close to 0.05. In the two-level neighbourhood model the relationship between low family SES and low occupational aspirations was β = .04, *p*=.07. For the association between low neighbourhood SES and more extrinsic aspirations the coefficients were β = -.04, *p* = .07 and β = -.04, *p* = .09 in the single level models and β = -.37, *p* = .06 in the two-level neighbourhood model.

Figure 7-4: Two-level cross-classified school and neighbourhood SEM



Pathways for level 2 school (2a) and neighbourhood (2b) were not specified for masculine aspirations nor neighbourhood (level 2b) for low aspirations

Note: Diagram shows standardised regression coefficients and credibility interval. Only statistically significant (* credibility interval does not go through zero) results are shown. Child's ability, parental involvement and aspirations were controlled for the child's gender, age and ethnicity.

7.4 Conclusions

This chapter explored the role of the broader school and neighbourhood context on children's aspirations, classified by the occupational prestige and masculinity/femininity of the aspiration, and extrinsic/intrinsic motivation. The study focused on children living in England. The main aim was to understand if there were school and neighbourhood influences on children's aspirations, and if these influences contribute to children's aspirations over and above family level influences. A further aim of the study was empirical, to investigate the effect on the results of not taking account of the MCS complex survey design.

In England, the bivariate analysis showed that the masculinity/femininity of the aspiration was not related to school or neighbourhood characteristics, but weakly to maternal qualifications and the child's cognitive ability. Low occupational aspirations were weakly related to neighbourhoods with lower education residents and schools with high proportions of children receiving FSM and with lower paternal qualifications and NS-SEC. More extrinsic aspirations were associated with children living in neighbourhoods with higher incomes, employment and education, and higher achieving schools with a lower proportion of FSMs. At the family level more extrinsic aspirations were also related to higher maternal qualifications and NS-SEC, and family income.

As expected the neighbourhood of residence and the school attended explained very little of the variance in children's aspirations. In the two-level cross-classified SEM, the contextual influences explained 4.86% of the variance in extrinsic/intrinsic motivation, the school attended explained 2.36% of the variance in the prestige of the occupation, while 2.49% of the variance in the masculinity/femininity of the aspirations was explained by school and neighbourhood context. In the two-level cross-classified SEM low family SES was weakly directly related to lower occupational aspirations and indirectly to more feminine aspirations via cognitive ability. Low neighbourhood SES was directly related to extrinsic aspirations. In this study the school attended by the child did not influence children's aspirations.

This study fitted a number of different SEM models to investigate the consequences on the results of not taking account of the complex survey sampling design and the non-hierarchical structure of the school and neighbourhood data in the MCS. In the single level models, the significant pathways, covariances and covariates were exactly the same in the models accounting for and not accounting for the complex survey design. Therefore, ignoring the MCS complex sample design did not have much effect on the standard errors. Secondly, the models not taking account of the structure of the data resulted in different significant pathways, than the cross-classified model. In all models (where the pathway was specified) low family SES was

directly positively associated with FSMs and negatively directly related to child cognitive ability, parental involvement in home-based learning and the school's achievement. However, in the single level models, cognitive ability was negatively associated with masculine aspirations, while in the two-level models none of the predictors were associated with children's aspirations. Although some of the pathways to aspirations in the SEM models fitted were significant, the effect sizes were very weak.

This study, found schools and neighbourhoods explained very little of the variance in children's aspirations. In the cross-classified models, low family SES was (very weakly) related to low prestige aspirations, while high neighbourhood SES was associated with more extrinsic aspirations for wealth, fame and image.

Chapter 8 Fantasy, unrealistic, uncertain and unknown aspirations and children's emotional and behavioural adjustment in primary school

8.1 Introduction

This chapter examines the association between children's aspirations classified by their realism, the child's maturity, and externalising and internalising problems at age 7. All first-born children at sweep 4 were included in this study, regardless of whether they gave a response to the aspirations question. In this chapter, children's aspirations were defined as: non-rare or rare occupations, fantasy, descriptive and uncertain aspirations and not interpreted responses, item non-response and self-completion non-response. Therefore, this study included young children's expressions (or non-expression) of aspirations, which would normally be excluded from analysis because of lack of clarity and non-response.

This chapter firstly outlines the aims of the research and briefly outlines the method relevant to this chapter, followed by the results and a brief outline of the findings and conclusions. The results section covers bivariate analysis of aspirations and externalising and internalising problems by gender, and correlations between the main study variables. A series of regression models were fitted to investigate the influence of aspirations on externalising and internalising problems.

8.1.1 Study aims

Using data from the MCS, this study investigated the association between aspirations (or the ability to formulate them at age 7) and emotional and behavioural problems in primary school children. This work used novel categories of children's aspirations based on theory and previous empirical evidence. The exploratory hypothesis was that young children who had occupational aspirations would have positive outcomes compared to children who had 'fantasy,' 'descriptive' or uncertain aspirations, or those who did not state an aspiration. Seven year olds who express a fantasy or 'descriptive' aspiration may be falling behind developmentally or employing an escape function. Fantasy or substitutive future orientations may be an escape from the stresses of everyday life (Nuttin & Lens, 1985). These children were expected to have lower cognitive ability and more emotional and behavioural problems. The same pattern of results was expected for children whose responses could not be interpreted and for those who did not give an aspiration at all. Uncertain or unexpressed aspirations may reflect goal avoidance or difficulties in episodic future thinking, which was hypothesised to be linked to increased emotional or conduct problems.

It was also proposed that children with aspirations for rare occupations would have more positive emotional and behavioural outcomes compared to children choosing non-rare occupations. Children aspiring to rare occupations may be expressing their hopes for the future, free from constraints. At this age, this may be evidence that children have high self-efficacy and strong beliefs that they can influence their choices, regardless of the difficulty of their goals.

A number of family and child-level variables that may jointly determine aspirations and emotional and behavioural problems in children were adjusted for. As discussed, parental education, social class, mental health and family poverty are related to children's aspirations. They are also related to children's emotional and behavioural problems (Bradley & Corwyn, 2002; Goodman & Gregg, 2010; Shanahan et al., 2008). Because of the incomplete information on fathers, mother's social class, educational attainment and mental health were adjusted for, and whether the child had ever lived in a lone-mother family was also taken into account. The children's age, gender, and verbal cognitive ability were also adjusted for because these variables are related to children's emotional and behavioural problems (Huisman et al., 2010; Merikangas et al., 2010), and also to their aspirations. Furthermore, in line with cognitive theories of depression that depressed parents will globally report negatively on many aspects of their and their children's lives (Birmaher et al., 1996), - maternal depressed mood when the child was aged 5 was controlled for. To relate changes in family poverty to changes in levels of children's emotional and behavioural adjustment (Shanahan et al., 2008), both family poverty and children's emotional and behavioural problems were measured at age 7 and 5 (at the previous MCS sweep) were also taken into account.

8.2 Method

8.2.1 Participants

Data was used from the MCS, and information from the main respondents (usually the child's mother), and the children themselves from sweeps up to age 7, when aspirations were measured for the first time. Data was used from all sweeps (at children's ages 9 months, and 3, 5 and 7 years) from only the first-born, so that there was only one cohort member per family. Sweep 4 covered 14,043 children at age 7. Of these, 13,681 were singletons, 166 pairs of twins and 10 sets of triplets. The analytic sample comprised those children with a valid score on internalising or externalising problems at age 7 (N = 13,464).

8.2.2 Measures

In this study, children's aspirations were coded into eight categories. Occupational aspirations were coded into aspirations for '*non-rare' or 'rare' occupations*. '*Non-rare*' occupations were

those jobs held by more than 0.1% of the UK working population in 2008, when Sweep 4 of MCS took place. If the aspired job was held by less than 0.1% of the UK working population in 2008, then it was labelled '*rare*'. Quarter 2 (April-June) 2008 Labour Force Survey was used to identify the proportion of people employed in occupations (coded to the unit groups of the Standard Occupational Classification 2000). '*Rare*' occupations were answers such as 'sports person', 'vet', 'pop star' or 'spy'. This group, therefore, included unrealistic - but typical for younger children - career aspirations. '*Non-rare*' occupations were jobs such as 'teacher', 'police', 'doctor', 'hairdresser' or 'builder'. '*Fantasy*' aspirations were 'magical' and not achievable (such as 'royalty', 'superhero' or 'fairy'). '*Descriptive*' aspirations were responses reflecting states of mind (such as 'happy', 'helpful', 'normal', 'good') or future states (such as 'an adult', 'tall', 'a man', 'a mum'). '*Uncertain*' aspirations combined the 'don't know' and the few 'nothing' responses. '*Non-interpreted*' were those responses that were difficult to decipher (such as 'gormeth', 'lastoonrst', 'dinson'). '*Item non-response*' was for missing data on the 'aspiration' question by those children who otherwise completed the Self-Completion Module. '*Self-completion non-response*' was recorded when the whole Module was missing.

Emotional and behavioural problems at age 5 and 7 were measured using the main respondent's report of the Strengths and Difficulties Questionnaire (Goodman, 1997). Two major subscales were used in this study, externalising problems (α = 0.81), comprising of the sum of the two sub-scales conduct problems and hyperactivity, and internalising problems (α = 0.71), comprising of the sum of the two sub-scales emotional symptoms and peer problems. Scores on both subscales ranged from 0 to (potentially) 20, lower to higher levels of externalising and internalising difficulties.

The *family-level* covariates were family poverty, and mother's depressed mood, lone-parenthood, highest academic qualification and social class. Family poverty was measured (as in Malmberg & Flouri, 2011) by a four-item summative index of the following socio-economic disadvantages: overcrowding, non-ownership of home, receipt of income support and income (below the poverty line). The index ranges from 0 to 4, reflecting a family's level of material deprivation and social exclusion, Family poverty was measured when children were aged 5 and 7. Mother's depressed mood was assessed when the cohort child was aged 5, by Kessler's (2003) 6-item measure of psychological distress (K6), ranging from 0 to 24 (α = 0.84). Lone parenthood was a dichotomous variable indicating whether the main respondent had been a single parent at any of the four MCS sweeps. Mother's highest academic qualification as at Sweep 4 ranged from 'no qualification' to 'Higher Degree'. Mother's social class was constructed from information from all four sweeps of MCS. The highest social class since Sweep 1 was coded to one of the seven National Statistics Socio-economic classification groups, ranging from 'routine occupations' to 'Higher Managerial'/'Professional'.

The *child-level variables* were age (in days) at day of the Sweep 4 interview, sex, ethnicity, and verbal cognitive ability at age 7. Verbal cognitive ability was measured at age 7 with the British Ability Scales (BAS) II Word Reading scale, which measures receptive language skills. Children's scores were adjusted for their age according to the mean scores of the BAS norming group, and were computed using the BAS manual's conversion tables.

8.2.3 Missing data imputation

Overall 3.6% of the values on the explanatory variables were missing and were identified as not missing completely at random (Little's chi-square $p < 0.001$; Little & Rubin, 2002). A multiple imputation (MI) approach to handling missing data was adopted. Given the level of missingness, five imputed datasets (Graham et al., 2007) were generated in SPSS 20 using the Markov Chain Monte Carlo procedure. The imputation included all the variables in the model, with the exception of the outcome variables (externalising and internalising problems at Sweep 4), in a restrictive strategy (Collins et al., 2001).The models were fitted in SPSS which pooled the results from the analyses carried out in each imputed dataset.

8.2.4 Analytic plan

The prevalence of different types of response to the children's aspirations were examined, and the association of aspirations and externalising and internalising problems by gender. Then, correlations between the main study variables were explored. Lastly, a series of linear regression models were fitted to externalising and internalising problems at age 7. The first model regressed the outcomes on aspirations, gender and ethnicity. Model 2 added internalising and externalising problems at age 5 to measure change. Model 3, also included verbal cognitive ability, and the final model, added all the remaining covariates. Further analysis was conducted using the emotional and behavioural problem subscales of hyperactivity, conduct problems, emotional symptoms and peer problems to test if the relationship between children's aspirations was related to specific behavioural problem domains. All models controlled for the MCS survey design ('stratum')[43].

8.3 Results

8.3.1 Descriptives and correlations

Compared to the analytic sample, the non-analytic sample had lower maternal social class and qualifications, and more poverty. Children from the non-analytic sample were also more likely to

[43] At the time of the analysis weighting for complex survey design could not be used with imputed data in SPSS

be from an ethnic minority, have lower verbal cognitive ability, and not to have completed the Children's Self-Completion Questionnaire, which included the item on aspirations at age 7.

Most children in the analytic sample (81.6%) gave an occupational aspiration. Half of these aspirations were for *non-rare* (50.6%) occupations, and just under a third (31%) were for *rare* occupations. Very few children had *fantasy* (1%) or *descriptive* (2%) aspirations. Some children were uncertain (4.5%) of what their aspirations for the future might be, whereas others did not give a future goal. In particular, another 4.5% did not respond to the aspiration question, 1.2% could not convey their response in a way that could be understand, and 5.2% did not complete the Self-Completion Module.

Table 8-1 shows the mean internalising and externalising scores in each of the 'aspirations' category by gender. The highest means across externalising and internalising were for fantasy aspirations, 6.97 for externalising problems and 3.86 for internalising problems. Children not completing the self-completion questionnaire, also on average had high externalising (M=6.45) and internalising (M=3.75) problems. The lowest problem scores were for aspirations for occupations, non-rare occupations scored on average 4.73 on externalising and 2.87 on internalising problems, while lower still were aspirations for rare occupations, externalising on average 4.70 and internalising 2.52.

Table 8-1: Mean SDQ subscale scores in each aspiration category by gender

	Externalising problems (n = 13,413)			Internalising problems (n=13,415)		
Aspiration category	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**
Non-rare occupation	4.73	5.46***	4.18***	2.87	2.97*	2.79*
Rare occupation	4.70	5.11***	4.08***	2.52	2.57	2.45
Fantasy	6.97	7.55	6.07	3.86	4.09	3.48
Descriptive	5.64	6.59**	4.77**	3.04	3.30	2.80
Uncertain	4.84	5.46***	4.03***	2.96	3.21	2.64
Non-interpreted	5.26	5.42	4.91	2.96	2.94	3.01
Item non-response	5.12	5.63**	4.43**	2.90	2.83	3.00
Self-completion non-response	6.45	7.10***	5.47***	3.75	3.90	3.51
Total	4.88	5.48**	4.24**	2.82	2.90**	2.74**

Significant mean difference between boys and girls (*p < .05, ** p < .01, ***p < .001)

Table 8-2 shows the correlations between all the study variables. Correlations between aspirations and other variables were very modest in size. Aspirations for *rare occupations* were positively associated with being male, being white, verbal cognitive ability and maternal social class, and negatively with maternal depression, poverty at age 5 and 7 and externalising and internalising problems. Aspirations for *non-rare occupations* were positively associated with being female, being Pakistani/Bangladeshi, and age 5 and 7 family poverty, and negatively with age 5 and 7 externalising problems. *Fantasy aspirations* were positively associated with emotional and behavioural problems at age 5 and 7, maternal depressed mood at age 5, and negatively with age, but were not related to verbal cognitive ability. *Descriptive aspirations* were associated with family poverty at age 5 and age 7, and lower verbal cognitive ability and higher externalising problems at age 7. *Uncertain aspirations* were related to being male, being white, and not related to emotional and behavioural problems, and were negatively associated with poverty. *Children whose responses could not be interpreted* were associated with being male, and had lower levels of verbal cognitive ability, and had experienced more poverty at both age 5 and 7 and maternal depressed mood at age 5. *Children who either did not respond to the aspirations question or the whole Self-Completion module* also had lower levels of verbal cognitive ability and had experienced more poverty at age 5 and age 7, but in addition they had higher emotional and behavioural problems. The children who did not respond to the Self-Completion were most likely to have emotional and behavioural problems, and were more likely to be in lone parent families and have mothers who were depressed at age 5.

Table 8-2: Descriptive statistics and pairwise correlations (Ns = 11,911-13,464)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Age	-																	
2. Girl	-.02																	
3. White	-.05**	-.00																
4. Mixed	.02*	.01																
5. Indian	.03**	-.01																
6. Pakistani/Bangladeshi	.02*	.01																
7. Black/Black British	.02*	-.01																
8. Other	.01	.00																
9. Externalising problems, age 5	-.02	-.15**	-.04**	.02*	.00	.04**	-.01	.00										
10. Internalising problems, age 5	.00	-.03**	-.14**	.02*	.05**	.14**	.03**	.04**	.40**									
11. Verbal cognitive ability, age 7	-.05**	.08**	-.06**	.02	.06**	.02	.02	.02*	-.27**	-.15**								
Mother's highest qualification	.01	.01	-.02*	.02*	.04**	-.03**	.02	.01	-.08**	-.04**	.11**							
12. Higher Degree	-.02	.00	.04**	.01	-.00	-.07**	-.01	.02*	-.16**	-.10**	.19**							
13. First Degree	-.02	-.00	.04**	-.00	-.01	-.05**	.01	-.00	-.08**	-.07**	.08**							
14. A Level/HE Diploma	.00	-.01	.10**	-.02	-.05**	-.07**	-.05**	-.04**	.02*	-.04**	-.05**							
15. GCSEa-c	.00	-.01	.03**	-.01	-.01	-.02	-.02*	-.02*	.10**	.08**	-.11**							
16. GCSEd-g	.02*	.01	-.18**	.00	.08**	.15**	.05**	.08**	.02	.04**	.01							
17. Other	.02	.01	-.15**	.01	.02	.17**	.05**	.01	.18**	.17**	-.19**							
18. None																		
Mother's highest social class																		
19. Higher Managerial/Professional	-.01	.02	-.00	.02*	.01	-.03**	.02*	-.00	-.09**	-.07**	.15**	.27**	.25**	-.00	-.16**	-.10**	-.02*	-.12**
20. Lower Managerial/Professional	-.01	-.01	.07**	.00	-.03**	-.08**	-.00	-.02	-.13**	-.12**	.14**	.07**	.23**	.14**	-.09**	-.13**	-.04**	-.19**
21. Intermediate	-.01	-.01	.04**	-.03**	.02*	-.05**	-.01	-.01	-.01	-.03**	.02*	-.08**	-.11**	.07**	.15**	-.00	-.02*	-.10**
22. Small employers	.02*	.00	-.04**	-.01	.00	.07**	-.02	.03**	.00	.02	-.02	-.03**	-.05**	-.01	.04**	-.01	.03**	.03**
23. Lower supervisory	-.01	.00	-.01	.01	-.01	.01	.01	-.01	.04**	.03**	-.06**	-.05**	-.09**	-.04**	.04**	.06**	.02	.05**
24. Semi-routine	.01	.01	-.05**	.01	.02	.07**	-.00	-.01	.13**	.12**	-.14**	-.10**	-.17**	-.11**	.05**	.14**	.02*	.19**
25. Routine	-.00	-.01	-.06**	.01	.01	.07**	.00	.03**	.12**	.11**	-.14**	-.07**	-.12**	-.12**	-.01	.09**.	.05**	.24**
26. Family poverty, age 5	.03**	.01	-.18**	.08**	-.01	.12**	.14**	.04**	.26**	.22**	-.26**	-.14**	-.24**	-.17**	.01	.14**	.06**	.35**
27. Family poverty, age 7	.03**	.01	-.20**	.07**	-.01	.14**	.15**	.04**	.23**	.20**	-.23**	-.12**	-.22**	-.16**	-.00	.12**	.05**	.34**
28. Ever in lone parent family	.00	-.01	-.06**	.08**	-.03**	-.04**	.13**	-.00	.13**	.10**	-.10**	-.05**	-.09**	-.06**	.01	.04**	-.01	.13**
29. Maternal depressed mood, age 5	.00	-.01	-.09**	.04**	.03**	.06**	.03**	.03**	.29**	.31**	-.10**	-.03**	-.07**	-.05**	-.02	.04**	.03**	.13**
Aspiration																		
30. Non-rare occupation	-.01	.16**	-.04**	-.02*	.02	.05**	-.01	.02*	-.03**	-.00	.00	.00	-.01	-.01	-.01	.01	.02*	.02
31. Rare occupation	.01	-.13**	.06**	.01	-.01	-.08**	.00	-.02*	-.03**	-.06**	.08**	.00	.02**	.01	.03**	-.02*	-.02*	-.05**
32. Fantasy	-.02**	-.02*	.01	-.01	-.01	.01	-.01	.00	.04**	.02*	-.01	.01	.01	.01	-.02*	.00	-.00	.00
33. Descriptive	-.01	.02	-.02	.00	-.00	.01	.02	.00	.02	.01	-.03**	.01	-.01	-.00	-.01	.01	-.00	.02
34. Uncertain	.01	-.02**	.03**	.00	-.02*	-.02*	-.01	-.01	-.01	.01	-.02	.01	.03**	.02*	-.02*	-.00	-.01	-.02*
35. Non-interpreted	-.00	-.04**	-.01	.01	.01	.00	.00	-.01	.02	.01	-.04**	-.01	-.01	-.02	.02	.01	.00	.01
36. Item non-response	.00	-.02*	-.01	-.01	-.01	.04**	-.01	-.01	.02*	.03**	-.05**	-.01	-.01	-.00	-.01	-.00	.01	.03**
37. Self-completion non-response	.02**	-.04**	-.04**	.02**	-.02*	.03**	.03**	.01	.10**	.08**	-.09**	-.01	-.03**	-.01	-.01	.02	.01	.05**
38. Externalising problems, age 7	-.03**	-.17**	-.02	.01	.00	.04**	-.02*	.00	.71**	.32**	-.30**	-.06**	-.15**	-.07**	.02**	.09**	.02*	.15**
39. Internalising problems, age 7	.00	-.03**	-.11**	.02*	.03**	.12**	.02	.03**	.36**	.58**	-.18**	-.05**	-.11**	-.07**	-.01	.06**	.04**	.16**
N	13464	13464	13371	13371	13371	13371	13371	13371	12543	12561	13065	12978	12978	12978	12978	12978	12978	12978
M	2640	1.49	.85	.03	.02	.06	.03	.01	4.77	2.52	111.44	.05	.14	.20	.34	.10	.03	.15
SD	90	.50	.36	.16	.15	.23	.17	.11	3.41	2.53	18.09	.22	.35	.40	.47	.30	.16	.36

Table 8-2 continued

	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
26. Family poverty, age 5	-.20**	-.26**	-.08**	-.02	.09**	.29**	.30**														
27. Family poverty, age 7	-.17**	-.24**	-.07**	.00	.08**	.24**	.28**	.77**													
28. Ever in lone-parent family	-.07**	-.08**	-.03**	-.03**	.03**	.08**	.13**	.39**	.30**												
29. Maternal depressed mood, age 5	-.06**	-.09**	-.02*	.00	.04**	.10**	.08**	.23**	.21**	.09**											
Aspiration																					
30. Non-rare occupation	-.02*	-.02*	.01	.00	.01	.03**	-.00	.03**	.03**	-.01	.00										
31. Rare occupation	.03**	.04**	.01	-.02	-.01	-.04**	-.03**	-.08**	-.08**	-.02*	-.04**										
32. Fantasy	.00	.01	-.00	-.01	-.02	.00	.01	.01	-.00	.00	.02*										
33. Descriptive	-.00	-.01	-.01	-.00	-.02	.02*	.02*	.04**	.04**	.01	.01										
34. Uncertain	.01	.02*	-.01	.02	-.01	-.02**	-.01	-.04**	-.03**	.00	-.02										
35. Non-interpreted	-.02**	-.00	.00	.02	-.02*	.00	.03**	.03**	.03**	.01	.03**										
36. Item non-response	-.00	-.03**	-.01	.02*	.02*	-.01	.04**	.04**	.03**	-.00	.01										
37. Self-completion non-response	-.01	-.03**	-.01	-.00	.01	.04**	.02	.07**	.07**	.05**	.04**										
38. Externalising problems, age 7	-.09**	-.12**	-.02	-.00	.04**	.13**	.11**	.24**	.21**	.11**	.25**	-.04**	-.04**	.05**	.02*	.00	.02	.02*	.10**		
39. Internalising problems, age 7	-.08**	-.10**	-.05**	.02*	.03**	.12**	.10**	.23**	.21**	.09**	.28**	.02*	-.08**	.03**	.01	.00	.01	.02*	.08**	.45**	
N	12539	12539	12539	12539	12539	12539	12539	11026	13389	13364	11911	13464	13464	13464	13464	13464	13464	13464	13464	13412	13415
M	.10	.31	.20	.06	.06	.19	.09	.84	1.68	.08	2.84	.51	.31	.01	.02	.05	.01	.05	.05	4.75	2.76
SD	.30	.46	.40	.23	.24	.39	.29	1.12	.97	.27	3.21	.50	.46	.10	.14	.21	.11	.21	.22	3.62	2.82

*p < .05, ** p < .01, ***p < .001. Correlations, means and SDs are weighted, N unweighted

8.3.2 Regressions

The models of externalising problems are presented in Table 8-3. In all the models, older children, girls compared to boys, and black children compared to white were less likely to be associated with externalising problems. Model 1 showed that, compared to children with aspirations for *non-rare occupations*, children with *fantasy* or *descriptive* aspirations and those who did not complete the questionnaire had higher externalising problems at age 7. By contrast, compared to children with aspirations for *non-rare occupations*, those who aspired to *rare occupations* had fewer externalising problems.

In Model 2, on introducing internalising and externalising problems at age 5, the effect of '*descriptive*' aspirations became nonsignificant. The size of the coefficient of the effect of rare occupational and fantasy aspirations, and self-completion non-response was reduced. Externalising problems at age 5 were strongly related to externalising problems at age 7, but age 5 internalising problems were not. In Model 3, when verbal cognitive ability at age 7 was included, the association between aspirations for *rare occupations* in externalising problems became nonsignificant, and the size of the coefficient of the effect of self-completion non-response was reduced. Verbal cognitive ability at age 7 was negatively related to externalising problems.

In Model 4, when all the covariates were included in the model *fantasy* aspirations ($\beta = 1.13$, 95% CI: 0.58, 1.68 or 0.31 Standard Deviation units) and *self-completion non-response* ($\beta = 0.41$, 95% CI: 0.18, 0.65 or 0.11 Standard Deviation units) remained associated with increasing externalising problems. As well as *fantasy aspirations* and *self- completion non-response*, externalising problems and maternal depressed mood at age 5, verbal cognitive ability and family poverty at age 7, and mothers with no qualifications compared to mothers educated to degree level were related to children's externalising problems at age 7. On further analysis of the externalising problems sub-scales conduct problems were not associated with aspirations, however *fantasy* aspirations ($\beta = 0.89$, $p < .001$, 95% CI: 0.46, 1.31 or 0.09 Standard Deviation units) and *self-completion non-response* ($\beta = 0.27$, $p < .01$, 95% CI: 0.08, 0.46 or 0.20 Standard Deviation units) were related to hyperactivity.

Table 8-3: Externalising problems at age 7: regression coefficients (standard errors) – multiple linear regression (N =13,464)

	1	2	3	4
Constant	8.22(0.91)***	5.33(0.82)***	10.12(0.89)***	9.56(1.00)***
Age	-0.00(0.00)***	-0.00(0.00)**	-0.00(0.00)***	-0.00(0.00)**
Stratum: England-advantaged (ref)				
England-disadvantaged	088(0.09)***	0.45(0.08)***	0.33(0.08)***	0.19(0.08)*
England-ethnic	0.88(0.14)***	0.29(0.13)*	0.25(0.13)	0.07(0.13)
Wales-advantaged	-0.18(0.15)	-0.21(0.14)	-0.34(0.14)	-0.33(0.13)*
Wales-disadvantaged	0.73(0.11)***	0.32(0.10)**	0.01(0.10)	-0.13(0.10)
Scotland-advantaged	-0.31(0.14)*	-0.30(0.12)*	-0.34(0.12)**	-0.28(0.12)*
Scotland-disadvantaged	0.54(0.14)***	0.10(0.15)	-0.02(0.14)	.-0.08(0.13)
Northern Ireland-advantaged	-0.52(0.16)**	-0.28(0.14)*	-0.45(0.14)**	-0.38(0.14)**
Northern Ireland-disadvantaged	0.48(0.14)***	0.11(0.12)	-0.21(0.12)	-0.34(0.12)**
Girl	-1.22(0.06)***	-0.72(0.06)***	-0.65(0.06)***	-0.68(0.06)***
Ethnicity: White (ref)				
Mixed	-0.04(0.19)	-0.32(0.18)	-0.25(0.18)	-0.32(0.17)
Indian	-0.33(0.22)	-0.29(0.20)	-0.09(0.20)	-0.08(0.19)
Pakistani/Bangladeshi	-0.18(0.17)	-0.52(0.26)	-0.44(0.25)	-0.49(0.23)
Black/Black British	-0.90(0.19)***	-1.19(0.20)***	-1.11(0.19)***	-1.17(0.20)***
Other ethnic group	-0.24(0.29)	-0.61(0.43)	-0.47(0.40)	-0.45(0.37)
Externalising problems, age 5		0.54(0.03)***	0.51(0.03)***	0.49(0.03)***
Internalising problems, age 5		-0.12(0.09)	-0.12(0.08)	-0.14(0.08)
Verbal cognitive ability, age 7			-0.03(0.00)***	-0.03(0.00)***
Mother's highest qualification: None (ref)				
Higher Degree				-0.13(0.17)
First Degree				-0.38(0.13)**
A Level/HE Diploma				-0.19(0.11)
GCSEa-c				-0.09(0.10)
GCSEd-g				0.14(0.12)
Other				-0.11(0.19)
Mother's highest social class: Routine (ref)				
Higher Managerial/Professional				-0.18(0.13)
Lower Managerial/Professional				-0.21(0.11)
Intermediate				-0.13(0.13)
Small employers				-0.28(0.16)
Lower supervisory				-0.13(0.17)
Semi-routine				0.08(0.13)
Family poverty, age 5				-0.11(0.11)
Family poverty, age 7				0.22(0.08)*
Ever in lone-parent family				0.28(0.20)
Maternal depressed mood, age 5				0.07(0.03)*
Aspiration: Non-rare occupation (ref)				
Rare occupation	-0.22(0.07)**	-0.14(0.06)*	-0.06(0.06)	-0.04(0.06)
Fantasy	1.64(0.31)***	1.14(0.28)***	1.12(0.28)***	1.13(0.28)***
Descriptive	0.59(0.22)**	0.20(0.20)	0.10(0.20)	0.05(0.20)
Uncertain	0.07(0.15)	0.09(0.13)	0.06(0.13)	0.12(0.13)
Non-interpreted	0.24(0.28)	-0.01(0.27)	-0.18(0.26)	-0.22(0.26)
Item non-response	0.27(0.15)	0.13(0.14)	0.03(0.14)	0.03(0.13)
Self-completion non-response	1.38(0.14)***	0.66(0.13)***	0.42(0.13)**	0.41(0.12)**
R squared adjusted	0.06-0.06	0.33 – 0.37	0.36 – 0.39	0.38 – 0.40

Note. R squared adjusted shows the range of the five imputed datasets for each model. In SPSS 20 a model summary is not given for the pooled results. Coefficients unstandardized. Model excluding aspirations R squared adjusted 0.05

*p < .05, ** p < .01, ***p < .001

Table 8-4 shows results for internalising problems. Model 1 shows that compared to children with aspirations for *non-rare occupations*, those with *fantasy* aspirations and those who *did not complete the Self-Completion Module* had more internalising problems. By contrast, internalising problems were lower for children with aspirations for *rare occupations*. Boys compared to girls and Pakistani/Bangladeshi children compared to white children were related to internalising problems.

In Model 2, when externalising and internalising problems at age 5 were included, the coefficient for *fantasy* aspirations became nonsignificant and the size of the coefficient for self-completion non-response was reduced. Internalising problems at age 5, unlike externalising problems at age 5 were related to internalising problems at age 7. Gender and ethnic differences were no longer explanatory factors in model 2. In Model 3, after including verbal cognitive ability at age 7, the coefficient for *self-completion non-response* became nonsignificant, and the size of the coefficient of aspirations for *rare occupations* was attenuated.

In Model 4, when all the covariates were included, aspirations for *rare occupations* (β = -0.23, 95% CI: -0.33, -0.13, or 0.08 Standard Deviation units) remained associated with a small decrease in internalising problems. Internalising problems at age 7 were also associated with internalising problems and maternal depressed mood at age 5, and verbal cognitive ability and family poverty at age 7. On further analysis of the internalising sub-scales, aspirations for *rare occupations* were negatively associated with both peer problems (β = -0.15, $p < .001$, 95% CI: -0.22, -.09 or 0.07 Standard Deviation units) and emotional symptoms (β = -0.07, $p < .05$, 95% CI: -0.14, -0.06 or 0.03 Standard Deviation units).

Table 8-4: Internalising problems at age 7: regression coefficients / (standard errors) – multiple linear regression (N=13,464)

	1	2	3	4
Constant	2.87(0.71)***	2.15(0.74)**	4.19(0.86)***	4.26(0.80)***
Age	-0.00(0.00)	-0.00(0.00)	-0.00(0.00)	0.00(0.00)
Stratum: England-advantaged (ref)				
England-disadvantaged	0.62(0.07)***	0.35(0.07)***	0.29(0.07)***	0.16(0.06)*
England-ethnic	0.71(0.11)***	0.22(0.11)*	0.21(0.11)	0.03(0.11)
Wales-advantaged	-0.19(0.12)	-0.26(.12)*	-0.34(0.12)**	-0.33(0.12)**
Wales-disadvantaged	0.33(0.09)***	0.12(0.08)	.-0.06(0.08)	.-0.18(0.08)*
Scotland-advantaged	-0.31(0.11)**	-0.34(0.10)**	-0.36(0.10)***	-0.31(0.10)**
Scotland-disadvantaged	0.22(0.11)*	-0.00(.11)	-0.07(0.11)	-0.14(0.11)
Northern Ireland-advantaged	-0.27(.13)*	-0.26(0.12)*	-0.36(0.12)**	-0.29(0.12)*
Northern Ireland-disadvantaged	0.38(0.11)***	0.10(0.11)	-0.08(0.10)	-0.21(0.10)
Girl	-0.19(0.05)***	-0.05(0.06)	-0.05(0.06)	-0.08(0.06)
Ethnicity: White (ref)				
Mixed	0.21(0.15)	0.03(0.16)	0.07(0.16)	-0.02(0.15)
Indian	0.21(0.18)	0.01(0.20)	0.13(0.20)	0.13(0.19)
Pakistani/Bangladeshi	0.89(0.13)***	0.22(0.24)	0.27(0.23)	0.18(0.21)
Black/Black British	-0.02(0.15)	-0.42(0.26)	-0.38(0.26)	-0.46(0.25)
Other ethnic group	0.60(0.23)	-0.02(0.34)	0.07(0.34)	0.02(0.31)
Externalising problems, age 5		0.05(0.03)	0.03(0.03)	0.01(0.03)
Internalising problems, age 5		0.31(0.07)**	0.31(0.07)**	0.29(0.06)**
Verbal cognitive ability, age 7			-0.02(0.00)***	-0.01(0.00)***
Mother's highest qualification: None (ref)				-0.15(0.15)
Higher Degree				-0.24(0.13)
First Degree				-0.16(0.11)
A Level/HE Diploma				-0.10(0.30)
GCSEa-c				0.01(0.09)
GCSEd-g				-0.08(0.18)
Other				
Mother's highest social class: Routine (ref)				-0.21(0.15)
Higher Managerial/Professional				-0.12(0.15)
Lower Managerial/professional				-0.21(0.14)
Intermediate				-0.05(0.18)
Small employers				-0.05(0.12)
Lower supervisory				
Semi-routine				
Family poverty, age 5				-0.08(0.10)
Family poverty, age 7				0.20(0.07)*
Ever in lone-parent family				0.20(0.13)
Maternal depressed mood, age 5				0.09(0.03)*
Aspiration : Non-rare occupation (ref)				
Rare occupation	-0.34(0.06)***	-0.30(0.05)***	-0.25(0.05)***	-0.23(0.05)***
Fantasy	0.67(0.24)**	0.44(0.24)	0.43(0.24)	0.43(0.23)
Descriptive	0.13(0.17)	.-0.11(0.19)	-0.16(0.19)	-0.21(0.18)
Uncertain	0.07(0.18)	-0.06(0.12)	-0.08(0.12)	-0.02(0.18)
Non-interpreted	0.16(0.22)	-0.03(0.24)	-0.12(0.24)	-0.18(0.23)
Item non-response	0.10(0.18)	-0.07(0.12)	-0.13(0.12)	-0.13(0.12)
Self-completion non-response	0.85(0.11)***	0.41(0.16)*	0.28(0.15)	0.27(0.14)
R squared adjusted	0.04-0.04	0.16 – 0.24	0.17 – 0.25	0.20 – 0.26

Note. R squared adjusted shows the range of the five imputed datasets for each model. In SPSS 20 a model summary is not given for the pooled results. Coefficients unstandardized. Model excluding aspirations R squared adjusted 0.03.
*p < .05, ** p < .01, ***p < .001

8.4 Conclusion

This chapter examined the association between aspirations (or the ability to formulate them at age 7) and emotional and behavioural problems in primary school children. Although children's aspirations tend to be optimistic, according to Gottfredson (1981) by age 7 children no longer have fantasy or descriptive aspirations, In particular, this exploratory study focused on the association between children's aspirations classified by their realism and the children's maturity and the change in externalising and internalising problems from age 5 to age 7. Children's aspirations were defined as non-rare or rare occupations, fantasy, descriptive and uncertain aspirations and included young children's expressions (or non-expression) of aspirations, which would normally be excluded from analysis i.e. non-interpretable responses, item non-response and self-completion non-response. The research investigated whether occupational aspirations, in particular rare occupations (typical of children of this age) were related to more positive outcomes than non-occupational and also explored non-expression of aspirations.

For 81.6% of the children in the sample, aspirations were occupational. As predicted by Gottfredson, very few (1%) of the seven-year-olds in MCS aspired to be fantasy characters but many children had unrealistic aspirations reflecting hopes for *rare occupations*; 31% of the sample aspired to rare jobs. Nearly 10% (4.5% item non-response and 5.2% self-completion non-response) were non-responders to the aspirations question and 1.2% could not convey their response in a way that could be understood. Non-responders to the aspirations question were associated with lower cognitive ability, more poverty, and higher emotional and behavioural problems.

The bivariate relationship between aspirations and the explanatory variables was weak. However, after controlling for factors related to children's externalising and internalising problems, some types of aspirations compared to others were associated with behavioural problems. Although the difference was very small, children with *fantasy* aspirations (0.11 Standard Deviation units) and *self-completion non-responders* (0.04 Standard Deviation units) were more likely than children with aspirations for *non-rare occupations* to have externalising problems at age 7, even after adjusting for externalising and internalising problems at age 5 and all the study's covariates. Compared to aspirations for *non-rare occupations*, aspirations for *rare occupations* were associated (0.11 Standard Deviation units) with fewer internalising problems, even after adjusting for internalising and externalising problems at age 5 and all the study's covariates.

Ambitions for *rare occupations* were related to fewer internalising problems, both emotional symptoms and peer problems. By contrast, *fantasy aspirations and self-completion non-*

response at age 7 were associated with an increase in hyperactivity from age 5 to age 7, even after adjustment. However, some findings were unexpected. D*escriptive*, *uncertain* and *non-interpretable* aspirations were hypothesised to be associated with negative child outcomes. *Uncertain* and *non-interpretable* aspirations and *item non-response* were not associated with negative child outcomes. Age 7 *descriptive* aspirations, on the other hand, were related to concurrent externalising problems, but the association was not robust to adjustment for age 5 internalising and externalising problems.

In summary, very few children had fantasy aspirations, but many had hopes for rare occupations. Children with fantasy aspirations were more likely, while children with rare occupational aspirations were less likely to have an increase in problem behaviours from age 5 to age 7, compared to children with non-rare occupational aspirations. Although non-response in itself was not related to negative outcomes, total self-completion non-response was associated with hyperactivity.

Chapter 9 A model of the pathways to and from aspirations to emotional and behavioural problems

9.1 Introduction

This chapter investigates the association between children's aspirations and children's emotional and behavioural problems at age 7. Using path analysis this chapter examined the possible predictors of aspirations, (social disadvantage, parental values, parental involvement in home-based learning and child cognitive ability) and explored the pathways from aspirations to hyperactivity, conduct problems, emotional symptoms and peer problems. In this chapter children's aspirations were classified in a number of ways: by prestige of the occupation; masculinity/femininity; extrinsic/intrinsic aspirations, and by the realism and maturity of the child's aspiration. The SDQ subscales were reported by both the mother and the teacher.

This chapter firstly outlines the aims of the research, followed by a brief outline of the method pertaining to this chapter, the results, and a brief outline of the findings and conclusions. The results section covers bivariate analysis of aspirations and hyperactivity, conduct problems, emotional symptoms and peer problems by respondent (parent and teacher) and by gender, and correlations between the main study variables. The first SEMs explored the pathways to and from the prestige of the occupation, masculinity/femininity of the aspiration and extrinsic/intrinsic motivation to hyperactivity, conduct problems, emotional symptoms and peer problems as reported by the parent and then by the teacher. Gender differences in the association between aspirations and problem behaviour were then examined. Lastly, this chapter examines the pathways to and from aspirations defined by the realism and maturity of the aspiration (expressed and uncertain aspirations) to emotional and behavioural problems as reported by the parent and teacher.

As discussed in section 2.4, the existing evidence on the relation between aspirations and psychological adjustment in young children is limited and therefore this work is exploratory in nature. Furthermore, no previous research has explored this relationship in different settings. A child's behaviour may differ between the home and the school. This research attempted to fill this gap, using data from the MCS children followed at ages 9 months, and 3, 5 and 7 years.

9.1.1 Study aims

The first research aim was to investigate the pathways to and from the three ways of classifying children's aspirations at age 7. In particular, social disadvantage was expected to be directly associated with less parental involvement in home-based learning, parent's traditional values (e.g., obedience), and, in the child, lower cognitive ability, lower aspirations and more emotional

and behavioural problems. Low parental involvement in home-based learning would be related to low occupational aspirations and low cognitive ability. In turn, low cognitive ability would be associated with low occupational and masculine aspirations. In addition, maternal psychological distress was assumed to be directly related to children's emotional and behavioural problems, and negatively associated with parental involvement in home-based learning. Finally, it was expected that both low occupational and extrinsic aspirations would be related to emotional and behavioural problems, and masculine aspirations would be related to behavioural problems. The second aim was to explore whether these pathways differed when children's emotional and behavioural difficulties were reported by the teacher or the parent. The inter-informant agreement for parents and teachers in various studies investigating emotional and behavioural problems is moderate, ranging from r = .27 to r = .50 (Collishaw et al., 2009). Although there is now strong evidence that parental ill mental health can bias parental ratings of child psychopathology (Birmaher et al., 1996), teachers' and parents' reports of child behaviour may disagree because teachers may be more sensitive to disruptive behaviour, and parents to depression or anxiety (Abikoff, Courtney, Pelham, & Koplewicz, 1993). Teachers also tend to rate boys higher than girls on emotional and, particularly, behavioural problems (Collishaw et al., 2009).

The third aim was to explore differences between boys and girls in the 'effects' of aspirations. Children, particularly boys (Young & Sweeting, 2004), with gender-atypical aspirations were expected to have peer problems, and perhaps other emotional problems, as a result of social repercussions at an age where gender roles are a major focus for the child (Gottfredson, 1981). Gender typicality in aspirations is associated with better peer relationships (Egan & Perry, 2001). Children who are considered gender-atypical also tend to have lower feelings of self-worth, more depression and anxiety, and greater risk of suicide (Carver et al., 2003; Yunger et al., 2004).

Following from the results in the exploratory study in chapter 8, the fourth aim was to examine the pathways to and from children's aspirations by the realism and the maturity. In particular, to investigate in more detail the association between the general types of aspirations, and emotional and behavioural problems as reported by parents and teachers.

9.2 Method

9.2.1 Participants

In this study, data from the first four sweeps of the MCS was used when the children were aged 9 months, 3 years, 5 years and 7 years, respectively. Information from the main respondents (usually the child's mother), the mother's partner, teachers and the children themselves was

used, The analytic sample for models 1 and 2 n = 11,656 comprised all children whose first aspiration could be coded into at least one of the three aspiration classifications explored (occupation, extrinsic motivation, and masculinity) and for models 3 and 4 was n = 12,275 all children giving an interpretable response to a taxonomy of general types of younger children's aspirations by realism and maturity .

9.2.2 Measures

Children's emotional and behavioural problems at age 7 were measured using the main respondent's and teacher's report of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ has sub-scales which measures four types of difficulty: hyperactivity, and conduct, emotional and peer problems (www.sdqinfo.org). The reliability of the scales was adequate and the same for both analytic samples, with alphas ranging form. 0.60 to 0.87 (hyperactivity, α = 0.78 (main), α = 0.87 (teacher); conduct problems, α = 0.60 (main), α = 0.78 (teacher); emotional symptoms, α = 0.65 (main), α = 0.77 (teacher); peer problems, α = 0.57 (main), α = 0.66 (teacher)).

Children's aspirations were categorised in a number of ways. In the first models, *children's aspirations* were measured with broad occupational categories; the masculinity/femininity of the detailed occupation or future state; and extrinsic and intrinsic goals. *Occupational aspirations* were classified, using the one-digit SOC2000 code from the Standard Occupational Classification 2000 (ONS; www.ons.gov.uk), into nine major groups, with 1 indicating the highest occupation status (Managers and Senior Officials) and 9 the lowest (Elementary Occupations). *Masculine and feminine aspirations* were coded using the proportion female among UK workers (age 16-74) in that occupation (SOC2000) using the Quarter 2 (April-June) 2008 Labour Force Survey (LFS; Office for National Statistics), around the time of MCS4 fieldwork. The following bandings were applied: "masculine" (<25% women), "integrated" (25% to 49.9% women), "feminine" (50% to 74.9% women), and "ultra-feminine" (>=75% women). *Extrinsic and intrinsic aspirations* were coded into four categories: "extrinsic", "extrinsic-intermediate", 'neutral' or "intrinsic-intermediate. In the final models, children's aspirations were grouped into five categories, non-rare occupations, rare occupations, fantasy, descriptive and uncertain aspirations. '*Rare*' occupations were answers such as 'sports person', 'vet', 'pop star' or 'spy'. '*Non-rare*' occupations were jobs such as 'teacher', 'police', 'doctor', 'hairdresser' or 'builder'. '*Fantasy*' aspirations were 'magical' and not achievable (such as 'royalty', 'superhero' or 'fairy'). '*Descriptive*' aspirations were responses reflecting states of mind (such as 'happy', 'helpful', 'normal', 'good') or future states (such as 'an adult', 'tall', 'a man', 'a mum'). '*Uncertain*' aspirations combined the 'don't know' and the few 'nothing' responses.

Children's cognitive ability was measured at age 5 using the Naming Vocabulary, Pattern Construction and Picture Similarities tests from the second edition of the British Ability Scales (Elliott et al., 1996). The Naming Vocabulary scale measures expressive language ability and knowledge of nouns. The Pattern Construction and Picture Similarities scales measure non-verbal ability, specifically spatial realisation and problem solving, respectively.

Parental involvement in home-based learning was measured at age 3 (the earliest opportunity) with four items measuring how frequently anyone at home engaged in the following activities with the child: learning the ABC or the alphabet; teaching numbers or counting; teaching songs, poems or nursery rhymes; and painting or drawing (α = 0.59 for both analytic samples). All items were measured on a 5-point scale (1='never' to 5='every day').

Parental values were measured at age 3 by asking the parent to choose the most important quality for the child to learn in order to prepare him/her for life, from the following: 'well-liked or popular', 'think for themselves', 'work hard', 'help others', 'obey their parents' and 'learn religious values' (Alwin, 1990). The reference category was 'think for themselves'.

Social disadvantage at age 9 months was measured as a latent factor comprising four continuous variables. The measures were the highest academic qualification (7 categories ranging from 1 'higher degree' to 7 'no qualifications') and occupation (9 categories using the one-digit SOC2000 code, with 1 indicating the highest occupation status (Managers and Senior Officials) and 9 the lowest (Elementary Occupations) for both mother and partner.

Maternal psychological distress at age 9 months was measured in MCS with 9 items of the 24-item Malaise Inventory (Rutter, Tizard & Whitmore, 1970). The Malaise Inventory symptoms are agreement to items such as "feel miserable and depressed" and "become scared for no reason" (α = 0.73 in both analytic samples).

Control factors were the child-level variables of age, gender, birth order and ethnicity. Children's ethnicity was grouped into six categories: white, Indian, Pakistani or Bangladeshi, black, mixed, and other ethnicity as per the UK-wide government census classification. Family structure, intact or not, was accounted for at 9 months.

9.2.3 Analytic approach and hypothesised model

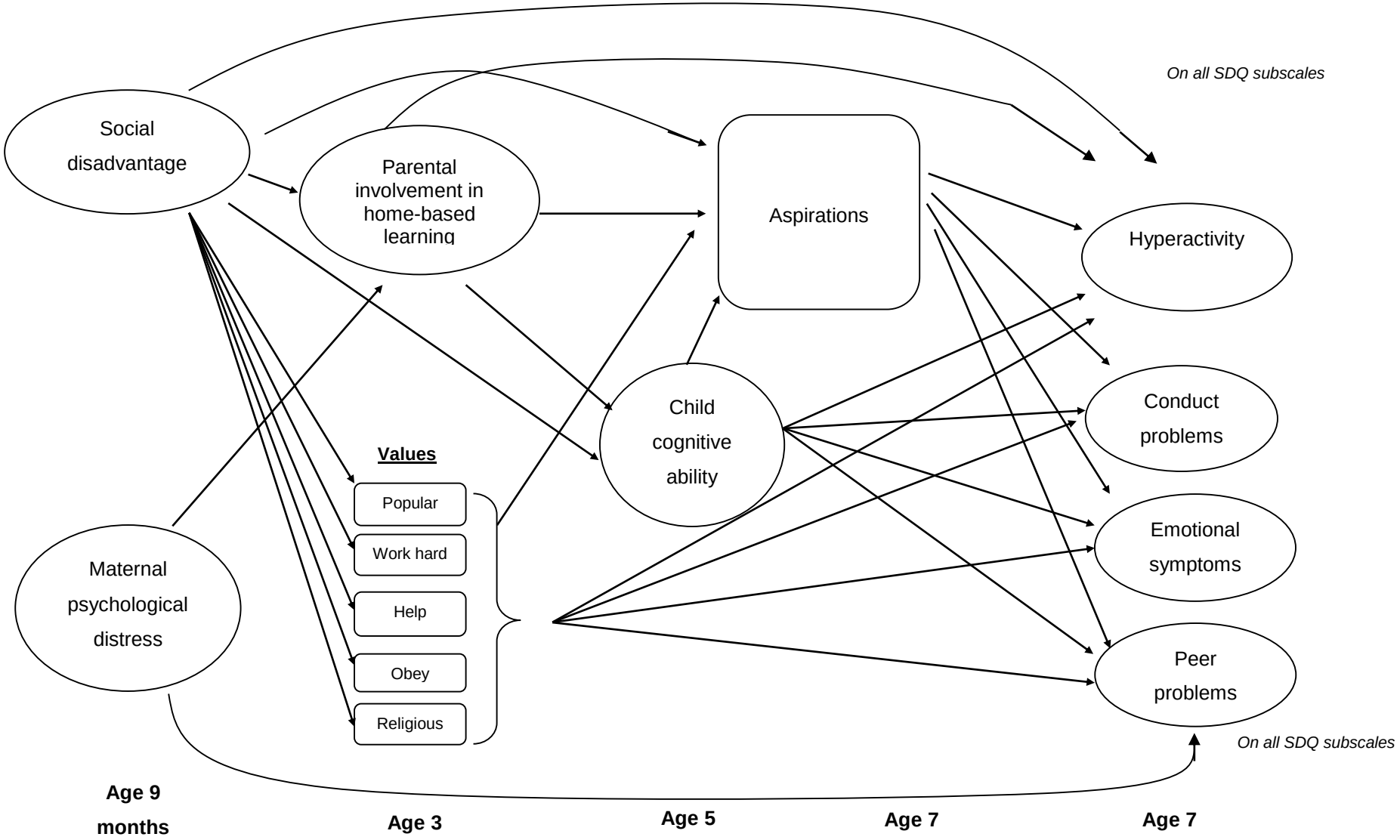
Firstly, the families in the analytic sample for the three ways of classifying aspirations (occupational, masculine/feminine and extrinsic/intrinsic) models (models 1 and 2) (n = 11,656) and for the taxonomy of general types of aspirations by realism and maturity models (models 3 and 4) (n = 12,275) were tested to see if they differed from families not in model 1 and 2 (n =

2,201) and model 3 and 4 (n = 1,582) on the covariates. Then, the mean scores on each of the emotional and behavioural subscales in each of the classifications of aspirations by gender were tested, and correlations among the primary variables were examined. Structural equation modelling (SEM) was then used to test the hypothesised model (Figure 9-1). Four models were fitted, two using the three ways of classifying aspirations (occupational, masculine/feminine and extrinsic/intrinsic) and using the parent's (usually mother's) responses to the SDQ, and the second the teacher's. The second two models used the taxonomy of general types of younger children's aspirations by realism and maturity, with separate models for parent and teacher responses to the SDQ, As shown in Figure 9-1 other than the definition of aspirations and the parent or teacher SQD response, the models were exactly the same. Maternal psychological distress, social disadvantage, parental involvement in home-based learning, child's cognitive ability, and the SDQ sub-scales (hyperactivity, conduct, emotional and peer problems) were latent constructs loading on their scale items. Covariances were specified among all variables within each sweep with the exception of aspirations at age 7 which were hypothesised to predict age 7 emotional and behavioural problems. Social disadvantage was adjusted for family structure and ethnicity, in light of the evidence that social disadvantage is related to both (Goodman, Patel & Leon, 2008). Also in view of the extant evidence, the following adjustments were made: First, maternal psychological distress was adjusted for family structure. Second, parental values, child cognitive ability and parental involvement in home-based learning were controlled for birth order, gender and ethnicity. Finally, aspirations and emotional and behavioural problems were controlled for gender and ethnicity, with added controls for birth order and age on emotional and behavioural problems.

To fit the models, Mplus 7.11 (Muthen & Muthen, 1998-2012) was used. As maternal psychological distress was a latent categorical outcome, the weighted least squares estimator (WLSMV) was used. In line with current practice, several measures to assess the goodness of fit of the model to the data (i.e., the χ^2 statistic, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), and the Tucker Lewis Index (TLI)) were used. To take account of disproportionate, stratified clustering in the MCS sample selection, the TYPE=COMPLEX command, along with the stratification, cluster and weight options were used. In order to conduct multi-group analysis by gender, measurement invariance was tested for each of the main instruments in model 1 and 2. However, the measurement instruments were not equivalent. To test for gender differences in the 'effects' of aspirations on child outcomes, the interaction terms between child's sex and each of the three variables measuring aspirations (in models 1 and 2) on both parent and teacher-reported emotional and behavioural problems were evaluated.

Figure 9-1: ***Hypothesised SEM for pathways to and from aspirations to emotional and behavioural problems***

The work on the association between aspirations and EBD proposes the pathway for young children might be from aspirations to EBD. However, the use of arrows in the pathway diagrams used in SEM visually implies causality. Causal inference cannot be made as the pathways from aspirations to emotional and behavioural problems are cross-sectional i.e. are not temporal.



9.3 Results

9.3.1 Descriptives and correlations

The 2,201 excluded families are compared with the analytic sample (n = 11,656) used in the analysis of the three ways of classifying aspirations (occupational, masculine/feminine and extrinsic/intrinsic; see Appendix XV). The latter had more girls and children with higher cognitive ability and lower scores on all problem behaviours as reported by both parent and teacher. The analytic sample was also more likely to be white, intact families and have mothers with higher social class and qualifications, as well as the mother's partners having higher qualifications. The parents were also more likely to be involved in teaching songs and painting and drawing with the children.

The analytic sample (n = 12,275) used in the analysis of the taxonomy of general types of younger children's aspirations by realism and maturity, was compared with the families excluded from the analysis (n = 1,582; see Appendix XVI). The differences in the analytic sample and excluded families were the same as the sample compared above. In addition, the children included in this sample had fewer older siblings, the mother's partner had a higher social class and the parents were more likely to help the children with numbers or counting when they were aged 3.

Table 9-1 shows the mean SDQ subscale scores in each of the three ways of classifying aspirations (occupational, masculine/feminine and extrinsic/intrinsic) by gender[44]. On each of the subscales, with the exception of emotional symptoms, boys scored on average higher than girls on hyperactivity, conduct and peer problems. Scores given by parents and teachers for emotional symptoms and peer problems were fairly similar, while teachers gave lower scores on average than parents on conduct problems for both boys and girls and lower average hyperactivity scores for girls. Overall, higher occupational aspirations and more intrinsic aspirations were associated with less hyperactivity and fewer conduct problems, while masculine aspirations were related to more hyperactivity and conduct problems. While girls with masculine aspirations on average had higher scores on the emotional symptoms scale as reported by both parents and teachers, girls with very gender stereotypical aspirations "ultra-feminine" also on average scored higher on emotional symptoms. However, for boy's, gender a-typical aspirations did not relate to more emotional symptoms. On average the highest prestige score on emotional symptoms were for low occupational aspirations, especially for girls. Compared to boys, on average girls with extrinsic intermediate aspirations had higher scores on emotional symptoms. There were no clear patterns on the overall average peer problem scores by the three ways of classifying aspirations (occupational, masculine/feminine and extrinsic/intrinsic). However, boys compared to girls, had more peer problems if they had high and low occupational aspirations, intrinsic intermediate and neutral aspirational goals, and integrated and feminine aspirations.

[44] For comparison purposes children's occupational aspirations in Table 9-1 were grouped into high, medium and low occupational aspirations. Generally, the children's aspirations were very high (SOCs 1 to 3), and therefore to illustrate differences in the children's aspirations by gender, ethnicity and social class the classifications were as follows; high (SOC 1&2), medium (SOC 3) and low (SOC 4 to 9). Therefore, the categories reflect children's aspirations at age 7.

Table 9-1: Mean SDQ subscale scores (weighted) in each aspiration category by gender
(Aspirations classified by occupational, extrinsic/intrinsic motivation, masculinity/femininity)

	Hyperactivity						Conduct problems					
	Parent report (n = 10,933 – 11,356)			Teacher report (n=7,189 – 7,470)			Parent report (n=10,973-11,397)			Teacher report (n=7,189-7,470)		
Aspiration assignment by	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**
Occupational aspiration												
High [SOC 1&2]	3.07	3.59***	2.86***	2.34	3.35***	1.98***	1.27	1.38*	1.23*	0.65	0.97***	0.54***
Medium [SOC 3]	3.46	3.75***	2.91***	3.01	3.54***	2.07***	1.45	1.58***	1.21***	0.81	0.96***	0.55***
Low [SOC 4-9]	3.43	3.89***	3.03***	3.01	3.91***	2.23***	1.44	1.29***	1.29***	0.82	1.11***	0.57***
Extrinsic/intrinsic												
Extrinsic	3.56	4.09***	3.10***	3.20	3.94***	2.49***	1.54	1.65	1.44	0.83	1.04*	0.63*
Extrinsic-intermediate	3.39	3.61***	3.05***	2.81	3.25***	2.14***	1.45	1.56***	1.29***	0.75	0.84**	0.62**
Neutral	3.56	3.87***	2.95***	3.25	3.81***	2.11***	1.47	1.58***	1.23***	0.89	1.09***	0.50***
Intrinsic- intermediate	3.06	3.86***	2.89***	2.30	3.66***	2.04***	1.27	1.47**	1.22**	0.64	0.99***	0.57***
Masculinity/femininity												
Masculine	3.78	3.85***	3.18***	3.56	3.69***	2.50***	1.60	1.62*	1.42*	1.00	1.03*	0.73*
Integrated	3.18	3.62***	2.92***	2.56	3.34***	2.12***	1.27	1.41**	1.18**	0.66	0.90***	0.52***
Feminine	2.96	3.60***	2.84***	2.09	3.30***	1.87***	1.27	1.51**	1.22**	0.58	0.97***	0.51***
Ultra-feminine	3.11	3.90**	3.02**	2.43	3.72***	2.28***	1.31	1.35	1.31	0.65	0.73	0.64
Total	3.37	3.80***	2.94***	2.85	3.64***	2.10***	1.41	1.56***	1.25***	0.78	1.01***	0.56***

Significant mean difference between boys and girls (*p < .05, ** p < .01, ***p < .001)

Table 9-1: (continued) Mean SDQ emotional symptoms and peer problems subscale scores (weighted) in each aspiration category by gender
(Aspirations classified by occupational, extrinsic/intrinsic motivation, masculinity/femininity)

	Emotional symptoms						Peer problems					
	Parent report (n = 10,953-11,374)			Teacher report (n = 7,188-7,469)			Parent report (n=10,958-11,381)			Teacher report (n=7,186-7,467)		
Aspiration assignment by	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**
Occupational aspiration												
High [SOC 1&2]	1.54	1.45*	1.58*	1.43	1.34	1.47	1.22	1.40***	1.15***	1.13	1.33**	1.06**
Medium [SOC 3]	1.46	1.44	1.49	1.37	1.34	1.43	1.19	1.21**	1.08**	1.06	1.07	1.04
Low [SOC 4-9]	1.65	1.63	1.68	1.59	1.45*	1.72*	1.26	1.46***	1.13***	1.24	1.40**	1.11**
Extrinsic/intrinsic												
Extrinsic	1.41	1.49	1.34	1.42	1.55	1.30	1.18	1.37*	1.03*	1.09	1.21	0.99
Extrinsic-intermediate	1.45	1.34***	1.64***	1.29	1.11***	1.57***	1.03	1.02	1.05	0.91	0.83**	1.03**
Neutral	1.56	1.56	1.55	1.48	1.46	1.51	1.36	1.45***	1.17***	1.27	1.37***	1.09
Intrinsic-intermediate	1.58	1.58	1.59	1.53	1.57	1.53	1.21	1.49***	1.15***	1.15	1.36*	1.11*
Masculinity/femininity												
Masculine	1.53	1.52	1.70	1.42	1.38*	1.75*	1.31	1.31	1.31	1.16	1.16	1.16
Integrated	1.48	1.41	1.53	1.35	1.26	1.40	1.20	1.37***	1.09**	1.10	1.27**	1.00**
Feminine	1.52	1.51	1.52	1.43	1.44	1.43	1.14	1.41**	1.08**	1.09	1.41**	1.03**
Ultra-feminine	1.64	1.38*	1.67*	1.65	1.36	1.69	1.17	1.18	1.17	1.20	1.02	1.22
Total	1.53	1.49*	1.57*	1.45	1.38*	1.52*	1.23	1.33***	1.13***	1.14	1.20**	1.08**

Significant mean difference between boys and girls (*p < .05, ** p < .01, ***p < .001)

Table 9-2 shows the mean SDQ subscales scores in each of the general classification of young children's aspiration categories, by gender. The highest mean scores across all emotional and behavioural problems (excluding emotional symptoms reported by teachers) were fantasy aspirations, ranging from 4.89 for hyperactivity and 1.25 for conduct problems. Descriptive aspirations also had higher mean scores across the SDQ subscales. The lowest problem scores were for aspirations for rare occupations, ranging from 3.33 for hyperactivity and 0.74 for conduct problems. Boys averaged significantly higher scores on conduct and hyperactivity than girls across the aspiration categories. Girls averaged significantly higher scores on emotional symptoms, than boys as reported by parents and teachers. Boys had lower mean scores on emotional symptoms for rare occupational aspirations than girls. As reported by parents and teachers, boys with non-rare occupational aspirations had higher average scores on peer problems than girls.

Table 9-2: Mean SDQ hyperactivity and conduct problems subscale scores (weighted) by realism and maturity of aspiration category by gender

	Hyperactivity						Conduct problems					
	Parent report (n = 11,965)			Teacher report(n=7,869)			Parent report (n = 12,007)			Teacher report (n=7,869)		
Maturity and realism of aspiration	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**
Non-rare occupation	3.34	3.88***	2.92***	2.80	3.84***	2.05***	1.41	1.60***	1.26***	0.78	1.11***	0.54***
Rare occupation	3.33	3.62***	2.89***	2.81	3.30***	2.10***	1.37	1.49***	1.19***	0.74	0.87***	0.57***
Fantasy	4.89	5.40*	4.10*	4.10	4.75*	3.09*	2.08	2.16	1.97	1.25	1.47	0.92
Descriptive	3.98	4.74***	3.28***	4.06	5.00***	3.15***	1.66	1.85	1.49	1.00	1.14	0.86
Uncertain	3.41	3.85***	2.82***	2.95	3.75***	1.93***	1.44	1.63**	1.20**	0.80	1.10***	0.42***
Total	3.37	3.81***	2.93***	2.86	3.64***	2.09***	1.41	1.57***	1.25***	0.78	1.01***	0.56***

Mean SDQ emotional symptoms and peer problems subscale scores (weighted) by realism and maturity of aspiration category by gender

	Emotional symptoms						Peer problems					
	Parent report (n = 11,983)			Teacher report (n=7,868)			Parent report (n=11,983)			Teacher report (n=7,866)		
Maturity and realism of aspiration	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**	**Total**	**Boys**	**Girls**
Non-rare occupation	1.58	1.53	1.61	1.51	1.46	1.54	1.30	1.45***	1.19***	1.20	1.36***	1.09***
Rare occupation	1.44	1.41	1.48	1.33	1.25*	1.45*	1.08	1.16***	0.97***	0.99	0.98	1.01
Fantasy	2.08	2.35	1.64	1.67	1.74	1.57	1.80	1.73	1.90	1.77	1.86	1.63
Descriptive	1.61	1.60	1.63	1.77	1.70	1.84	1.42	1.71*	1.16*	1.59	1.67	1.52
Uncertain	1.71	1.75	1.65	1.80	1.66	1.97	1.27	1.49**	0.99**	1.39	1.54	1.19
Total	1.54	1.51*	1.58*	1.47	1.39**	1.54**	1.23	1.34***	1.12***	1.15	1.22**	1.09**

Significant mean difference between boys and girls (*p < .05, ** p < .01, ***p < .001)

Tables 9-3 and 9-4 show the pairwise correlations between the main variables in the analytic sample. As expected, in both samples social disadvantage, maternal psychological distress and lower cognitive ability were correlated with emotional and behavioural problems. Although the parent and teacher reports of problem behaviour were correlated, their association, particularly in emotional symptoms, was not strong.

In Table 9-3 both reports of problem behaviours correlated very weakly with three ways of classifying aspirations - occupation, masculine/feminine and extrinsic/intrinsic aspirations. Having lower occupational, more extrinsic and, particularly, more masculine aspirations was weakly associated with more hyperactivity and conduct problems. Lower and more intrinsic aspirations were also weakly associated with more emotional symptoms and peer problems. Masculine aspirations were very weakly associated with peer problems in the parent report only, while feminine aspirations were very weakly correlated with emotional symptoms in the teacher report. Low occupational, but not extrinsic or masculine aspirations were weakly associated with social disadvantage. Masculine aspirations were very weakly associated with parents valuing obedience, while parents who valued popularity for their children had children with more extrinsic aspirations. Parents valuing religion had children with more intrinsic aspirations. Aspirations were not related to maternal psychological distress, but high occupational, intrinsic and feminine aspirations were correlated positively, but weakly to cognitive ability and some types of parental involvement in home-based learning i.e. learning the ABC and painting and drawing.

Table 9-3: Pairwise correlations (unweighted) of key observed study variables

(Aspirations classified by occupational, extrinsic/intrinsic motivation, masculinity/femininity)

		1	2	3	4a	4b	4c	4d	5	6a	6b	6c	6d	7a	7b	7c	7d	7e
1.	Low occupational aspiration	-																
2.	Extrinsic aspiration	.22**	-															
3.	Masculine aspiration	-.10**	.38**	-														
4.	**Social disadvantage**																	
a.	Maternal qualifications	.04**	-.01	. 02	-													
b.	Paternal qualifications	.05**	.01	.01	.51**	-												
c.	Maternal SOC	.04**	.02	.01	.53**	.38**	-											
d.	Paternal SOC	.04**	-.02	.02	.40**	.51**	.38**	-										
5.	Maternal psychological distress	-.00	.02	-.00	.13**	.09**	.12**	.13**	-									
6.	**Parental inv. home learning:**									-								
a.	Learning the ABC	-.04**	-.03**	-.03**	-.01	-.01	.00	-.00	.00		-							
b.	Teaching numbers	-.01	.01	.02	-.06**	-.04**	-.03*	-.03**	-.01	.39**		-						
c.	Teaching songs, etc.	.02	-.01	-.06**	-.15**	-.09**	-.07**	.08**	-.02	.22**	.39**		-					
d.	Painting or drawing	-.04**	-.04**	-.12**	-.03**	-.01	.01	-.00	-.02	.16**	.22**	.24**						
7.	**Values**																	
a.	Popular	.01	.02*	.02	.02	.01	-.02*	-.01	.02	-.04**	-.02**	-.04**	-.01	-				
b.	Work hard	-.01	.00	.00	.08**	.07**	.06**	.06**	.01	.00	-.00	-.01	.00	-.08**	-			
c.	Help others	.00	.02	.01	.03**	-.01	.02*	.01	-.01	-.01	.00	-.02	.01	-.10**	-.19**	-		
d.	Obey	.02	.01	.03*	.15**	.11**	.12**	.09**	.03**	-.01	-.04**	-.03**	.02	-.08**	-.14**	-.18**	-	
e.	Religious	-.02*	-.04*	-.02	.01	-.02	-.03*	-.00	.02	.01	-.03**	-.05**	-.01	-.04**	-.08**	-.10**	-.08**	
8.	**Child cognitive ability:**																	
a.	Naming vocabulary	-.01*	.01	-.04**	-.34**	-.28**	-.26**	-.25**	-.08**	.06*	.09**	.09**	.05**	-.02	-.06**	-.03**	-.10**	-.09**
b.	Pattern construction	-.03**	-.03**	-.07**	-.19**	-.16**	-.15**	-.16**	-.04**	.04**	.04**	.08**	.05**	.00	-.02	-.00	-.04**	-.03**
c.	Picture similarities	-.03**	-.03**	-.05**	-.15**	-.13**	-.12**	-.11**	-.04**	.04**	.02*	.06**	.04**	-.00	-.03**	-.03**	-.02*	-.01
Parent-reported SDQ subscales:																		
9.	Hyperactivity	.05**	.05**	.12**	.19**	.17**	.18**	.16**	.18**	-.03**	-.02*	-.07**	-.10**	-.01	.02*	.00	.04**	-.00
10.	Conduct problems	.04**	.04**	.07**	.23**	.18**	.19**	.16**	.21**	-.03**	-.03**	-.07**	-.05**	.00	.04**	.01	.05**	-.02
11.	Emotional symptoms	.03**	-.04**	-.02	.15**	.12**	.13**	.11**	.21**	.01	.00	-.04**	-.02	.00	.01	.02	.04**	.02
12.	Peer problems	.02*	-.03**	.04**	.19**	.15**	.17**	.15**	.18**	.04**	-.01	-.07**	-.05**	.00	.02*	-.01	.06**	.03*
Teacher-reported SDQ subscales:																		
13.	Hyperactivity	.06**	.08**	.19**	.16**	.13**	.13**	.11**	.09**	-.04**	-.04**	-.06**	-.11**	-.00	.03*	.00	.04**	-.02
14.	Conduct problems	.04**	.03**	.10**	.14**	.11**	.11**	.10**	.09**	-.01*	-.03**	-.05**	-.06**	-.00	.02	-.01	.03*	-.01
15.	Emotional symptoms	.03**	-.03**	-.03**	.08**	.07**	.07**	.06**	.08**	.00	.01	.02	-.02	.02	.02	-.01	.00	.01
16.	Peer problems	.03**	-.04**	.01	.10**	.08**	.08**	.08**	.08**	.02	-.02	-.03**	-.03*	-.00	.02	-.03*	.01	.01
N		11220	11656	11501	11220	8570	10242	8464	10881	10604	10604	10604	10604	10257	10257	10257	10257	10257
Mean		3.28	2.02	2.88	4.04	4.01	5.05	4.61	1.68	3.19	4.19	4.28	4.22	.04	.13	.19	.12	.04
SD		1.60	.86	1.08	1.66	1.76	2.51	2.77	1.77	1.40	1.07	1.06	.95	.19	.34	.39	.33	.20

Table 9-3 (continued)

		8a	8b	8c	9	10	11	12	13	14	15	16
8.	**Child cognitive ability:**											
a.	Naming vocabulary	-										
b.	Pattern construction	.33**	-									
c.	Picture similarities	.30**	.33**	-								
Parent-reported SDQ subscales:												
9.	Hyperactivity	-.16**	-.19**	-.13**	-							
10.	Conduct problems	-.14**	-.14**	-.10**	.54**	-						
11.	Emotional symptoms	-.11**	-.11**	-.08**	.30**	.37**	-					
12.	Peer problems	-.14**	-.12**	-.09**	.32**	.35**	.42**	-				
Teacher-reported SDQ subscales:												
13.	Hyperactivity	-.16**	-.23**	-.12**	.46**	.31**	.09**	.22**	-			
14.	Conduct problems	-.10**	-.10**	-.07**	.30**	.32**	.07**	.22**	.59**	-		
15.	Emotional symptoms	-.09**	-.10**	-.09**	.12**	.12**	.23**	.17**	.21**	.19**	-	
16.	Peer problems	-.07**	-.11**	-.06**	.23**	.21**	.16**	.31**	.37**	.41**	.40**	-
N		11074	11052	11062	11356	11397	11374	11381	7459	7459	7458	7456
Mean		54.50	50.84	55.95	3.30	1.36	1.50	1.19	2.78	.75	1.40	1.11
SD		10.94	9.76	10.15	2.48	1.52	1.75	1.52	2.75	1.47	1.90	1.60

In Table 9-4, the general types of younger children's aspirations were also weakly related to problem behaviours as reported by the parent and teacher. However, as expected fantasy aspirations were correlated, although weakly with all problems behaviours as reported by the parent, but only hyperactivity and peer problems by the teacher. Descriptive aspirations were related weakly to all problem behaviours in the teacher report, but only hyperactivity in the parent report. Uncertain aspirations were weakly associated with emotional symptoms and peer problems in the teacher report. As expected, rare occupational aspirations were related, albeit weakly to fewer emotional symptoms and peer problems, but unexpectedly non-rare occupational aspirations were associated, although weakly with peer problems in the parent and teacher report and emotional symptoms in the parent report. Non-rare occupational and descriptive aspirations were weakly positively related to social disadvantage, whereas rare occupational and uncertain aspirations were negatively associated. Rare occupational and uncertain aspirations were weakly associated with higher cognitively ability, while non-rare occupational and descriptive aspirations were weakly related to lower cognitive ability. There were very weak relationships between parents' values and the general types of children's aspirations.

Table 9-4: Pairwise correlations (unweighted) of key observed study variables
(Aspirations classified by realism and the child's maturity)

	1a	1b	1c	1d	1e	2a	2b	2c	2d	3	4a	4b	4c	4d	5a	5b	5c	5d	5e
5 Aspirations																			
a) Non-rare																			
b) Rare																			
c) Fantasy																			
d) Descriptive																			
e) Uncertain																			
6 Social disadvantage																			
a) Maternal qualifications	.06**	-.04**	-.01	.02*	-.04**	-													
b) Paternal qualifications	.06**	-.05**	.00	.00	-.03*	.51**	-												
c) Maternal SOC	.03**	-.03**	-.01	.02	-.02*	.55**	.39**	-											
d) Paternal SOC	.05**	-.04**	-.02	.02	-.02*	.41**	.53**	.38**	-										
7 Maternal psychological distress	.00	-.01	.02*	.02	-.02*	.13**	.10**	.12**	.12**	-									
8 Parental inv. In home learning:																			
a) Learning the ABC	.02	-.02*	.01	.00	-.01	.01	-.01	.00	-.00	-.00	-								
b) Teaching numbers	-.01	.02	-.01	-.02*	.01	-.06**	-.04**	-.03*	-.03*	-.01	.39**	-							
c) Teaching songs, etc.	-.02	.02	.00	-.01	.00	-.14**	-.09**	-.07**	-.08**	-.02	.22**	.39**	-						
d) Painting or drawing	.00	-.01	.01	-.00	-.01	-.03**	-.00	.01	-.00	-.01	.16**	.22**	.24**	-					
9 Values																			
a) Popular	-.01	.02*	.01	-.02	-.01	.02*	.01	-.02*	-.01	.01	-.04**	-.02*	.04**	-.01	-				
b) Work hard	.01	-.01	.00	-.01	-.04**	.09**	.07**	.06**	.06**	.01	.00	-.00	-.01	.00	-.08**	-			
c) Help others	.00	.01	-.01	.02	.01	.04**	.00	.03**	.01	-.01	-.01	-.00	-.02	-.01	-.10**	-.19**	-		
d) Obey	.02	-.01	-.01	-.01	-.01	.15**	.11**	.12**	.09**	.03**	-.01	-.04**	-.03**	-.02	-.08**	-.14**	- .18**	-	
e) Religious	.04**	-.04*	.00	.01	.03	-.00	-.02*	-.03*	.00	.02	.01	-.03**	-.05**	-.01	-.04**	-.08**	-.10**	-.08**	-
10 Child cognitive ability:																			
a) Naming vocabulary	-.05**	.06**	-.01	-.07**	.03**	-.34**	-.28**	-.27**	-.25**	-.08**	.06**	.09**	.19**	.05**	-.01	-.06**	-.03**	-.10**	-.09**
b) Pattern construction	-.03**	.03**	-.01	-.04**	.03**	-.19**	-.16**	-.15**	-.16**	-.05**	.04**	.04**	.08**	.05**	.00	-.02*	-.01	-.04**	-.03**
c) Picture similarities	-.01	.02	-.02	-.03**	.01	-.16**	-.13**	-.13**	-.11**	-.04**	.04**	.02*	.06**	.04**	-.00	-.03**	-.03**	-.02*	-.01
Parent-reported SDQ subscales:																			
11 Hyperactivity	.01	-.01	.06**	.03**	.01	.19**	.17**	.17**	.16**	.18**	-.03**	-.02*	-.07**	-.10**	-.01	.02*	.00	.04**	-.01
12 Conduct problems	.00	-.02	.03**	.02	.00	.22**	.17**	.19**	.16**	.20**	-.03**	-.03*	-.07**	-.05**	-.00	.03**	.01	.05**	-.02
13 Emotional symptoms	.03**	-.05**	.03**	.01	.02	.14**	.12**	.13**	.10**	.21**	.01	.00	-.04**	-.02	-.00	.01	.01	.05**	.02
14 Peer problems	.06**	-.07**	.03**	.02	-.00	.18**	.15**	.17**	.15**	.18**	.04**	-.01	-.07**	-.05**	.00	.02*	-.01	.06**	.03**
Teacher-reported SDQ subscales:																			
15 Hyperactivity	-.02*	-.01	.04**	.06**	.01	.15**	.13**	.12**	.11**	.09**	-.04**	-.04**	-.06**	-.11**	-.00	.02	.00	.04**	-.02
16 Conduct problems	-.00	-.01	.01	.02*	.01	.13**	.11**	.11**	.10**	.09**	-.01	-.03*	-.05**	-.06**	-.01	.02	.00	.03**	-.01
17 Emotional symptoms	.02	-.04**	-.01	.02*	.03*	.08**	.06**	.08**	.06**	.08**	.00	.01	.02	.02	.02	.01	-.01	.01	.00
18 Peer problems	.03**	-.06**	.03**	.04**	.02*	.09**	.08**	.08**	.08**	.08**	.02	-.02	-.03**	-.03**	-.01	.01	-.03*	.02	.01
N	12275	12275	12275	12275	12275	11823	9043	10809	8932	11538	11174	11174	11174	11174	10812	10812	10812	10812	10812
Mean	.57	.35	.01	.02	.05	4.74	4.69	5.04	4.60	1.68	3.19	4.20	4.28	4.22	.04	.13	.19	.12	.04
SD	.50	.48	.11	.15	.22	1.99	2.12	2.51	2.77	1.76	1.41	1.07	1.06	.95	.19	.34	.39	.33	.20

Table 9-4 (continued)

	6a	6b	6c	7	8	9	10	11	12	13	14
6. Child cognitive ability:	-										
a) Naming vocabulary	.33**	-									
b) Pattern construction	.31**	.33**	-								
c) Picture similarities											
Parent-reported SDQ subscales:											
7. Hyperactivity	-.16**	-.20**	-.13**	-							
8. Conduct problems	-.14**	-.14**	-.10**	.54**	-						
9. Emotional symptoms	-.11**	-.11**	-.08**	.30**	.37**	-					
10. Peer problems	-.14**	-.12**	-.09**	.32**	.34**	.42**	-				
Teacher-reported SDQ subscales:											
11. Hyperactivity	-.17**	-.23**	-.13**	.46**	.31**	.09**	.22**	-			
12. Conduct problems	-.10**	-.10**	-.07**	.30**	.32**	.07**	.22**	.59**	-		
13. Emotional symptoms	-.09**	-.11**	-.09**	.12**	.11**	.23**	.17**	.20**	.19**	-	
14. Peer problems	-.08**	-.12**	-.07**	.23**	.20**	.16**	.31**	.37**	.42**	.40**	-
N	11654	11629	11643	11965	12007	11983	11991	7858	7858	7857	7855
Mean	54.58	50.91	55.98	3.31	1.36	1.51	1.19	2.79	.75	1.41	1.12
SD	10.96	9.76	10.16	2.48	1.52	1.75	1.52	2.76	1.46	1.91	1.60

9.3.2 *SEM paths for the* three ways of classifying aspirations (occupational, masculine/feminine and extrinsic/intrinsic).

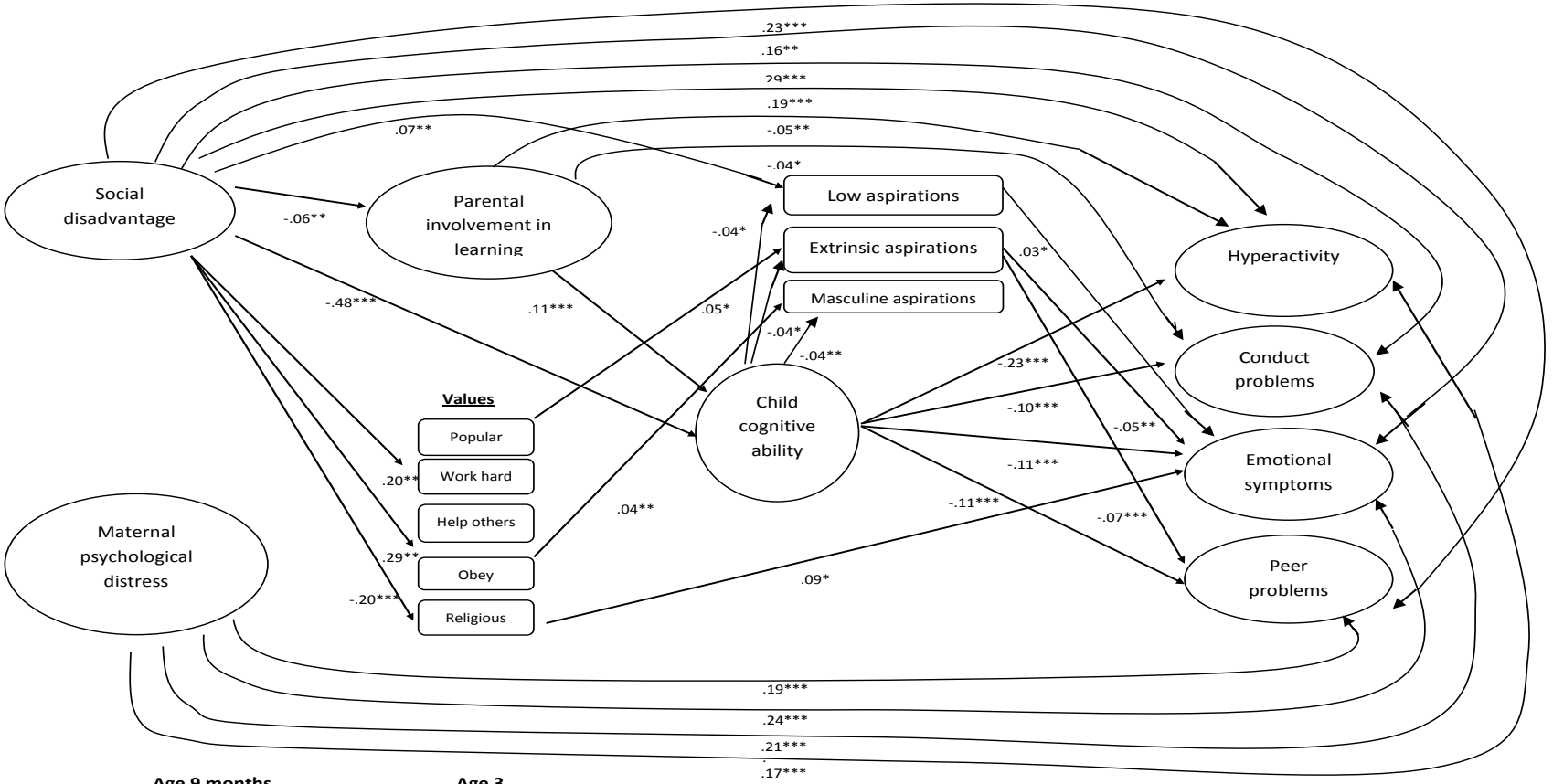
Figure 9-2 shows the path diagram of the SEM model of parent ratings of child problem behaviour, while Figure 9-3 shows the model for the teacher ratings for the three ways of classifying aspirations (occupational, masculine/feminine and extrinsic/intrinsic). The statistically significant findings of these models are presented below, as well as gender differences in the 'effects' of aspirations on child problem behaviour. The overall fit for the model using the parent report was good ($\chi^2(1324) = 4256.64$, $p < .001$; RMSEA = .014; CFI = .912; TLI = .896). A similar goodness of fit was obtained for the model using the teacher report ($\chi^2(1324) = 4237.72$, $p < .001$; RMSEA = .014; CFI = .898; TLI = .879).

After controlling for all the covariates, observed variables and latent constructs in SEM there were gender, ethnic and age differences in determining the three ways of classifying children's aspirations. As shown in Appendix XVII (not shown in Figure 9-2 and 9-3), boys compared to girls had lower, more extrinsic and more masculine aspirations. All ethnic minority children had higher aspirations than white children. Compared to white children, Pakistani/Bangladeshi, Indian and children from other ethnic backgrounds had more intrinsic aspirations, and Pakistani/Bangladeshi children had more feminine aspirations. In general examining the covariates in the models, white compared to Pakistani/Bangladeshi and mixed families were more socially disadvantaged. Parental involvement in home based learning was greater for girls than boys, and for white, compared to Pakistani/Bangladeshi, black and children from 'other' ethnic groups. Similarly, cognitive ability was higher for girls than boys, and for white children compared to Indian, Pakistani/Bangladeshi, black and children from other ethnic groups. Parental values for girls compared to boys and children from non-white backgrounds, compared to white were for 'religious values' rather than 'to think for themselves'. Parents of Pakistani/Bangladeshi and black, compared to white children valued 'obedience' over 'thinking for themselves', but 'thinking for themselves' over 'helping others'. Parents of Indian compared to white children valued 'working hard', compared 'to thinking for themselves'.

Boys compared to girls were related to hyperactivity, conduct and peer problems in both the parent and teacher report, while girls were related to emotional symptoms in the teacher report only. Younger children were related to hyperactivity in both parent and teacher report, and emotional symptoms in the teacher report only. White children were related to hyperactivity compared to Pakistani/Bangladeshi children in both parent and teacher report, and black and other ethnic groups in the parent report only. In the parent report white, compared to Pakistani/Bangladeshi, black and other ethnic groups children were related to conduct problems, whereas in the teacher report black, compared to white children were associated with conduct problems. In the teacher report, white, compared to Indian, Pakistani/Bangladeshi, and

other ethnic groups children were associated with emotional symptoms, while in the parent report Indian, Pakistani/Bangladeshi and mixed, compared to white children were associated with peer problems in the parent report.

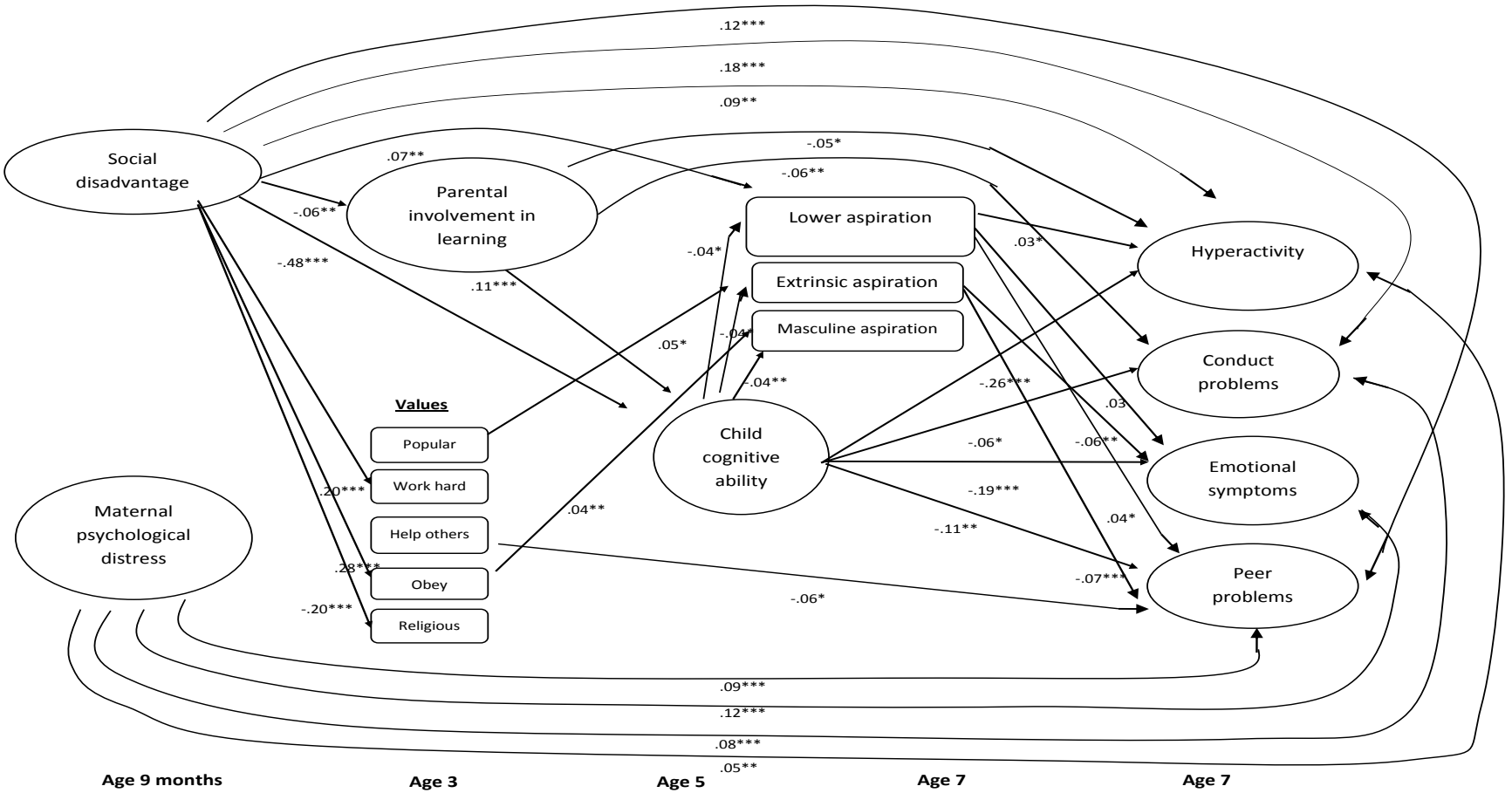
Figure 9-2: SEM predicting parent-reported emotional and behavioural problems



N = 11,656; $\chi^2(1324) = 4256.64$, $p < .001$; RMSEA = .014; CFI = .912; TLI = .896

Note: Diagram shows standardised regression coefficients. Only statistically significant (*p < .05; **p < .01; ***p < .001) results are shown. Controls for family structure and child's ethnicity were included in each regression path from social disadvantage. Maternal psychological distress was adjusted for family structure. Each regression path at age 3 and 5 was adjusted for the child's gender, ethnicity and birth order. Aspirations were controlled for the child's gender and ethnicity. Problem behaviour was adjusted for the child's age, gender, ethnicity and birth order.

Figure 9-3: SEM predicting teacher-reported emotional and behavioural problems



N = 11,656; $\chi^2(1324) = 4237.72$, $p < .001$; RMSEA = .014; CFI = .898; TLI = .879

Note: Diagram shows standardised regression coefficients. Only statistically significant (*p < .05; **p < .01; ***p < .001) results are shown. Controls for family structure and child's ethnicity were included in each regression path from social disadvantage. Maternal psychological distress was adjusted for family structure. Each regression path at age 3 and 5 was adjusted for the child's gender, ethnicity and birth order. Aspirations were controlled for the child's gender and ethnicity. Problem behaviour was adjusted for the child's age, gender, ethnicity and birth order.

From social disadvantage and maternal psychological distress at age 9 months to problem behaviour at age 7 years

In the model of parent-reported behaviour (Figure 9-2), social disadvantage at age 9 months was directly positively related to all emotional and behavioural problems at age 7. Teacher-reported hyperactivity, conduct and peer problems at age 7 were directly positively related, though more weakly than in the parent report, to social disadvantage at age 9 months, while there was no relationship between social disadvantage and teacher-reported emotional symptoms (Figure 9-3). Maternal psychological distress at 9 months was directly related to all types of problem behaviour at age 7 in both models. However, the relationship was weaker when problem behaviour was reported by the teacher rather than the parent.

From social disadvantage and maternal psychological distress at age 9 months to age 3 parental involvement in home-based learning and parental values, age 5 cognitive ability and age 7 aspirations

Social disadvantage was negatively related to parental involvement in home-based learning and child cognitive ability, and positively related to low aspirations, although weakly. As expected, social disadvantage was also related to valuing “obeying parents” and “working hard” compared to “thinking for themselves”. Unexpectedly, it was negatively related to “learning religious values”, advocated by a small number of parents (3%) in preference to the children “thinking for themselves”. There was no relationship between social disadvantage and children’s masculine or extrinsic aspirations.

From age 3 parental involvement in home-based learning and parental values to age 5 cognitive ability and age 7 aspirations and problem behaviour

There was no relationship between parental involvement in home-based learning at age 3 and aspirations at age 7. However, parental involvement in home-based learning at age 3 was positively associated with cognitive ability at age 5. Parents wanting their children to be “well-liked or popular” compared to “thinking for themselves” had children with more extrinsic aspirations, and parents wanting their children “to obey” them had children with more masculine aspirations. Parental involvement in home-based learning was related to lower hyperactivity and fewer conduct problems. There were few differences in the models using the parent and the teacher reports of problem behaviour. Parents who wanted to impart religious values at age 3 were more likely to report emotional symptoms in their children at age 7. In the teacher report, not valuing ‘helping others’ compared to ‘thinking for themselves’ was also related to peer problems

From age 5 cognitive ability to age 7 aspirations and problem behaviour

Cognitive ability at age 5 was related, albeit very weakly to more feminine, intrinsic and higher aspirations, and was directly negatively related to all four problem behaviour types as reported by both parents and teachers.

From aspirations to problem behaviour

In both the teacher and parent report, extrinsic aspirations were weakly associated with fewer emotional and peer problems. Also for both reports, lower aspirations were very weakly related to emotional symptoms, and in the teacher report to peer problems, too. In the teacher report, there was also a significant, but very weak relationship between lower aspirations and hyperactivity.

Gender differences in the 'effects' of aspirations

The strength of the association between aspirations and problem behaviour differed somewhat by gender. Although effect sizes were small, intrinsic aspirations were more strongly related to emotional symptoms in the teacher report ($\beta = .08$, $p < .01$), and peer problems in the parent report ($\beta = .07$, $p < .01$) in boys. The relation between low aspirations and hyperactivity in the parent report ($\beta = .05$, $p < .05$), emotional symptoms in the teacher report ($\beta = .11$, $p < .001$) and peer problems in both reports (parent report $\beta = .06$, $p < .05$; teacher report $\beta = .07$, $p < .05$) was stronger in girls.

9.3.3 SEM paths for the general types of younger children's aspirations

The results for the pathways which did not go to and from aspirations, in the general types of younger children's aspirations models, were the same as the previous models and therefore the results in this chapter focus on the paths to and from aspirations. (See Appendix XVIII for the path diagram of the SEM models for the general types of younger children's aspirations, for both parent and teacher report). Figure 9-4 shows the significant pathways to the general types of young children's aspirations, and Figure 9-5 shows the significant pathways from aspirations to emotional and behavioural problems.

Predictors of age 7 aspirations

As shown in figure 9-4, after controlling for all the covariates, girls are less likely than boys to have rare, fantasy and uncertain, compared to non-rare occupational aspirations. Indian children were less likely than white children to have uncertain, fantasy or rare occupational aspirations, compared to non-rare occupational aspirations. Pakistani/Bangladeshi and 'other' children were more likely than white children to have non-rare compared to rare occupational

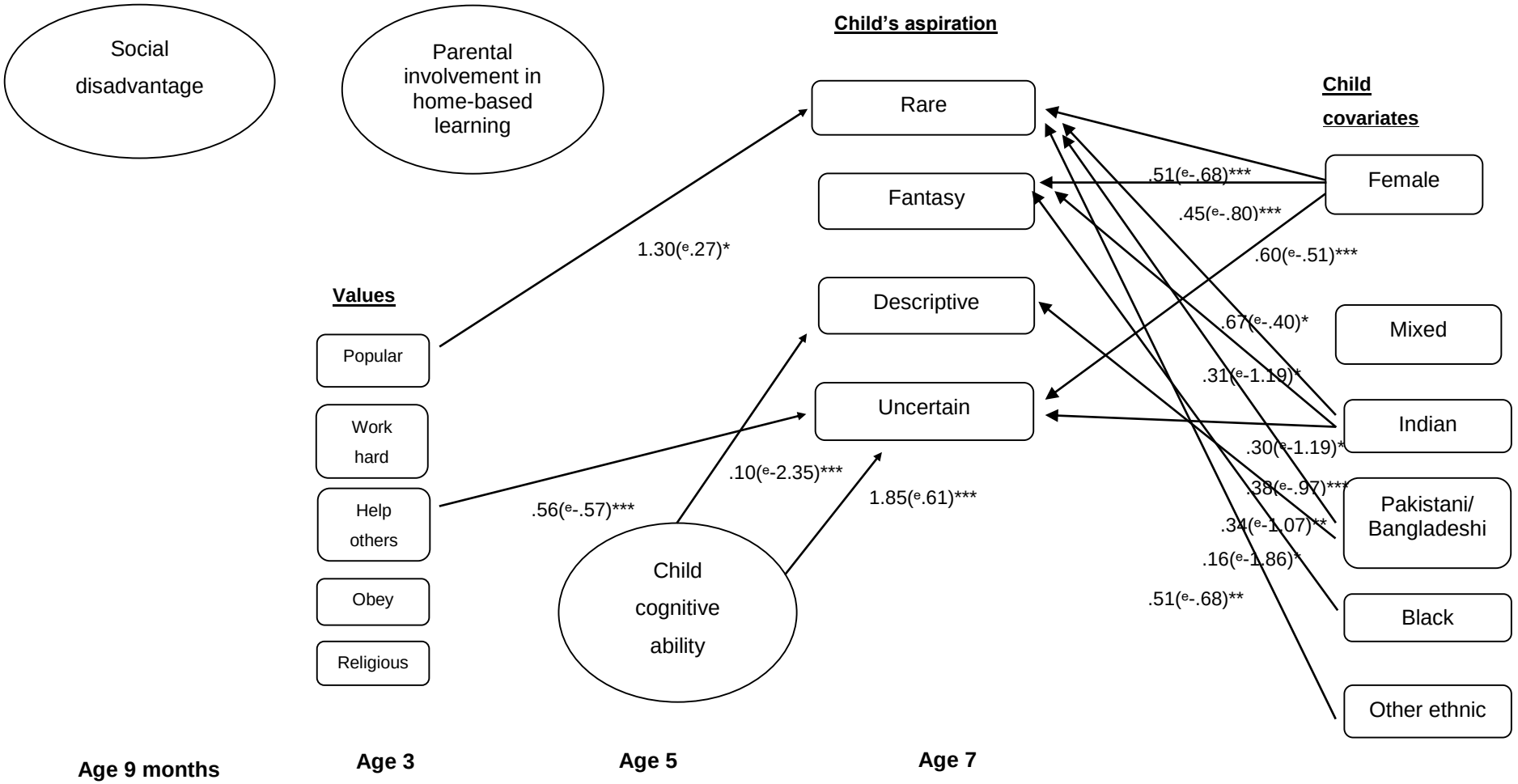
aspirations. Black and Indian children were less likely than white children to have fantasy, and Pakistani/Bangladeshi to have descriptive aspirations, compared to non-rare occupational aspirations.

There was no relationship between social disadvantage at age 9 months or parental involvement in home-based learning at age 3 and aspirations at age 7. Parents wanting their children to be “well-liked or popular” compared to “thinking for themselves” had children with rare occupational aspirations, compared to non-rare occupational aspirations. Parents wanting their children “to think for themselves” rather than “help others” had children with more uncertain, rather than non-rare occupational aspirations. Compared to non-rare occupational aspirations, higher cognitive ability at age 5 was related to uncertain aspirations and lower cognitive ability was related to descriptive aspirations.

From aspirations to problem behaviour

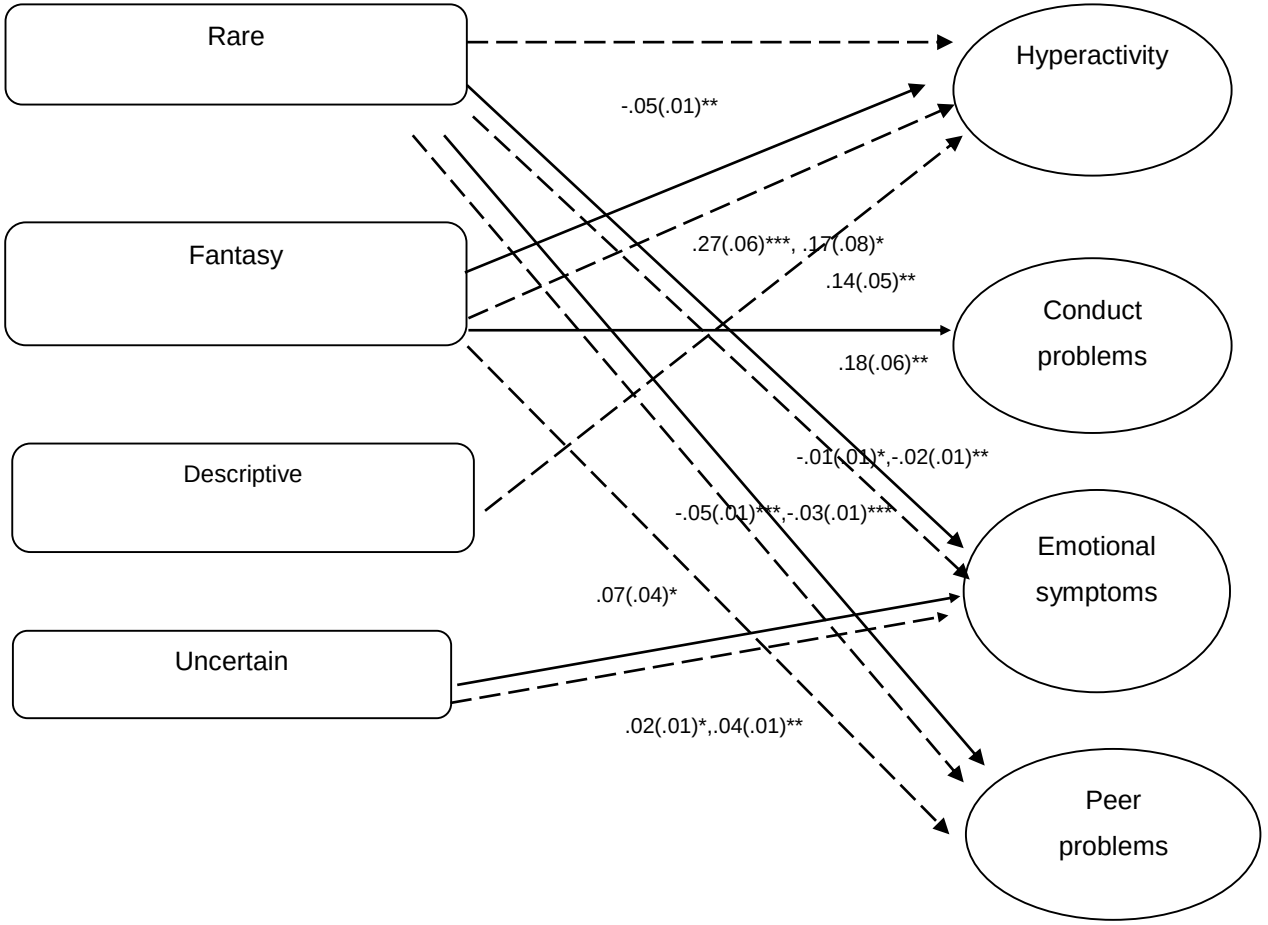
Compared to non-rare occupational aspirations, fantasy aspirations were associated with hyperactivity in the teacher and parent report, conduct problems in the parent report and peer problems in the teacher report only. In both the parent and teacher report, uncertain aspirations were related to emotional symptoms, while descriptive aspirations were related to hyperactivity in the teacher report, compared to non-rare occupational aspirations. In both the parent and teacher report, rare occupational aspirations compared to non-rare occupational aspirations were related to fewer emotional symptoms and peer problems, and less hyperactivity in the teacher report.

Figure 9-4:*Pathway model predicting general types of younger children's aspirations*



Aspirations reference category: non-rare aspiration. Values reference category: thinking_for themselves. Ethnicity reference category: White British

Figure 9-5: Pathway model of the general types of younger children's aspirations predicting emotional and behavioural problems



- Non-broken line = Parent report, Broken line=Teacher report
- Reference category: non-rare aspirations

9.4 Conclusion

In this chapter, SEM was used to explore a number of pathways to and from children's aspirations (classified by the prestige of the occupation, masculinity/femininity and extrinsic/intrinsic aspirations, and by the realism and maturity of the aspiration) and children's emotional and behavioural problems at age 7. The main aims of this study were to investigate models of the pathways to children's aspirations, and from children's aspirations to hyperactivity, conduct problems, emotional symptoms and peer problems. The chapter also set out to explore whether the pathways to problem behaviours differed if reported by the teacher or the parent, and to examine the difference between girls and boys in the effects of aspirations.

Social disadvantage was directly weakly related to low aspirations. Social disadvantage was also related, more strongly to other family and child characteristics, such as parental values and child cognitive ability, which in turn predicted aspirations, albeit very weakly. Socially disadvantaged parents who valued obedience compared to the child thinking for themselves, in turn predicted more masculine aspirations. Parents pass on a share of their class advantage and disadvantage to their children, through family resources and their beliefs. However, in previous studies social economic-status has been related to more parental involvement in home-based learning which in turn has been related to aspirations. However, parental involvement in home-based learning at age 5 did not directly predict aspirations at age 7, but was related to aspirations, although very weakly via cognitive ability. The offspring of parents who valued popularity for their children aspired to wealth, fame and attractiveness (e.g., 'famous footballer', 'super model' or 'popstar') and parents with children with lower cognitive ability tended to have more masculine aspirations (e.g., 'fire-fighter', 'footballer' or 'soldier'), extrinsic, and lower occupational aspirations.

Similarly, in the general types of young children's classification of aspirations, rare occupational aspirations (e.g., sports person', 'vet', 'pop star' or 'spy'), compared to non-rare occupational aspirations (e.g., 'teacher', 'police', 'doctor', 'hairdresser' or 'builder') were associated with parents who valued popularity for their children. At this age children with uncertain aspirations, compared to non-rare aspirations were associated with higher cognitive abilities and parents who valued children "thinking for themselves", rather than "helping others". Perhaps uncertainty of aspirations at age 7 is reflective of non-conformity and self-direction. Finally, descriptive aspirations (e.g. 'adult', 'tall', 'good', 'happy') compared to non-rare aspirations were related to lower cognitive ability.

Although other factors were more important, aspirations were related, albeit very modestly, to emotional and behavioural problems. As expected, low occupational aspirations were more

common in children with emotional symptoms in both the parent and teacher report, but also peer problems and hyperactivity in the teacher report. The relation between low aspirations and hyperactivity, emotional symptoms and peer problems was stronger in girls. But contrary to expectations based on research with adolescents and adults, it was intrinsic, not extrinsic, aspirations that were related, although weakly to emotional symptoms and peer problems, especially in boys. One explanation is that children's aspirations are more extrinsic than adults and therefore more typical for them, which in developmental psychology contributes to an individual's well-being. On the other hand the contradictory finding may be due to the operalisation of the extrinsic/intrinsic aspiration variable. Unfortunately, in the MCS children were not asked to clarify the reasons for their choice of aspiration, and therefore in categorisation their responses assumptions regarding their motives were made.

As expected, fantasy aspirations at age 7 were associated with more hyperactivity, conduct problems and peer problems, but not related to lower cognitive ability. However, at this age children with rare occupational aspirations, which may be harder to achieve and less realistic than non-rare occupational aspirations, had fewer emotional symptoms and peer problems and lower hyperactivity. Uncertain aspirations were linked to emotional symptoms, but also high cognitive ability. Descriptive aspirations were associated with hyperactivity in the teacher report, perhaps as a result of the association with low cognitive ability.

These results do not signify a causal relationship between aspirations and emotional and behavioural problems. Although these findings are significant, they are very weak, and caution should be taken in interpreting the results. As the aspirations and emotional and behavioural were both measured at age 7 the constructs are contemporaneous correlates without temporal order. The relationship could be bi-directional. In this study, unlike the study in Chapter 8 prior emotional and behavioural problems were not controlled for, therefore for occupational, extrinsic/intrinsic and the masculinity/femininity of the aspiration the direction of the pathway with behavioural problems is unclear. Although the models were complex and included several pathways, there may be unobservable constructs or measures, for example personality or the child's interests, which may explain the association between aspirations and emotional and behavioural problems.

In summary, social disadvantage, parental values and child cognitive ability were the antecedents (albeit very weakly) to children's aspirations. The association between the prestige, Extrinsic/intrinsic motivation and the masculinity/femininity of children's aspirations was very weak. More intrinsic aspirations were associated with both emotional symptoms and peer problems, while low aspirations were related to emotional symptoms in the teacher and parent report. In the school setting, low aspirations were also related to peer problems and hyperactivity. Although again the relationship was weak, the predictors of the realism and

maturity of the children's aspirations were parental values and the child's ability. Fantasy aspirations at age 7 were associated with more hyperactivity, conduct problems and peer problems, whereas having aspirations for rare occupations were related to fewer emotional symptoms and peer problems and less hyperactivity. Uncertain aspirations were linked to emotional symptoms and descriptive aspirations were associated with hyperactivity in the teacher report.

Chapter 10 Discussion

This chapter has three elements. The main section discusses the key findings in light of what the thesis adds to existing theories and knowledge, and highlights unexpected findings. It starts with the characteristics and predictors of children's aspirations at age 7, followed by the association of children's aspirations with emotional and behavioural problems and a visual summary of the main findings. The second part discusses the strengths and limitations of the research. The chapter concludes with the implications for policy and future research.

10.1 Summary and discussion of key findings

The thesis was framed using two overarching theories. Life course theory places the child in a social, cultural and historical context and ecological systems theory acknowledges at any life stage an individual interacts within multiple contexts (Bronfenbrenner, 1979; Vondracek et al., 1986). Life stage is important in the development of aspirations. As discussed most psychological theories identify adolescence as a key stage and the majority of work on aspirations has been conducted with older children. As well as life stage, self-concept underlies many theories of aspirational development. Gottfredson's (1981) theory of circumscription and compromise is one, which in addition also focuses on the development of aspirations in both childhood and adolescence. This was also used to inform the work in this thesis, along with social learning theory and sociological theories such as social reproduction and the family investments model. . The first aim of this thesis was to investigate the characteristics of children's aspirations at age 7 and then to investigate the individual, family, school and neighbourhood level determinants of primary school children's aspirations.

The development of self-concept is central to may aspirational theories and is also related to children's overall feelings of well-being, in particular their self-esteem and self-efficacy. For primary school children, aspirations are more likely to be unconstrained by society, compared to adolescents. Therefore, aspirations may better reflect children's hopes and fears for the future. The second was to explore the association between children's aspirations and emotional and behavioural problems, by considering a model of the pathways to and from children's aspiration, to children's behaviour at age 7. Aspirations were classified in a number of ways, by the prestige of the occupation, masculinity/femininity and extrinsic/intrinsic aspirations, and by the realism and maturity of the aspiration.

10.1.1 Characteristics of children's aspirations at age 7

Most children's aspirations were for adult occupations, suggesting that at age 7 children already have ideas for future careers. However, the range of the children's aspirations was narrow, with fifteen job categories representing over three-quarters (78.9%) of occupations aspired to by

children at MCS4. Although children may have occupational aspirations, their frame of reference may be very limited.

A large proportion (55.6%) of the children aspired to occupations that are common in the UK population[45]. This shows that in middle childhood not all aspirations are as fantastical and unrealistic as previous studies had deemed typical. Some (35.6%) children expressed unrealistic aspirations for rare occupations (e.g., 'sports person', 'pop star'), but in line with Gottfredson's hypothesis very few aspirations (1.2%) were fantastical. However, without asking directly about expectations it is not clear how 'aligned' or 'misaligned' (realistic/unrealistic) the children's aspirations were.

The research in this thesis also found that the aspirations of children at age 7 were very optimistic. Most (81.1%) children aspiring to adult occupations wanted to be in the professional, managerial and technical professions. Similarly, over a third of children expressed unrealistic aspirations for rare occupations, which accounted for a small percentage (6.6%) of the adult working population in 2008. In agreement with previous work, most aspirations in this research were gender-typical. Finally, just under a third of children were deemed to have more extrinsic / extrinsic intermediate aspirations. Very few (5.2%) children spontaneously gave aspirations for wealth, fame or image, counter to the 'suggestion' that teachers fear children's obsession with 'celebrity culture' and fame. However, the children were not asked about the reasons for their choices, so aspiring to be a 'doctor' or 'a footballer' may not be more intrinsic or more extrinsic, respectively to a 7 year old child.

10.1.2 Predictors of children's aspirations at age 7

10.1.2.1 Individual factors

Gender

Gender was a major predictor of children's aspirations at age 7, supporting Gottfredson's view that children around this age focus on gender roles in their choices. Boys compared to girls had lower occupational, more extrinsic and more masculine aspirations, even after controlling on all the covariates. And compared to aspirations for non-rare occupations, boys were more likely than girls to aspire to rare ones.

Although generally girls had high occupational aspirations (e.g. teacher, vet, doctor) compared to boys the proportion of girls with low occupational aspirations was also marginally higher for girls than boys. Boys tended to aspire to occupations in the associate professional and technical occupations (e.g. sportsmen, fireman, policeman, pilot, soldier etc.). Although a third (32.7%) of boys wanted to be sports players (in particular footballers), their choice of aspirations

[45] Although, how realistic these aspirations are for the individual will also depend on factors such as the child's ability and family background.

was more varied than girls'. Most girls were in agreement on the types of occupational aspirations, with substantial proportions wanting to be teachers (21.9%), vets (11.8%), hairdressers (8.9%), actress/singer (8.3%), doctor (5.8%) or artist (5.9%). Perhaps girls, are starting to narrow their choice of aspirations earlier than boys, or in the first instance the occupational frame of reference for girls is already more restricted than for boys.

Gender stereotypes also seem to shape motivations. Half (49.7%) of girls had (more) intrinsic aspirations (i.e. helping and caring for others) compared to only a tenth (10.1%) of boys. Vida and Eccles (2003) found females, compared to males endorse altruistic values and these values negatively predicted later outcomes i.e. studying or working in maths and science related occupations. The results in this thesis suggest that young girls in particular may already be potentially restricted in their future occupational choices by gender typicality and stereotypes in the work place.

Ethnicity

White children had lower occupational aspirations than all other ethnic groups. This difference has been found in older children (Croll, 2008; Strand, 2007) and seems to develop pre-secondary school. Across the studies in this thesis, this variance was not explained by differences in social advantage (only children from Pakistani/Bangladeshi backgrounds came from poorer families than white children) or cognitive ability (all ethnic minority children, except for mixed, had lower cognitive ability at age 5 than white children) after controlling for all the covariates. However, compared to white children, all children from ethnic groups were more engaged with school, perhaps as a result of parental and cultural influences.

In previous research with older children, ethnic minority parents had higher expectations for their children that resulted in, for example more parental involvement in home-based learning (Croll, 2008; Strand, 2011). However, in the research in this thesis white children were associated with more parental involvement in home-based learning, compared to children from Pakistani/Bangladeshi backgrounds at age 3 and 5, and black and other ethnic groups at age 5. There were however, ethnic differences in the values parents thought were important for their children. Firstly, parents of Indian compared to white children valued 'working hard' compared to 'thinking for themselves'. Indian children seemed to be more pragmatic than white children, more certain about future aspirations and chose more common occupational aspirations over rare occupational or fantasy aspirations. Parents of Pakistani/Bangladeshi and black children valued obedience over autonomy, but children thinking for themselves over helping others. Contrary to these values, children from Pakistani/Bangladeshi and other ethnic groups, compared to white children aspired nevertheless to more intrinsic aspirations (i.e. doctor, teacher), than white children. Although the coding in this thesis defined 'doctor' and 'teacher' as

intrinsic, aspiring to these professions may also be motivated by prestige, especially in particular cultures.

10.1.2.2 Family contextual factors

Parents' and grandparents' social status

Regardless of family background, children's aspirations were high, thus, negating the common assumption of a 'poverty of aspirations' among disadvantaged children (Kintrea et al., 2011), at least at age 7. Most of the popular children's aspirations were similar across family backgrounds; however even at primary school age there were a few differences by the social class of the children. Children from lower SES backgrounds were more likely to aspire to more gender stereotypical aspirations such as police officers and hairdressers, while more advantaged children aspired to be scientists or artists. In addition, children from the higher, compared to the lower social classes were more likely to aspire to rare occupations i.e. not as achievable in the general population. This may be a reflection of the child's self-esteem and self-efficacy via their parent's expectations or their wider experience of the world of work.

As expected, across all models[46] in this thesis, after controlling on the covariates, family background[47] was directly, albeit weakly related to children's occupational aspirations. There was intergenerational social class transmission (although weak) from both the maternal and paternal parents' class to the child's classed occupational aspirations. This inter-generational effect is well documented (Croll, 2008; Schoon & Parsons, 2002). Parents pass on a share of their class advantage or disadvantage to their children, when they are growing up and as adults.

A multi-group analysis was conducted to explore gender differences in the predictors of children's aspirations. Although, the results should be treated with caution nevertheless they are interesting. Even at age 7, boys from disadvantaged backgrounds had more masculine aspirations, while girls from more advantaged backgrounds aspired to more masculine aspirations. This may be because parents from disadvantaged backgrounds tend to have more traditional views (Alwin, 1989).

Social reproduction and investment of family resources in children is thought to be influential across generations. This thesis showed that social homogamy is the norm in Britain. The parents' and the grandparents' social class was related within lineage, as well as cross-lineage, both between (grandparent-parent) and within (grandparent-grandparent) generations. As

[46] With the exception of the single level and two-level SEMs in Chapter 7. These models were included in this thesis for empirical reasons only and were not the correct approach to modelling cross-classified school and neighbourhood data.

[47] In this thesis, family background, albeit using different measures, was used to explore differences in children's aspirations in all five studies.

hypothesised, parents' social class mediated the effect of grandparents' class on the grandchild's classed aspirations. However, only the paternal grandmother's social class directly (albeit very weakly) influenced the grandchild's classed aspirations after parental factors were included. This was unexpected, as maternal grandparents are thought to be more influential (Chan & Boliver, 2013). One explanation might be that the sample likely overestimated the influence of paternal grandparents. In order to include the paternal lineage and reduce measurement error, families where the mother's partner was present at Sweep two (at child's age three years) were included. This increased reliability by only including partners who gave details of their parents' occupations. However, this may have over-estimated the role that the paternal grandparents play in influencing the grandchild as lone mothers when the child was aged three) would have been excluded. Another reason may be that previous studies explored intergenerational mobility in earlier time periods when social mobility patterns may have been different, and modelled adult grandchild outcomes.

This study, also investigated a specific version of the 'sunken middle-class' hypothesis, that parents who experienced downward mobility, in particular mothers, might have the cultural resources and motivation to influence upward counter mobility and vice versa in their children's ambitions (Jackson & Marsden, 1962). In this study there was no evidence to support the 'sunken middle-class' hypothesis. The study in this thesis, modelled young children's aspirations and not adult social class, and the differences in British culture half a century later may explain the different findings.

Parental values and involvement in home-based learning

Belonging to a particular socio-economic group brings a collection of values and beliefs ((Bourdieu, 1984). As expected, social disadvantage was also related to parental values, which in turn predicted aspirations. In the analysis in this thesis, social disadvantage was related to hard work and obedience, over autonomy. Previous research shows that socially disadvantaged individuals tend to emphasise obedience and conformity to authority and tradition, while the more advantaged value self-direction in themselves and their children (Alwin, 1989; Lareau, 2002). More importantly in this thesis parental values were related to children's aspirations. Social disadvantage was associated with obedience, which in turn was related to more masculine aspirations (e.g. 'firefighter', 'policeman', 'soldier'). The offspring of parents who valued popularity for their children aspired to wealth, fame and attractiveness (e.g., 'famous footballer', 'super model' or 'popstar'). Parental influences were also related to aspirations via children's cognitive ability and school engagement.

According to the family investment model children from more privileged backgrounds have greater access to financial and other resources including time spent with the child. Surprisingly, parental involvement in home- based learning was not directly associated with children's

aspiration. However, parental involvement in home-based learning was indirectly positively related to children's aspirations[48] via school engagement at age 7, which in turn was associated with higher and more intrinsic aspirations, and with cognitive ability(although very weakly) , which in turn was related to higher, more intrinsic and more feminine aspirations. It might be that the parental involvement in home-based involvement construct used in the thesis does not capture exactly the same type of parental involvement measures used in other studies. As Hill and Tyson (2009) argue there are numerous definitions of parental involvement, relating to home-based and school-based involvement. In the MCS the questions on parental involvement at age 3 relate to anyone in the household engaging in the activities with the child, so not strictly parental, while at age 5 the question is asked of the mother and their partner. The items used to construct the parental involvement in home-based learning measurement at each age group were also different. At age 3, parental involvement in home-based learning included more academic pursuits such as learning the alphabet or teaching the child to count, while at age 5 the items were less academic for example musical activities and playing with toys or games. However, regardless of the items both parental involvement in home-based learning constructs were related to positive child school engagement and ability outcomes, which in turn were related to higher and more intrinsic aspirations (and more feminine aspirations via parental involvement in home-based learning at age 5, in the model in chapter 9).

Chapter 5 showed that the antecedents of parent involvement were better explained by the infant's temperament. Children with 'easy' temperaments were associated with more parental involvement in home-based learning. It is generally agreed that parents' cognitive and social skills enable them to choose how they will respond to their children's behaviour, however children can also influence the behaviour of parents (Bates, Schermerhorn & Peterson, 2012).

10.1.2.3 Cognitive ability and school engagement

As expected, in all models, social disadvantage / low family SES was strongly negatively related to the child's cognitive ability at age 5. Where the pathway was specified (in chapter 9), social disadvantage was also associated with cognitive ability at age 5 via parental involvement in home-based learning at age 3. More importantly, cognitive ability at age 5 was directly (albeit very weakly) related to children's aspirations at age 7 and indirectly via school engagement (liking and finding school interesting). Cognitive ability was directly related to higher, more intrinsic and feminine aspirations in the model in chapter 9 and only feminine aspirations in the cross-classified model in chapter 7. The analysis in chapter 5 included a pathway from cognitive ability to children's aspirations via school engagement. In this study there was no direct relation between child ability and aspirations, however, cognitive ability was related to school engagement which predicted both more intrinsic and more prestigious aspirations, particularly

[48]At age 3 and 5 in chapters 5 and 9, in chapter 7 there was no indirect pathway from parental involvement to children's aspirations.

for girls. As identified by Gottfried (1990) and Eccles's et al. (1983) intrinsic motivation such as increased interest and enjoyment of an activity can lead to higher levels of motivation, even in young children. Also, cognitive ability was associated negatively to descriptive aspirations (e.g., 'tall', 'an adult'), as Gottfredson's model would predict, and positively to uncertain aspirations. These findings may reflect early higher ability and lower academic intrinsic motivation. Finally, children with fantasy and descriptive aspirations were less engaged with school. This may be explained by their more difficult temperaments and lower cognitive abilities respectively, impacting negatively on their interactions with the school environment.

Children's abilities play an important role in the development of their aspirations, this thesis showed a weak relation. However, according to theorists, perceived competence is more important in determining aspirations than actual ability itself (Bandura, 2001; Eccles et al., 1983). Unfortunately, over the first four sweeps of the MCS there were few questions asking how the child perceives their own abilities in school or at home.

10.1.2.4 Contextual effects

In applying the developmental-contextual approach chapter 7 explored the role of the broader context (school and neighbourhood) on the prestige, femininity/masculinity and the motivation of children's aspirations. As expected, the contextual effects were very weak, and the family and individual child characteristics better explained children's aspirations expressed at age 7. Less than 5% of the variance in all of the three aspiration classifications (using the cross-classified model) was explained by the variance between neighbourhoods and between schools.

There was no between-school variability in children's aspirations; however there was between-neighbourhood variability. Children from more advantaged neighbourhoods were associated with more extrinsic aspirations (i.e. for fame, wealth and image). Although this result was not hypothesised, a recent exploratory study with adults in the US found greater neighbourhood SES predicted greater materialism (as defined by the Materialistic Values Scale, MVS, Richins & Dawson, 1992), over and above individual family SES (Zhang, Howell & Howell, 2014). Perhaps younger children living in higher SES neighbourhoods are comparing themselves with their neighbourhood peers, using an average frame of reference and are therefore aspiring to the neighbourhood level of wealth, image and fame[49]. However, in previous studies exploring contextual influences and child outcomes, schools are the main pathway through which the influence of neighbourhood is transmitted to children (Leckie, 2009; Owens, 2010).

[49] This may be akin to the Marsh et al. (2008) big-fish-little-pond-effect on academic self-concept.

10.1.3 Aspirations and emotional and behavioural problems

Both maternal psychological distress and social disadvantage, along with children's ability, gender and ethnicity were stronger predictors of emotional and behavioural problems, than children's aspirations. The thesis adds some support to the premise that younger children's aspirations may be an indicator of their belief in themselves and their confidence about the future. However, the relationship is very weak. The thesis shows that children's aspirations at age 7 were one of many significant variables explaining externalising and internalising problems after controlling for prior behavioural problems. However, the analysis in the thesis was unable to indicate the direction of the relationship or if the association was bi-directional.

10.1.3.1 Realism and children's maturity of the aspiration and emotional and behavioural problems

As expected, children with *fantasy* aspirations were more likely than children with aspirations for *non-rare occupations* to have externalising problems at age 7.This pattern of results suggests, in line with previous findings (Gottfredson, 1981), that children with magical thinking in middle childhood may be behind on their emotional and behavioural development. However, fantasy aspirations were not associated with cognitive ability, suggesting they are behind on behavioural, but not cognitive development. Moreover, fantasy aspirations may also be an escape response from the stresses of everyday life. Reports of hyperactivity were associated with fantasy aspirations by both parents and teachers; however their perceptions of other related problems differed. Fantasy aspirations were related to peer problems in the teacher report and conduct problems in the parent report. This is probably as a result of the differences in comparisons of the child with classmates or siblings, or as a result of how behaviours manifest in different situations.

Compared to aspirations for *non-rare occupations*, aspirations for *rare occupations* were negatively associated with internalising problems, even after adjusting for internalising and externalising problems at age 5 on all the study's covariates. Supporting this finding, both teachers' and parents' reports showed a negative association between rare occupational aspirations and emotional symptoms and peer problems. Also in the teacher report, when gender is controlled for rare aspirations were negatively related to hyperactivity. Having rare occupations compared to non-rare occupations for boys is related to less hyperactivity as reported by teachers. As shown in table 9-2, teacher reported hyperactivity for non- rare aspirations is higher (M=3.84) compared to rare aspirations (M=3.30) in boys ($F=32.26$, $p<.001$), but when comparing rare and non-rare aspirations for all children, there is no difference in hyperactivity. Younger children are characteristically optimistic, however children aspiring to rare occupations compared to non-rare occupations may be expressing their hopes

for the future, free from constraints. At this age, this may be evidence that children have high self-efficacy and strong beliefs that they can influence their choices, regardless of the difficulty of their goals. Popularity may also partly explain the positive outcomes for rare aspirations. Rare occupations included for example 'sports person', 'vet' and 'popstar' which at age 7 were some of the children's favourite aspiration choices. Having aspirations for rare occupations may help increase popularity, which in turn might reduce internalising problems. The research in this thesis hypothesised that *descriptive* and *uncertain* aspirations would be associated with negative child outcomes. Although, there were very weak relations between d*escriptive* aspirations and problem behaviours, children with descriptive aspirations were more likely to have cognitive difficulties. There were different results in the two studies in this thesis examining uncertain aspirations and child behaviour. In chapter 9, uncertain aspirations were weakly positively related to emotional symptoms in both the teacher and parent report. However, no relationship was found in the study conducted in chapter 8. At age 7, uncertain aspirations are related to autonomy (rather than helping others), higher cognitive ability, and less school engagement which may for children of this age result in negative adult perceptions.

This thesis also hypothesised that unexpressed aspirations may reflect goal avoidance, which could be linked to increased internalising problems. However, non-response in itself was not related to negative outcomes, not doing the self-completion questionnaire at all was associated with hyperactivity. Complete non-response could be associated with problems in episodic future thinking, or with a less compliant temperament, or lower concentration and organisation skills. In support, not completing the questionnaire was more highly associated with emotional and behavioural problems at age 5 and low cognitive ability, potentially exacerbated by the relation with family poverty at age 5 and age 7.

10.1.3.2 Occupational aspirations and emotional/behavioural problems

As expected, the prestige of the occupational aspiration was related, though weakly, to emotional and behavioural problems in younger children. According to both the parent and teacher report, low occupational aspirations were more common in children with emotional symptoms. Aspirations at age 7 are typically optimistic and having low expectations, compared to high have been associated with anxiety and depression in children (Wyman et al., 1993).

Low occupational aspirations were also associated with peer problems and hyperactivity at school, as reported by teachers. In the school environment, children with lower aspirations may find it more difficult to have positive peer relations and have less engagement with school which may result in further difficulties. These early interactions at school may over time promote the development of negative attitudes and aspirations in the future. Previous studies suggest children orient towards peers sharing similar motivational orientations and preferences (Berndt et al., 1990). In this study, low occupational aspirations were predicted by lower family SES,

lower cognitive ability and less school engagement. As discussed most children from disadvantaged backgrounds have high aspirations, however even at age 7, they may have lower self-esteem and self-efficacy, reflected in lower aspirations compared to their more advantaged peers.

10.1.3.3 Masculinity/femininity of the aspiration and emotional/behavioural problems

Surprisingly there were no differences in the association of gender atypical aspirations and emotional and behavioural problems. This thesis hypothesised that being gender atypical, at an age when gender roles are coming into focus may result in negative social repercussions (Gottfredson, 1981). Previous studies with older children have found that gender typicality is associated with better peer relations and higher feelings of self-worth, as well as less anxiety and depression (Carver et al., 2003; Egan & Perry, 2001; Yunger et al., 2004). These initial results suggest that at this age having gender atypical aspirations may not be detrimental to children's well-being. Therefore, making children aware of and perhaps encouraging younger children to aspire to less stereotypical occupations may not result in negative emotional and behavioural outcomes, especially in their relations with peers. Unfortunately however, owing to measurement invariance, this study was unable to conduct multi-group analysis by gender. Although, moderation analysis (using interactions) was performed on all the pathways from aspirations to child behaviour no differences were found. However, there were differences in this study by gender in the relation between extrinsic/intrinsic motivation and children's behaviour.

10.1.3.4 Extrinsic/intrinsic motivation and emotional/behavioural problems

Contrary to expectations based on research with adolescents and adults, more intrinsic, not extrinsic aspirations were related to emotional symptoms and peer problems (in the both parent and teacher reports). However, recent studies exploring materialism and well-being have found that age inversely moderates the relation (Dittmar et al., 2014).

In both parent and teacher reports, there was a gender difference in the relationship between intrinsic aspirations and internalising problems. Intrinsic aspirations were more strongly associated with teacher-reported emotional symptoms and parent reported peer problems in boys. Intrinsic aspirations tend to be more typical of girls (49.7%) than boys (10.1%). Also, extrinsic aspirations in this study were fairly strongly ($r = .38$, $p < .01$) correlated with more masculine aspirations. One explanation could be that the few boys who gave intrinsic aspirations may be teased by their peers (Carver et al., 2003) as in general, boys are less encouraged to have gender-atypical (including intrinsic) aspirations than girls, which may result in peer rejection of those with less sex-typical dispositions. In the analysis in this thesis, the majority of boys with extrinsic aspirations (89%) wanted to be sports players. On the other hand,

of the boys with intrinsic-intermediate aspirations, 25% wanted to be doctors, 27% teachers, 20% animal carers and 16% veterinarians. It may be that boys who want to be sports players might be more popular at school and less likely to be bullied than those aspiring to be teachers or animal carers. As other research shows, by age 7, children tend to avoid gender-atypical types of play (Stoddart & Turiel, 1985). Of course, the fact that they may be good at sports may be driving the aspirations and the popularity, rather than the aspirations playing a causal role.

10.1.4 Summary of the pathways supported by the present findings

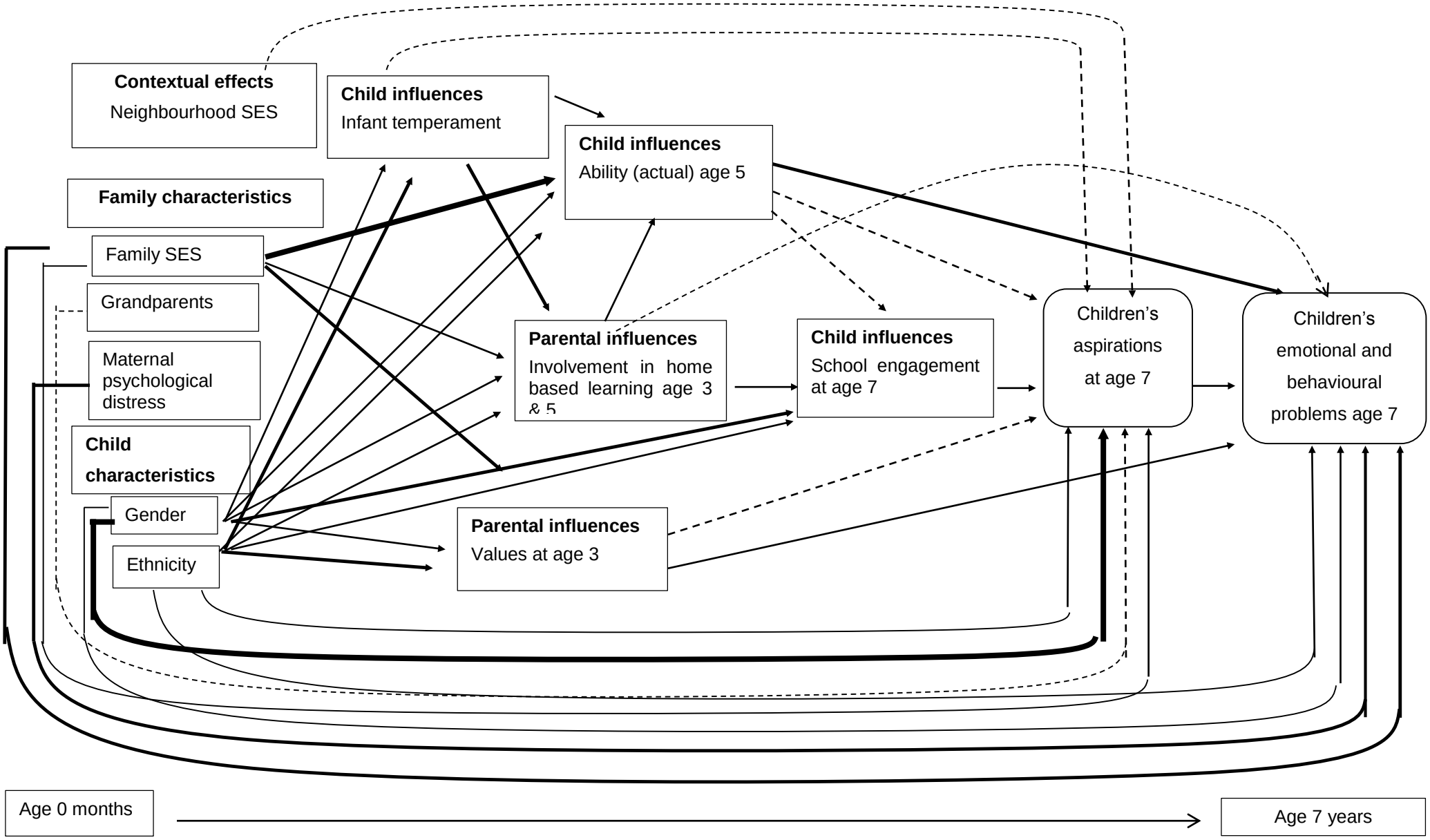
The thesis acknowledged the importance of life stage and multiple contexts in the development of aspirations. The model in figure 10.1 is a general pictorial summary of the pathways identified by theories and empirical evidence cited and supported by the results in this thesis[50]. The weight of the lines on the pathways are a visual interpretation of the strength of the associations identified across all the analysis, where ⇢ is a very weak association, → is weak, ⟶ is weak to medium, and ➡ is medium / strong[51].

The strongest direct predictor of children's aspirations at age 7 was gender. Family SES, the child's ethnicity and school engagement at age 7 were also associated albeit weakly with children's aspirations. Other direct influences on children's aspirations such as the child's ability, parental values, grandparents, infant temperament and neighbourhood SES, were tentative and very weak. Some were only tested in only one model in this thesis or their importance changed depending on the other covariates included in the models. However in the main they correspond with previous work investigating the determinants of older children's aspirations. Family SES, the child's gender and ethnicity may also, albeit weakly, influence children's aspirations via parental values, parent involvement and the child's ability.

The work also shows that there may be a relationship (although the results were weak) between children's aspirations at age 7 and emotional and behavioural problems, after controlling for stronger influences on child behaviour such as family SES, child ability and maternal psychological distress. However, the analysis in the thesis was unable to indicate the direction of the relationship or if the association was bi-directional.

[50] These variables have not been tested all together in one single model, so very weak pathways to children's aspirations and emotional and behavioural problems may become insignificant.
[51] This is a pictorial representation and is not intended to be an exact reproduction of the relative differences in the strengths of the pathways.

Figure 10-1: Visual representation of the possible pathways predicting children's aspirations at age 7 and the association with emotional and behavioural problems



10.2 Strengths and limitations of the study

10.2.1 Strengths

One of the main assets of this thesis is the use of the Millennium Cohort Study (MCS). The analysis was based on data from a large, nationally representative sample of children. The MCS is a rich data set that allows the modelling of a variety of social, economic and psychological factors which can potentially influence child outcomes, while controlling for other factors. The MCS includes information about the child, family background, parental attitudes, validated measures of child development and contextual factors. Furthermore, the use of a large representative cohort allows the findings of the research to be broadly generalisable to children in the first decade of the Twenty-first Century.

As outlined, the development of aspirations is a life-time process. This thesis acknowledged the importance of the individual, the situation and context in the development of aspirations and emotional and behavioural problems. The longitudinal design of the MCS allows for examination of the influence of early exposures on child outcomes over time and to understand their contributions to explaining the development of aspirations and behavioural outcomes at an early developmental stage. As well as the child and family factors, other contextual factors, namely the school the child attended and the neighbourhood SES were explored. As well as school and neighbourhood data the MCS includes data from different informants. For example, the parent and teacher perceptions were used in exploring children's emotional and behavioural difficulties. Psychosocial problems may be highly situational and the informant's perception of the situation may influence the ratings and also, children's behaviour may change in different situations.

The open ended question asking about aspirations gave all children the opportunity to give their own responses. The children's responses were classified in four ways, enabling this thesis not only to explore the more standard measurement of aspirations by occupation, but also to investigate other conceptual measurements of aspirations. Furthermore, children who could not respond to the question were not excluded from the thesis. The analysis in chapter 8 included non-response, to the child self-completion questionnaire and the aspirations question, as well as non-interpretable responses.

Another main strength was the use of structural equation modelling (SEM). SEM allows the analysis of multiple outcomes and in addition the use of both observed and latent variables. Latent variables can be used to model underlying constructs that are used to represent abstract phenomena such as family SES, child ability, and infant temperament. Latent constructs often

better depict underlying theoretical constructs compared to one observed variable. In addition SEM can model both direct and indirect effects of both observed and latent variables. The statistical SEM software Mplus used in this thesis can model different types of outcomes e.g. continuous, ordinal, nominal, as well as single, and multi-level models. In addition, the software can handle various incomplete data, non-normality and complex survey design, albeit dependent on the type of data and model applied. Also, this thesis tested the impact on significant results (i.e. type I error) of not taking account of survey design in modelling complex data by running models with and without MCS survey design clustering, stratification and weights.

As far as the researcher is aware, this study was the first using large-scale data in the UK to investigate the predictors of children's aspirations at age 7, and the association between the aspirations of primary school children and their emotional and behavioural development. In the first instance, this thesis demonstrated that younger children although more unrealistic than adolescents, already have occupational aspirations for the future. Moreover, the analysis in thesis showed that gender, ethnicity, family SES, parental values, cognitive ability and school engagement, all strongly associated with adolescents' aspirations, were also predictors (albeit weak) of several classifications of young children's aspirations. Although by no means the strongest factor, low, intrinsic, fantasy, descriptive and uncertain aspirations were related to more child behavioural problems. While rare occupational aspirations, compared to non-rare occupational outcomes were related to fewer emotional symptoms and peer problems.

10.2.2 Limitations

The analyses had several limitations that need to be acknowledged. At the time of the analysis in this thesis the aspirations question had only been asked in one sweep of the study, so no validation across sweeps could be made. At age 7 children's aspirations may be very changeable, however, there is some evidence that at least in the short term the occupational aspirations of elementary school children are stable over a given school year (Trice, 1991; Trice & King, 1991). Further, aspirations and emotional and behavioural problems were both recorded at age 7, and therefore causal inferences are even more difficult to defend in a cross-sectional rather than longitudinal design. Although the study hypothesised aspirations influence child behaviour, the direction of the association may differ, the relationship between aspirations and adjustment may be reciprocal. Although, studies that have fitted cross-lagged models have shown that constructs closely related to aspirations, such as career orientation, tend to be the precursor rather than the outcome of adjustment (Skorikov & Vondracek, 2007).

Many children only gave a single response to the aspirations question, with no clarification about the motives or meaning behind their responses. Without asking additional or more in-depth questions, there is no clear understanding of what for example, aspiring to be an 'engineer' or a 'doctor' or 'teacher' or 'a footballer' means to a 7 year old child. Therefore there were a certain number of assumptions made when coding the children's responses. For example, if a child responded 'engineer' the occupation was assumed to be professional and not a non-professional job. In addition, the children were not asked about the reasons for their choices, and so it was not easy to identify truly extrinsic or intrinsic motivation from the material at hand. Therefore subjective judgements were made in interpreting the children's responses. It may be that an aspiration to be a 'doctor' or 'teacher' may not be intrinsic to some children and may be more reflective of power and status. These subjective, decisions without knowing the children's intentions may explain why some of the results in relation to this measurement were not as predicated. In addition, the sub-division of non-rare and rare occupational aspirations in the realism and maturity of the aspiration classification was operationalised on the basis of the percentage of those jobs in the UK working population at the time when the children were interviewed. However, this classification did not take account of other criteria such as the child's family background or ability. For example, for a child with a parent who is a vet, sportsperson, singer, hairdresser or policeman, these occupations would be more realistic than for children whose parents have very dissimilar occupations to the child's aspiration. Likewise, if a child has ability in and has interest in a specific domain such as science then aspiring to be a vet or astronaut, is more realistic than a child who is not as able in the specific domain.

Furthermore, by definition aspirations tend to be unrealistic and high whereas expectations can be more realistic and aligned. The MCS did not ask what the children expected to be or thought they would be. Without asking directly about expectations we do not know whether the children really think they will be 'footballers' or 'singers' for example at age 7, and how 'aligned' or 'misaligned' the children's aspirations were with their expectations.

As with all multi-purpose studies, there were limits to the scope of the questions included in MCS. Unfortunately MCS4 did not include questions asking how the child perceives their own abilities in school or at home to elicit the child's level of self-efficacy[52]. And although the MCS included other relevant questions they could not be used in the analysis. For example, there was no variability in parental educational expectations at age 7. In addition, the MCS includes questions, for example on the child's interests and parental gender values which may predict

[52] The only question at MCS4 that is asked of the child that relates to self-efficacy is whether the child believes the 'teacher thinks they are clever'. Similarly there are no questions directly asking the parents on their occupational expectations of their child's future.

children's aspirations, however they could not be included as the items included did not form reliable constructs. There were also further restrictions on the analysis by the timing of some of the questions asked, for example temperament at age 9 months.

The analysis in chapter 8 included non-responders to the aspirations question and showed *item non-response* was not associated with negative child outcomes, suggesting that further analyses of the specified aspirations would not be affected by within-sweep response bias. However, this was not true of the children who did not respond to the child self-completion questionnaire who were associated with externalising problems. In the remaining studies, the excluded sample, compared to the analytic sample were more disadvantaged, had lower cognitive ability, were from ethnic minorities, lived in poorer neighbourhoods, go to lower achieving schools and have higher scores on problem behaviours. Assuming that children from more disadvantaged backgrounds may have added more extreme values, the reported estimates of the variability in the outcomes is likely to be underestimated. And finally, the results are based on a single cohort born at the turn of the century. There may be historical contexts which at the time influenced their choice of aspirations.

10.3 Recommendations for future work and policy

10.3.1 Future research

The work in this thesis showed that there is an association between children's aspirations and emotional and behavioural problems at age 7. The pathways identified in this thesis could be modelled using the SDQ measure at MCS5 to explore if the same associations between children's aspirations at age 7 and child problems at age 11 are found using a longitudinal design. In addition an initial exploration of the direction of the association between aspirations and child behaviour, using the SDQ measure at age 7 and children's aspirations at age 11 could be tested. As the cohort grows older the MCS data could be used to investigate cross-lagged associations between emotional/behavioural adjustment and aspirations. Future research should model cross-lagged effects to determine the direction of this relationship using MSC4, MCS5 and MCS6 when the cohort was aged 7, 11 and 14 respectively. As well as child behaviour outcomes, when the children complete key educational stages, the relation between aspirations and educational outcomes could also be investigated.

As the development of aspirations is a life long process, future sweeps of the MCS will help understand how young people's aspirations develop over time. In the first instance it would be useful to explore how different the cohort's aspirations are at age 11, compared to age 7. For

example, is the cohort less optimistic and more realistic about their futures, and are they aspiring to similar occupations as they did when they were younger. According to Gottfredson (1981) older children become aware of social class and this is the beginning of distinguishing between jobs on this basis. Even at age 7 this project identified direct and indirect pathways from family SES. As the children become more aware of their social inheritance this association should be explored. Foremost the studies in this thesis identified child and family background factors as the main predictors of children's aspirations at age 7, as children spend more time away from the home environment, research could be conducted investigating the influence of the school and neighbourhood context, as well as their peers.

As the MCS children grow older, they are increasingly able to provide their own views and respond to a wider variety of questions. This will enable the children themselves to express how they feel and have their own 'voice' in this important study. For example, at MCS5 the children were asked questions about their self-esteem and perceptions about their ability. Work could be conducted looking at the association of perceived ability and not just the child's actual ability, along with the child's self-esteem on children's aspirations. MCS5 also includes two additional questions on children's aspirations, the first asks about their intention to stay at school at 16 and the second about life achievements by the time they are 30, adding more breadth to the study of children's future ambitions.

One major finding of this thesis was how gender typical the aspirations of the children were, both in terms of the masculinity/femininity of the aspiration, but also the more intrinsic choice of aspirations endorsed by girls. The analysis in this study was unable to conduct measurement equivalent multi-group analysis by gender. Further exploration of the influence of having gender atypical and typical aspirations on child outcomes is needed at this age and as the cohort grows older. Also, as the children get older do their gender self-concepts change, do they become more or less gender typical over time.

10.3.2 Policy implications

Over the past decade, there has been a strong policy focus on raising aspirations, particularly for poorer families. More recently, aspirations form one of the components of 'Character Education'. The government states it is 'committed to helping schools ensure that more children develop a set of character traits, attributes and behaviours that underpin success in education and work' (DfE, 2015). 'Confidence, optimism, motivation drive and ambition' are highlighted among these character traits. The research in this thesis showed that for younger children at least, most were optimistic about their futures regardless of their backgrounds. Also, mothers in the MCS had high educational expectations for their children, regardless of their socio-

economic status. Therefore, a policy of solely raising aspirations for children (at this age at least) would be ineffectual.

However, there were associations between children's aspirations and social disadvantage both directly and indirectly. Children develop self-concepts by making comparisons with others, if for example their home, school and neighbourhood environments are disadvantaged, this may reflect their frames of reference, including for their future aspirations. As highlighted in previous studies for older children it is not the lack of ambition, but the resources which may restrict children from more disadvantaged backgrounds achieving their dreams. In this study, parental values influenced children's aspirations directly and parental involvement in home-based learning indirectly via the child's ability and school engagement. Parents from more advantaged backgrounds were more involved with their children's learning and advocated autonomy over more traditional values. As the children grow older these resources may increase their self-efficacy and help them achieve their higher and more atypical aspirations. Encouraging children's autonomy may be one solution, as well as giving families the information and the understanding of how their children can realise their aspirations. This is not only important for future careers, but also for behavioural and educational outcomes.

At age 7 few children spontaneously had aspirations for fame, wealth and image. Although, many children had aspirations for rare occupations (such as 'footballer', 'popstar'), which are typical of this age-group. Rare aspirations were related to positive internalising outcomes, which may be because of their self-efficacy and belief in themselves, or because of the reciprocal popularity of having these aspirations. Secondly more extrinsic aspirations were negatively associated with emotional symptoms and peer problems, suggesting that at age 7, having aspirations for fame, wealth and image, are not limiting their emotional and social development. However, as the children grow up extrinsic aspirations may be harmful to educational outcomes, as school engagement was related to more intrinsic aspirations.

And finally, although adolescence is viewed as a key stage in the development of aspirations, this research shows that children start thinking about occupational aspirations at an early age, (although many are unrealistic). It also demonstrated that many of these aspirations were narrow and culturally stereotypical. Children's gender and cultural self-concepts were already forming at age 7 which could have an impact on their academic performance and future career choices. The Department of Education career education pilot scheme for 9 to 11 year olds found pupils involved in the scheme broadened their horizons, and reduced stereotypical thinking about future jobs. Schemes which show children at a young age, while they are very optimistic, alternative and broader futures, may help to diffuse stereotypical aspirational choices and expand their horizons.

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Appendices

Appendix I: Chapter 3, a bivariate analysis of NS-SEC and SOC2000 by median household equivalised income and % of mothers and their partners with degrees

Table II.1: Mother's and partner's NS-SEC by median equivalised income and % within NS-SEC class with a degree

	Mother NS-SEC		Partner NS-SEC	
NS-SEC	**Median equivalised weekly income** (n=10,079)	**% with a degree** (n=10,160)	**Median equivalised weekly income** (n=8,412)	**% with a degree** (n=8,404)
1 Higher managerial and professional occupations	£539.58	71.0%	£485.68	63.5%
2 Lower managerial and professional occupations	£398.04	39.7%	£383.23	32.6%
3 Intermediate occupations	£312.51	11.1%	£284.94	15.3%
4 Small employers and own account workers	£315.17	20.1%	£286.29	7.9%
5 Lower supervisory and technical occupations	£227.38	5.5%	£269.76	3.4%
6 Semi-routine occupations	£195.97	4.1%	£201.96	2.8%
7 Routine occupations	£165.58	1.8%	£196.32	2.2%

Table II.2: Mother's and partner's Major Group Standard Occupational Classification 2000 (SOC2000) by median equivalised income and % within SOC with a degree

	Mother SOC		Partner SOC	
SOC2000 – Major Group	**Median equivalised weekly income** (n=10,150)	**% with a degree** (n=10,233)	**Median equivalised weekly income** (n=8,371)	**% with a degree** (n=8,460)
1 Managers and Senior Officials	£436.39	31.0%	£432.67	32.9%
2 Professional Occupations	£477.66	82.7%	£466.40	74.9%
3 Associate Professional and Technical Occupations	£400.37	37.0%	£381.18	29.4%
4 Administrative and Secretarial Occupations	£316.39	11.5%	£289.19	23.2%
5 Skilled Trades Occupations	£236.54	4.2%	£273.47	2.9%
6 Personal Service Occupations	£230.56	6.3%	£232.06	10.2%
7 Sales and Customer Service Occupations	£207.33	5.6%	£227.38	5.8%
8 Process, Plant and Machine Operatives	£173.00	1.1%	£227.63	2.9%
9 Elementary Occupations	£170.86	1.6%	£191.49	3.4%

Appendix II: Chapter 3, List of children's main aspirations coded by extrinsic / intrinsic categories

Extrinsic	Extrinsic-intermediate	Otherwise	Intrinsic-intermediate	Intrinsic
Actor (famous, TV, Hollywood)	Actor	Accountant/ solicitor/ judge/ architect	Animal worker (except hunter, sheep shearer, trainer)	Pet (charity, help, rescue)
Famous, a star etc.	Artist (tattoo)	Administration	Carer	
F1 driver	Beautician	Agriculture	Clergy	Welfare
Fantasy (famous person / character)	Dancer	Artists	Coast guard	Descriptive (happy, help)
Gangster	Entertainment	Author	Dad / Mum / Uncle	
Model	(stunt driver, stunt person, clown, acrobat, fairground, comedian)	Builder	Doctor	
Popstar	Fashion designer	Cleaner	Driver – ambulance / paramedic	
Prime minister	Hairdresser	Computers	Life guard	
Royalty	Manager	Delivery	Midwife	
Sports person	(football, boss, businessman)	Electrician	Nurse	
(famous name, club, best)	Media (producer, film maker etc.)	Engineer	Physio	
	Musician	Farmer	Teacher	
	(band, drummer, guitar)	Firefighter	Vet	
	Singer	Food (baker, butcher, chef)		
	Sport:	Forces		
	(American football, BMX, Body builder, Boxer, Football, Go kart, Skateboarder, Strongman, Wrestler)	Instructors		
		Librarian		
		Manager (not boss, business)		
		Masseur		
		Mechanic		
		Musician (piano, violin)		
		Pharmacist		
		Police		
		Researcher		
		Sales		
		Scientist		
		Skilled trades		
		Sports: (athletics, baseball, basketball, cricket Cycling, diver, gaelic, golf, gymnastics Hockey, horse rising, ice skating, martial arts, rock climber, rugby league, rugby, runner, scuba diver, snooker, swimmer, tennis)		

Appendix III: Chapter 5, multi-group analysis by gender - testing pathways on Model 1

Latent construct	Type of model	χ^2	df	P value	CFI	TLI	RMSEA	$\chi^{2\ difference}$	df	P value <.05
Easy temperament at 9 months	1. All parameters free	1041.29	146	<.000	.925	.906	.033	-	-	-
	2. Metric invariance	1043.99	157	<.000	.925	.913	.032	2.70	11	NS
	3. Intercepts only	1048.64	157	<.000	.925	.913	.032	7.35	11	NS
	4. Scalar invariance	1183.96	168	<.000	.914	.907	.033	142.60	22	S
	5. Full uniqueness	1058.94	160	<.000	.924	.914	.032	7.35	14	NS
Low family SES at 9 months	1. All parameters free	671.70	4	<.000	.957	.872	.172	-	-	-
	2. Metric invariance	673.24	7	<.000	.957	.927	.130	1.54	3	NS
	3. Intercepts only	685.74	7	<.000	.957	.926	.131	14.04	3	S
	4. Scalar invariance	603.77	10	<.000	.962	.954	.103	67.93	6	S
	5. Full uniqueness	605.98	8	<.000	.962	.943	.115	65.72	4	S
Parental involvement in home-based learning at age 5	1. All parameters free	93.15	14	<.000	.980	.961	.039	-	-	-
	2. Metric invariance	109.06	21	<.000	.978	.968	.035	14.95	7	S
	3. Intercepts only	114.20	21	<.000	.976	.966	.036	22.42	7	S
	4. Scalar invariance	231.60	28	<.000	.950	.944	.046	134.16	14	S
	5. Full uniqueness	117.91	23	<.000	.976	.968	.037	27.87	9	S
Child cognitive ability at age 5	1. All parameters free	0	0	0	1	1	0	-	-	-
	2. Metric invariance	1.68	2	.432	1	1	0	1.68	2	NS
	3. Intercepts only	1.79	2	<.01	.992	1	0	1.79	2	NS
	4. Scalar invariance	13.91	4	.408	1	.992	.021	13.91	4	S
	5. Full uniqueness	11.32	3	<.01	.991	.991	.022	11.32	3	S
School engagement at age 7	1. All parameters free	110.57	24	<.000	.986	.976	.026	-	-	-
	2. Metric invariance	136.43	30	<.000	.983	.977	.026	25.86	6	S
	3. Intercepts only	170.11	30	<.000	.978	.969	.030	59.54	6	S
	4. Scalar invariance	476.25	36	<.000	.931	.919	.049	365.68	12	S
	5. Full uniqueness	245.66	31	<.000	.966	.954	.037	135.09	7	S

Appendix IV: Chapter 5, descriptive statistics (unweighted data) of model 1 variables in the analytic and non-analytic samples

(Aspirations classified by occupational, extrinsic/intrinsic motivation, masculinity/femininity)

		Analytic sample (n = 11,656)			Non-analytic sample (n = 2,201)		
Variable	**Range**	**N**	**M(SE)**	**95% CI**	**N**	**M(SE)**	**95% CI**
Aspirations							
Low occupational aspirations	1-9	11,220	3.28 (0.02)	[3.25, 3.31]			
Extrinsic aspirations)	1-4	11,656	2.02 (0.01)	[2.01, 2.04]			
Masculine aspirations)	1-4	11,501	2.88 (0.01)	[2.86, 2.90]			
Family SES							
(Low) maternal qualifications	1-8	11,220	4.76 (0.02)	[4.73, 4.80]	2,144	5.00 (0.05)	[4.91, 5.08]
(Low) paternal qualifications	1-8	8,570	4.70 (0.02)	[4.65, 4.74]	1,544	4.94 (0.06)	[4.83, 5.04]
(Low) maternal social class	1-7	10,169	4.04 (0.02)	[4.00, 4.08]	1,835	4.19 (0.05)	[4.10, 4.29]
(Low) paternal social class	1-7	8,505	3.76 (0.02)	[3.71, 3.80]	1,534	3.95 (0.05)	[3.85, 4.06]
Infant temperament	29-70	6,811	56.86 (0.08)	[56.70, 57.01]	1,207	56.49 (0.19)	[56.12, 56.86]
Mother involvement in learning							
Telling stories	1-6	11,118	3.63 (0.02)	[3.60, 3.65]	2,054	3.50 (0.04)	[3.43, 3.57]
Doing musical activities	1-6	11,116	4.78 (0.01)	[4.76, 4.80]	2,056	4.72 (0.03)	[4.67, 4.78]
Painting/drawing	1-6	11,119	3.86 (0.01)	[3.84, 3.88]	2,056	3.85 (0.03)	[3.80, 3.91]
Playing games/with toys	1-6	11,117	4.50 (0.01)	[4.47, 4.52]	2,055	4.49 (0.03)	[4.44, 4.54]
Partner involvement in learning							
Telling stories	1-6	8,061	3.52 (0.02)	[3.49, 3.55]	1,371	3.43 (0.04)	[3.35, 3.51]
Doing musical activities	1-6	8,063	4.09 (0.02)	[4.06, 4.13]	1,372	3.95 (0.04)	[3.87, 4.03]
Painting/drawing	1-6	8,063	3.40 (0.01)	[3.37, 3.42]	1,372	3.32 (0.03)	[3.26, 3.39]
Playing games/with toys	1-6	8,063	4.44 (0.01)	[4.42, 4.46]	1,373	4.38 (0.03)	[4.32, 4.44]
Cognitive ability							
Naming vocabulary	20-80	11,074	54.50 (0.10)	[54.30, 54.71]	1,956	52.13 (0.28)	[50.98, 52.12]
Pattern construction	20-80	11,052	50.84 (0.09)	[50.66, 51.02]	1,937	49.18 (0.25)	[48.86, 49.84]
Picture similarities	20-80	11,062	55.95 (0.10)	[55.76, 56.14]	1,958	54.61 (0.24)	[54.18, 55.16]
School engagement	7-21	10,917	16.61 (0.03)	[16.55, 16.67]	1,230	16.00 (0.10)	[15.81, 16.18]
Age (years), Sweep 4		11,656	7.23 (0.00)	[7.23,7.24]	2,201	7.25 (0.01)	[7.23,7.25]
Girl	0-1	11,656	0.51 (0.01)	[0.50,0.51]	2,201	0.42 (0.01)	[0.40,0.44]
Ethnicity							
White	0-1	11,654	0.86 (0.00)	[0.85, 0.86]	2,199	0.83 (0.01)	[0.81,0.84]
Mixed	0-1	11,654	0.01 (0.00)	[0.01,0.01]	2,199	0.01 (0.00)	[0.01,0.02]
Indian	0-1	11,654	0.03 (0.00)	[0.02,0.03]	2,199	0.02 (0.00)	[0.01,0.03]
Pakistani/Bangladeshi	0-1	11,654	0.06 (0.00)	[0.06,0.06]	2,199	0.09 (0.01)	[0.08,0.10]
Black	0-1	11,654	0.03 (0.00)	[0.03,0.04]	2,199	0.04 (0.00)	[0.03,0.05]
Other	0-1	11,654	0.02 (0.00)	[0.01,0.02]	2,199	0.02 (0.00)	[0.01,0.02]

Appendix V: Chapter 5, descriptive statistics (unweighted data) of model 2 variables in the analytic and non-analytic samples
(Aspirations classified by realism and the child's maturity)

		Analytic sample (n=12,275)			Non-analytic sample (n=1,582)		
Variable	**Range**	**N**	**M(SE)**	**95% CI**	**N**	**M(SE)**	**95% CI**
Aspirations							
Non-rare occupations	0-1	12,275	.57 (0.01)	[0.56, 0.58]			
Rare occupations	0-1	12,275	.35 (0.00)	[0.34, 0.35]			
Fantasy	0-1	12,275	.01 (0.00)	[0.01, 0.01]			
Descriptive	0-1	12,275	.02 (0.00)	[0.02, 0.03]			
Uncertain	0-1	12,275	.05 (0.00)	[0.05, 0.05]			
Family SES							
(Low) maternal qualifications	1-8	11,823	4.74 (0.02)	[4.71, 4.78]	1,511	5.23 (0.05)	[5.13, 5.33]
(Low) paternal qualifications	1-8	9,043	4.69 (0.02)	[4.64, 4.73]	1,071	5.15 (0.07)	[5.02, 5.28]
(Low) maternal social class	1-7	10,732	4.03 (0.02)	[3.99, 4.07]	1,272	4.35 (0.06)	[4.24, 4.47]
(Low) paternal social class	1-7	8,873	3.75 (0.02)	[3.71, 3.80]	1,061	4.09 (0.07)	[3.97, 4.22]
Infant temperament	29-70	7,172	56.86 (0.08)	[56.71, 57.01]	846	56.31 (0.23)	[55.86, 56.75]
Mother involvement in learning							
Telling stories	1-6	11,704	3.62 (0.01)	[3.59, 3.65]	1,468	3.52 (0.04)	[3.43, 3.60]
Doing musical activities	1-6	11,702	4.78 (0.01)	[4.76, 4.80]	1,470	4.72 (0.04)	[4.65, 4.79]
Painting/drawing	1-6	11,705	3.86 (0.01)	[3.84, 3.88]	1,470	3.83 (0.03)	[3.77, 3.90]
Playing games/with toys	1-6	11,703	4.50 (0.01)	[4.48, 4.52]	1,469	4.47 (0.03)	[4.41, 4.54]
Partner involvement in learning:							
Telling stories	1-6	8,497	3.51 (0.02)	[3.48, 3.55]	935	3.46 (0.05)	[3.36, 3.56]
Doing musical activities	1-6	8,499	4.08 (0.02)	[4.05, 4.11]	936	3.99 (0.05)	[3.90, 4.09]
Painting/drawing	1-6	8,499	3.39 (0.01)	[3.37, 3.42]	936	3.31 (0.04)	[3.23, 3.39]
Playing games/with toys	1-6	8,499	4.44 (0.01)	[4.42, 4.46]	937	4.37 (0.04)	[4.29, 4.44]
Cognitive ability							
Naming vocabulary	20-80	11,654	54.58 (0.10)	[54.39, 54.78]	1,376	50.45 (0.33)	[49.80, 51.10]
Pattern construction	20-80	11,643	50.91 (0.09)	[50.73, 51.09]	1,360	47.88 (0.31)	[47.27, 48.49]
Picture similarities	20-80	11,629	55.98 (0.09)	[55.80, 56.17]	1,377	53.80 (0.29)	[53.22, 54.37]
School engagement	7-21	11,492	16.58 (0.03)	[16.52, 16.64]	655	15.99 (0.13)	[15.73, 16.25]
Age (years), Sweep 4		12,275	7.23 (0.00)	[7.23,7.24]	1,582	7.25 (0.01)	[7.23,7.26]
Girl	0-1	12,275	0.50 (0.01)	[0.49,0.51]	1,582	0.42 (0.01)	[0.39,0.44]
Ethnicity							
White	0-1	12,269	0.85 (0.00)	[0.84,0.85]	1,582	0.77 (0.01)	[0.75,0.80]
Mixed	0-1	12,269	0.03 (0.00)	[0.02,0.03]	1,582	0.03 (0.01)	[0.03,0.04]
Indian	0-1	12,269	0.03 (0.00)	[0.02,0.03]	1,582	0.02 (0.00)	[0.02,0.03]
Pakistani/Bangladeshi	0-1	12,269	0.06 (0.00)	[0.05,0.06]	1,582	0.11 (0.01)	[0.10,0.13]
Black	0-1	12,269	0.03 (0.00)	[0.03,0.04]	1,582	0.04 (0.01)	[0.03,0.05]
Other	0-1	12,269	0.01 (0.00)	[0.01,0.02]	1,582	0.02 (0.00)	[0.01,0.02]

Appendix VI: Chapter 5, percentage of children's aspired occupations (weighted data) by ethnicity

Aspiration category	Total % (n=11,214)	White % (n=9,455)	Mixed % (n=297)	Indian % (n=292)	Pakistani/Bangladeshi % (n=659)	Black % (n=362)	Other ethnicity % (n=149)
Sports player	18.7 [17.7-19.7]	19.2 [18.2-20.3]	19.1 [14.7-24.5]	17.1 [12.7-22.6]	9.6 [6.9-13.1]	20.3 [16.3-25.0]	12.4 [8.2-18.3]
Teacher	12.5 [11.7-13.3]	11.7 [11.0-12.6]	10.6 [7.5-14.7]	12.5 [9.5-16.4]	21.3 [17.0-26.3]	19.2 [14.3-25.3]	18.8 [12.6-27.2]
Police officer	7.5 [7.0-8.1]	7.4 [6.7-8.0]	8.2 [5.1-12.8]	7.4 [4.0-13.3]	8.7 [6.4-11.5]	8.3 [5.7-11.9]	11.4 [6.7-18.5]
Vet	6.7 [6.2-7.2]	7.3 [6.7-7.9]	9.2 [5.9-14.1]	1.9 [0.8-4.4]	0.6 [0.2-1.6]	0.8 [0.2-2.6]	0.6 [0.2-2.3]
Actor, singer, entertainer	5.8 [5.3-6.4]	5.9 [5.4-6.5]	7.8 [4.8-12.3]	3.2 [1.5-6.7]	1.7 [0.9-3.3]	10.8 [7.0-16.2]	2.6 [0.7-9.7]
Hairdresser	4.5 [4.1-5.0]	4.8 [4.3-5.4]	4.0 [2.0-8.1]	3.0 [1.2-7.2]	2.1 [1.2-3.5]	2.2 [1.0-5.1]	-
Doctor	4.1 [3.6-4.6]	2.6 [2.3-3.0]	6.4 [3.6-11.3]	12.6 [8.9-17.7]	19.5 [15.4-24.4]	8.7 [5.7-13.1]	19.8 [14.6-26.3]
Artist	4.0 [3.6-4.6]	4.0 [3.5-4.6]	5.2 [3.2-8.3]	8.6 [5.6-13.0]	3.0 [1.8-4.8]	1.4 [0.7-2.9]	6.0 [2.5-13.5]
Animal carer	3.1 [2.7-3.5]	3.4 [3.0-3.9]	1.7 [0.7-3.8]	0.4 [0.1-2.9]	0.9 [0.3-2.5]	0.2 [0.0-1.3]	2.3 [1.0-5.2]
Scientist	2.8 [2.4-3.2]	2.8 [2.4-3.2]	3.58 [1.8-6.8]	2.8 [1.4-5.5]	2.6 [1.0-6.5]	2.7 [1.7-4.2]	2.6 [0.9-6.7]
Fire services	2.5 [2.2-2.8]	2.5 [2.2-2.9]	1.0 [0.4-2.5]	1.7 [0.6-4.9]	2.7 [1.5-4.6]	2.6 [1.4-4.7]	2.3 [0.7-7.0]
Nurse	1.8 [1.6-2.2]	1.9 [1.6-2.2]	-	1.7 [0.7-4.1]	2.0 [1.3-3.2]	3.6 [1.9-7.1]	-
Dancer	1.7 [1.5-2.0]	1.8 [1.5-2.1]	2.7 [1.4-5.3]	1.0 [0.3-2.9]	0.2 [0.0-0.9]	1.2 [0.6-2.6]	2.2 [0.7-6.6]
Builder	1.7 [1.5-2.0]	1.8 [1.5-2.1]	2.8 [1.2-6.3]	1.0 [0.4-2.7]	1.1 [0.5-2.2]	1.7 [0.5-5.8]	-
Armed forces	1.4 [1.2-1.7]	1.5 [1.3-1.9]	1.6 [0.6-4.0]	0.2 [0.0-1.2]	0.6 [0.2-2.2]	-	1.7 [0.3-7.8]
Other occupation	21.1 [20.2-22.0]	21.3 [20.2-22.4]	16.2 [11.9-21.7]	24.9 [18.8-32.2]	23.6 [19.4-28.3]	16.2 [12.4-21.1]	17.4 [10.9-26.7]

Appendix VII: Chapter 5, percentage of children's aspired occupations (weighted data) by mother's education

Aspiration category	Total % (n=10,806)	Degree + % (n=1,982)	A level's % (n=2,054)	5 GCSE % (n=3,717)	GCSE % (n=1,067)	Other % (n=268)	None (n=1,718)
Sports player	18.5 [17.6-19.5]	18.0 [16.3-19.9]	19.7 [17.8-21.7]	19.6 [18.1-21.2]	17.8 [15.0-20.9]	16.3 [11.4-22.8]	16.2 [14.1-18.7]
Teacher	12.4 [11.6-13.3]	12.6 [11.0-14.5]	12.2 [10.7-13.8]	11.1 [10.0-12.4]	13.5 [11.4-16.0]	12.1 [8.3-17.3]	14.5 [12.3-17.2]
Police officer	7.4 [6.9-8.1]	3.7 [2.8-4.8]	6.0 [5.0-7.1]	8.1 [7.1-9.2]	9.6 [7.7-12.0]	9.7 [5.9-15.5]	9.8 [8.4-11.6]
Vet	6.7 [6.2-7.3]	7.3 [6.1-8.6]	7.2 [6.0-8.6]	8.2 [7.3-9.2]	5.7 [4.2-7.6]	3.7 [1.9-7.3]	3.6 [2.6-5.0]
Actor, singer, entertainer	5.8 [5.3-6.4]	6.9 [5.7-8.3]	6.0 [4.9-7.4]	6.0 [5.2-6.9]	4.4 [3.3-6.0]	4.0 [2.0-7.7]	5.4 [4.3-6.9]
Hairdresser	4.6 [4.2-5.1]	2.8 [2.1-3.7]	4.5 [3.5-5.6]	5.7 [4.9-6.6]	4.5 [3.3-6.2]	2.1 [0.7-6.0]	5.0 [3.9-6.4]
Doctor	3.9 [3.4-4.5]	3.0 [2.2-4.1]	2.8 [2.1-3.7]	3.1 [2.5-3.9]	3.3 [2.2-4.9]	10.5 [7.0-15.4]	7.2 [5.6-9.2]
Artist	4.1 [3.6-4.6]	6.5 [5.3-7.9]	5.1 [4.2-6.3]	3.3 [2.6-4.1]	3.4 [2.4-4.9]	4.6 [2.1-9.5]	2.4 [1.7-3.5]
Animal carer	3.0 [2.7-3.5]	3.8 [2.9-4.8]	3.6 [2.8-4.5]	3.1 [2.6-3.9]	2.7 [1.8-4.1]	1.8 [0.6-5.0]	1.9 [1.2-2.9]
Scientist	2.8 [2.5-3.2]	4.9 [3.9-6.2]	3.8 [2.9-4.9]	2.4 [1.9-3.1]	1.4 [0.8-2.6]	3.1 [1.4-6.7]	1.3 [0.7-2.5]
Fire services	2.5 [2.2-2.8]	1.4 [0.9-2.0]	2.6 [1.8-3.6]	2.2 [1.7-2.8]	3.6 [2.5-5.2]	1.9 [0.7-5.0]	3.4 [2.6-4.4]
Nurse	1.9 []1.6-2.2]	1.3 [0.8-2.0]	1.3 [0.9-1.9]	2.1 [1.6-2.7]	1.9 [1.2-3.0]	2.1 [1.0-4.2]	2.7 [1.8-3.9]
Dancer	1.7 [1.5-2.0]	1.8 [1.3-2.6]	1.6 [1.1-2.3]	1.7 [1.3-2.2]	1.5 [0.8-2.5]	0.9 [0.2-5.1]	2.1 [1.4-3.1]
Builder	1.8 [1.5-2.1]	1.8 [1.3-2.7]	1.0 [0.6-1.5]	2.1 [1.6-2.6]	2.1 [1.1-3.7]	1.7 [0.8-3.5]	1.8 [1.2-2.7]
Armed forces	1.4 [1.2-1.7]	1.0 [0.7-1.7]	1.0 [0.6-1.6]	1.3 [1.0-1.8]	2.5 [1.6-3.9]	2.6 [1.1-6.1]	1.6 [1.0-2.5]
Other occupation	21.3 [20.4-22.3]	23.1 [20.9-25.5]	21.8 [19.9-23.8]	20.1 [18.6-21.6]	21.9 [19.0-25.2]	23.0 [18.2-28.8]	21.0 [18.7-23.5]

Appendix VIII: Chapter 5, percentage of children's aspired occupations (weighted data) by mother's partner's education

Aspiration category	Total % (n=8,266)	Degree + % (n=1,781)	A level's % (n=1,429)	5 GCSE % (n=2,617)	GCSE % (n=806)	Other % (n=198)	None % (n=1,435)
Sports player	18.9 [17.8-20.0]	18.9 [17.2-20.9]	19.8 [17.3-22.5]	20.4 [18.7-22.3]	18.7 [15.9-21.8]	17.5 [11.8-25.2]	15.2 [13.0-17.6]
Teacher	12.2 [11.3-13.1]	10.9 [9.3-12.7]	11.4 [9.6-13.4]	11.5 [10.3-12.9]	14.8 [12.3-17.7]	12.0 [8.0-17.7]	14.3 [12.3-16.5]
Police officer	6.9 [6.3-7.6]	3.9 [3.0-5.2]	6.0 [4.7-7.7]	7.2 [6.1-8.5]	7.4 [5.8-9.5]	8.3 [4.8-14.1]	10.5 [8.9-12.4]
Vet	6.9 [6.3-7.6]	7.6 [6.3-9.1]	8.1 [6.7-9.7]	7.4 [6.4-8.6]	5.6 [4.2-7.6]	3.2 [1.3-7.4]	5.2 [3.9-6.9]
Actor, singer, entertainer	6.0 [5.4-6.7]	6.5 [5.3-7.9]	5.5 [4.3-7.1]	6.0 [5.0-7.2]	5.8 [4.2-7.9]	6.6 [3.1-13.8]	6.1 [4.8-7.8]
Hairdresser	4.4 [3.9-4.9]	2.6 [1.9-3.6]	4.2 [3.1-5.7]	4.8 [4.0-5.7]	5.5 [3.9-7.7]	2.8 [0.9-8.0]	5.6 [4.3-7.3]
Doctor	3.6 [3.1-4.2]	3.8 [2.9-5.0]	3.4 [2.4-4.7]	2.7 [2.1-3.6]	2.3 [1.5-3.6]	10.9 [6.5-17.9]	5.3 [4.0-7.1]
Artist	4.2 [3.6-4.7]	6.2 [5.0-7.7]	4.4 [3.3-5.7]	3.8 [3.1-4.7]	3.1 [2.0-4.8]	3.3 [1.3-7.9]	2.8 [1.8-4.1]
Animal carer	3.2 [2.8-03.7]	3.4 [2.5-4.6]	4.3 [3.3-5.7]	3.5 [2.8-4.3]	3.0 [1.9-4.7]	1.3 [0.3-5.2]	1.4 [0.9-2.3]
Scientist	3.0 [2.6-3.5]	5.2 [4.2-6.4]	2.8 [2.1-3.8]	2.6 [2.0-3.4]	2.5 [1.4-4.5]	3.2 [1.4-7.2]	1.7 [1.1-2.7]
Fire services	2.4 [2.0-2.8][	1.5 [1.0-2.3]	1.7 [1.1-2.6]	2.3 [1.8-3.0]	4.1 [2.9-5.9]	2.0 [0.6-6.4]	3.3 [2.3-4.5]
Nurse	1.7 [1.4-2.0]	1.0 [0.6-1.6]	0.8 [0.5-1.4]	2.2 [1.6-3.0]	1.9 [1.1-3.2]	0.5 [0.1-1.8]	2.5 [1.8-3.6]
Dancer	1.8 [1.4-2.1]	1.3 [0.8-2.0]	2.0 [1.3-3.1]	1.9 [1.4-2.7]	1.9 [1.1-3.3]	1.6 [0.5-5.6]	1.6 [1.0-2.7]
Builder	1.7 [1.4-2.1]	1.3 [0.8-2.1]	1.4 [0.9-2.2]	1.8 [1.3-2.5]	2.6 [1.6-4.3]	2.2 [0.9-5.4]	1.8 [1.2-2.7]
Armed forces	1.3 [1.1-1.7]	1.3 [0.8-2.1]	0.7 [0.4-1.4]	1.5 [1.0-2.1]	1.8 [1.0-3.4]	2.9 [1.0-8.2]	1.2 [0.7-2.1]
Other occupation	21.8 [20.7-23.0]	24.6 [22.3-27.1]	23.4 [20.8-26.3]	20.3 [18.6-22.2]	18.9 [16.0-22.2]	21.6 [15.8-28.8]	21.5 [19.1-24.0]

Appendix IX: Chapter 5, model 1: three ways of classifying aspirations: Covariates – Age, gender, ethnicity and birth order

(Unstandardized beta coefficient and standard error) n **= 11,656**

	Age in years	**Gender**	**Mixed**	**Indian**	**Pakistani/Bangladeshi**	**Black**	**Other ethnic group**	**Birth order**
Reference:		Ref: Boys	Ref: White	Ref: White	Ref: White	Ref: White	Ref: White	
Low occupational aspirations	-0.00(0.01)	-0.03(0.01)*	-0.03(0.01)***	-0.04(0.01)***	-0.07(0.01)***	-0.03(0.01)**	-0.04(001)***	-
Extrinsic aspirations	0.00(0.01)	-0.27(0.01)***	0.00(0.01)	-0.02(0.01)	-0.07(0.01)***	0.00(0.01)	-0.03(0.01)***	-
Masculine aspirations	-0.01(0.01)	-0.64(0.01)***	0.02(0.01)*	0.01(0.01)	-0.02(0.01)	0.00(0.01)	0.02(0.01)*	-
Low family SES	-	-	-0.020(0.02)	-0.00(0.02)	0.21(0.03)***	0.03(0.02)	0.02(0.02)	
Easy temperament	-	-0.08(0.03)**	-0.10(0.02)***	-0.18(0.03)**	-0.33(0.05)***	-0.21(0.05)***	-0.10(0.03)**	-
Parental involvement in home-based learning	-	0.08(0.02)***	0.03(0.02)	-0.00(002)	-0.10(0.03)**	-0.06(0.03)	-0.02(0.02)	-0.35(0.02)***
Child cognitive ability	-	0.08(0.02)***	-0.02(0.01)	-0.05(0.01)***	-0.15(0.02)***	-0.11(0.02)***	-0.07(0.02)***	-0.13(0.02)***
School engagement	-	0.23(0.01)***	0.03(0.01)*	0.06(0.01)***	0.13(0.02)***	0.09(0.02)***	0.06(0.01)***	-

Statistically significant (*p<.05; **p<.01; ***p<.001)

- = not used as control

Appendix X: Chapter 5, model 2: General types of young children's aspirations by maturity and realism: Covariates – Age, gender, ethnicity and birth order

(Unstandardized beta coefficient and standard error) n = 12,275

	Age in years	**Gender**	**Mixed**	**Indian**	**Pakistani/Bangladeshi**	**Black**	Other ethnic group	Birth order
Reference:		Ref: Boys	Ref: White	Ref: White	Ref: White	Ref: White	Ref: White	
Aspiration:								
Rare occupational	0.08(0.09)	-0.66(0.05)***	0.27(0.14)	-0.36(0.19)	-0.95(0.19)	-0.00(0.18)	-0.67(0.22)**	-
Fantasy	-1.16(0.42)**	-0.71(0.23)**	-0.79(0.89)	-1.71(0.69)*	-0.53(0.68)	-2.21(0.79)**	-0.31(0.83)	-
Descriptive	-0.47(0.30)	0.07(0.16)	0.50(0.43)	-0.31(0.59)	-0.53(0.43)	-0.15(0.43)	-0.35(0.70)	-
Uncertain	0.30(0.11)	-0.44(0.11)***	0.26(0.34)	-1.27(0.53)*	-0.66(0.39)	-0.36(0.35)	-1.15(0.65)	-
Non-rare (reference)								
Low family SES	-	-	-0.21(0.14)	-0.04(0.20)	1.56(0.14)***	0.22(0.22)	0.32(0.23)	-
Easy temperament	-	-0.02(0.01)*	-0.09(0.02)***	-0.22(0.03)***	-0.30(0.02)***	-0.26(0.04)***	-0.19(0.04)***	-
Parental involvement in home-based learning	-	0.05(0.02)**	0.08(0.04)	0.03(0.05)	-0.17(0.07)*	-0.08(0.08)	-0.06(0.07)	-0.14(0.01)***
Child cognitive ability	-	0.04(0.01)***	-0.03(0.02)	-0.12(0.03)***	-0.22(0.02)***	-0.21(0.04)***	-0.20(0.05)***	-0.04(0.00)***
School engagement	-	0.25(0.01)***	0.10(0.04)*	0.26(0.04)***	0.42(0.04)***	0.35(0.05)***	0.32(0.05)***	-

Statistically significant (*p<.05; **p<.01; ***p<.001)

- = not used as control

Appendix XI: Chapter 5, testing pathways to children's aspirations by gender using Wald test

Latent construct	Aspiration classification	Wald test	df	P value
Easy temperament at 9 months	Low occupational aspirations	0.04	1	.847
	Extrinsic aspirations	0.07	1	.794
	Masculine aspirations	0.91	1	.340
Low family SES at 9 months	Low occupational aspirations	0.58	1	.446
	Extrinsic aspirations	1.87	1	.171
	Masculine aspirations	16.03	1	.000
Parental involvement in home –based learning at age 5	Low occupational aspirations	1.22	1	.270
	Extrinsic aspirations	1.81	1	.277
	Masculine aspirations	0.00	1	.980
Child cognitive ability at age 5	Low occupational aspirations	0.58	1	.446
	Extrinsic aspirations	1.87	1	.171
	Masculine aspirations	1.22	1	.270
School engagement at age 7	Low occupational aspirations	9.09	1	.003
	Extrinsic aspirations	4.31	1	.038
	Masculine aspirations	2.30	1	.130

Appendix XII: Chapter 6, descriptive statistics (unweighted data) of study variables in the analytic and non-analytic samples

		Analytic sample (n = 8,570)			Non-analytic sample (n = 2,650)		
Variable	**Range**	**N**	**M(SE)**	**95% CI**	**N**	**M(SE)**	**95% CI**
Child's aspiration (NS-SEC 1-3)	1-3	8,570	1.49 (0.01)	[1.47, 1.51]	2,650	1.53 (0.02)	[1.50, 1.56]
Maternal social class (NS-SEC 1-3)	1-3	8,049	1.97 (0.01)	[1.95, 1.99]	2,497	2.40 (0.02)	[2.37, 2.43]
Paternal social class (NS-SEC 1-3)	1-3	8,135	1.94 (0.01)	[1.92, 1.96]	1,437	2.31 (0.02)	[2.26, 2.36]
Maternal grandmother's social class (NS-SEC 1-3)	1-3	8,203	2.58 (0.01)	[2.56, 2.60]	1,931	2.62 (0.02)	[2.59, 2.65]
Maternal grandfather's social class (NS-SEC 1-3)	1-3	7,058	2.23(0.01)	[2.21,2.25]	1,791	2.43(0.02)	[2.39,2.47]
Paternal grandmother's social class (NS-SEC 1-3)	1-3	7,146	2.57 (0.01)	[2.55,2.59]	459	2.47 (0.04)	[2.40, 2.54]
Paternal grandfather's social class (NS-SEC 1-3)	1-3	7,067	2.26 (0.01)	[2.24, 2.28]	568	2.38 (0.04)	[2.30, 2.46]
Family income (top (1) to lowest (5) quintile)	5-1	8,567	3.80 (0.01)	[3.79,3.81]	2,633	2.73 (0.03)	[2.68,2.78]
Mother's highest academic qualification (1 'higher degree' to 7 'none')	1-7	8,297	3.81(0.02)	[3.77, 3.85]	2,517	4.60 (0.03)	[4.53, 4.67]
Father's highest academic qualification (1 'higher degree' to 7 'none')	1-7	7,228	3.87 (0.02)	[3.83, 3.91]	1,129	4.45 (0.06)	[4.34, 4.56]
Male		8,570	.50 (0.01)	[.49, .51]	2,650	.49 (0.01)	[.47, .51]
White		8,570	.86 (0.00)	[.85, .87]	2,649	.79 (0.01)	[.77, .81]
Lone mother (anytime in last 7 years)		8,180	.16 (0.00)	[.15, .17]	2,118	.96 (0.00)	[.95, .97]

Appendix XIII: Chapter 7, descriptive statistics (unweighted data) of study variables in the analytic and non-analytic samples

		Analytic sample (n = 6,502)			Non-analytic sample (n = 2,337)		
Variable	**Range**	**N**	**M(SE)**	**95% CI**	**N**	**M(SE)**	**95% CI**
Aspirations							
Low occupational	1 -9	6,247	3.23 (0.02)	[3.19, 3.27]			
Extrinsic aspirations	1 -4	6.502	2.03 (0.01)	[2.00, 2.05]			
Masculine aspirations	1 -4	6,414	2.89 (0.01)	[2.87, 2.92]			
Low family SES:							
Maternal qualifications	1-8	6,482	4.78 (0.03)	[4.73, 4.82]	2,327	5.23 (0.04)	[5.15, 5.31]
Paternal qualifications	1-8	5,411	4.56 (0.03)	[4.51, 4.61]	1,666	4.88 (0.05)	[4.79, 4.98]
Maternal NS-SEC	1-7	5,701	3.74 (0.03)	[3.69, 3.80]	1,894	4.23 (0.05)	[4.14, 4.32]
Paternal NS-SEC	1-7	5,552	3.44 (0.03)	[3.39, 3.50]	1,687	3.91 (0.05)	[3.81, 4.01]
Equivalised income	1-5	6,437	2.97 (0.02)	[2.94, 3.01]	1,622	3.27 (0.04)	[3.20, 3.33]
Low neighbourhood SES							
Income domain deciles	1-10	6,502	6.07 (0.04)	[6.00, 6.14]	1,605	6.63 (0.07)	[6.48,6.77]
Employment domain deciles	1-10	6,502	5.92 (0.04)	[5.85, 5.99]	1,605	6.44 (0.07)	[6.29, 6.58]
Education, training and skills domain deciles	1-10	6,502	6.14 (0.04)	[6.07, 6.21]	1,605	6.58 (0.07)	[6.44, 6.72]
School							
KS1	1-10	6,121	5.44 (0.04)	[5.37, 5.51]	1,638	4.94 (0.07)	[4.80, 5.08]
FSM	1-10	5,959	5.52 (0.04)	[5.45, 5.59]	1,634	6.16 (0.07)	[6.02, 6.30]
Mother involvement in learning:							
Telling stories	1-6	6,499	3.50 (0.02)	[3.46, 3.53]	1,896	3.47 (0.04)	[3.40, 3.54]
Musical activities	1-6	6,497	4.70 (002)	[4.66, 4.73]	1,898	4.66 (0.03)	[4.60, 4.73]
Painting or drawing	1-6	6,500	3.79 (0.02)	[3.77, 3.82]	1,898	3.82 (0.03)	[3.76, 3.88]
Play toys or games indoors	1-6	6,498	4.43 (0.02)	[4.40, 4.46]	1,898	4.42 (0.03)	[4.36, 4.48]
Partner involvement in learning:							
Telling stories	1-6	4,820	3.40 (0.02)	[3.36, 3.44]	1,192	3.35 (0.04)	[3.26,3.43]
Musical activities	1-6	4,822	4.03 (0.02)	[3.99, 4.07]	1,193	3.91 (0.04)	[3.82, 4.00]
Painting or drawing	1-6	4,822	3.34 (0.02)	[3.30, 3.37]	1,193	3.31 (0.04)	[3.24, 3.38]
Play toys or games indoors	1-6	4,822	4.41 (0.02)	[4.38, 4.44]	1,194	4.34 (0.03)	[4.27, 4.40]

Cognitive ability at age 5:							
Naming vocabulary	20-80	6,464	54.19 (0.14)	[53.91, 54.46]	1,855	51.55 (0.29)	[50.98, 52.12]
Pattern construction	20-80	6,454	50.89 (0.12)	[50.66, 51.13]	1,843	49.35 (0.25)	[48.86, 49.84]
Picture similarities	20-80	6,454	55.76 (0.12)	[55.52, 56.00]	1,856	54.67 (0.25)	[54.18, 55.16]
Age (years) at sweep 4		6,502	7.23 (0.00)	[7.23,7.24]	2,337	7.24 (0.01)	[7.23,7.25]
Girl		6,502	0.51 (0.01)	[0.50,0.52]	2,337	0.46 (0.01)	[0.44,0.48]
Ethnicity:							
White		6,444	0.78 (0.01)	[0.77, 0.79]	2,303	0.69 (0.01)	[0.67,0.70]
Mixed		6,444	0.03 (0.00)	[0.03,0.04]	2,303	0.05 (0.01)	[0.04,0.06]
Indian		6,444	0.04 (0.00)	[0.04,0.04]	2,303	0.03 (0.00)	[0.03,0.04]
Pakistani		6,444	0.08 (0.00)	[0.08,0.09]	2,303	0.14 (0.01)	[0.13,0.15]
Black		6,444	0.04 (0.00)	[0.04,0.05]	2,303	0.07 (0.01)	[0.06,0.09]
Other		6,444	0.02 (0.00)	[0.02,0.02]	2,303	0.02 (0.00)	[0.01,0.02]

Appendix XIV: Chapter 7, demographic covariates on aspirations for the different types of models

	Single level model: no cluster, weights			Single level model: with survey design cluster, weights			Two-level school			Two-level neighbourhood			Two-level with crossed random factor		
	Occupation	Extrinsic	Masculine	Occupation	Extrinsic	Masculine	Occupation	Extrinsic	Masculine	Occupation	Extrinsic	Masculine	Occupation	Extrinsic	Masculine
Age in years	-0.00	-0.00	-0.01	-0.00	-0.00	-0.01	0.00	0.01	0.02*	0.00	0.01	0.02*	-0.00	0.01*	-0.01
Female	-0.04**	-0.28***	-0.63***	-0.04**	-0.28***	-0.63***	-0.06***	-0.29***	-0.63***	-0.06***	-0.29***	-0.63***	-0.06*	-0.30*	-0.63***
Ethnicity: ref White															
Mixed	-0.05***	-0.01	0.03**	-0.05***	-0.01	0.03**	-0.05***	-0.00	0.04***	-0.05***	-0.00	0.04***	-0.05*	-0.00	0.04***
Indian	-0.04***	-0.02	0.01	-0.04***	-0.02	0.01	-0.05***	-0.02	0.01	-0.05***	-0.02	0.01	-0.05*	-0.02	0.01
Pakistani/Bangladeshi	-0.08***	-0.08***	-0.01	-0.08***	-0.08***	-0.01	-0.11***	-0.12***	-0.01	-0.11***	-0.12***	-0.01	-0.11*	-0.11*	-0.00
Black	-0.03**	-0.01	-0.00	-0.03**	-0.01	-0.00	-0.05**	-0.01	-0.00	-0.05***	-0.01	-0.00	-0.04*	-0.01	0.00
Other ethnic group	-0.04***	-0.04***	0.02*	-0.04**	-0.04***	0.02*	-0.05***	-0.06***	0.01	-0.05***	-0.05***	0.01	-0.05*	-0.05*	0.01

Significant covariates standardised coefficients. Statistically significant (* credibility interval does not go through zero for cross-classified model). Other results statistically significant (*p < .05; **p < .01; ***p < .001)

Appendix XV: Chapter 9, descriptive statistics (unweighted data) of study variables in the analytic and non-analytic samples for model 1

(Aspirations classified by occupational, extrinsic/intrinsic motivation, masculinity/femininity)

		Analytic sample (n = 11,656)			Non-analytic sample (n = 2,201)		
Variable	**Range**	**N**	**M(SE)**	**95% CI**	**N**	**M(SE)**	**95% CI**
Aspirations							
Low occupational	1 -9	11,220	3.28 (0.02)	[3.25, 3.31]			
Extrinsic aspirations	1 -4	11,656	2.02 (0.01)	[2.01, 2.04]			
Masculine aspirations	1 -4	11,501	2.88 (0.01)	[2.86, 2.90]			
Parent-reported SDQ at age 7:							
Hyperactivity	0 -10	11356	3.30 (0.02)	[3.25, 3.35]	2066	3.80 (0.06)	[3.69, 3.92]
Conduct problems	0 -10	11397	1.36 (0.01)	[1.33, 1.38]	2075	1.63 (0.04)	[1.55, 1.70]
Emotional symptoms	0 -10	11374	1.50 (0.02)	[1.47, 1.53]	2069	1.75 (0.04)	[1.67, 1.83]
Peer problems	0 -10	11381	1.19 (0.01)	[1.17, 1.22]	2071	1.47 (0.04)	[1.40, 1.55]
Teacher-reported SDQ at age 7:							
Hyperactivity	0 -10	7459	2.78 (0.03)	[2.72, 2.84]	1267	3.49 (0.09)	[3.32, 3.66]
Conduct problems	0 -10	7459	0.75 (0.02)	[0.71, 0.78]	1269	0.96 (0.05)	[0.87, 1.05]
Emotional symptoms	0 -10	7458	1.40 (0.02)	[1.35, 1.44]	1267	1.65 (0.06)	[1.54, 1.76]
Peer problems	0 -10	7456	1.11 (0.02)	[1.07, 1.15]	1269	1.41 (0.05)	[1.31, 1.51]
Cognitive ability at age 5:							
Naming vocabulary	20-80	11074	54.50 (0.10)	[54.30, 54.71]	1956	52.13 (0.28)	[50.98, 52.12]
Pattern construction	20-80	11052	50.84 (0.09)	[50.66, 51.02]	1937	49.18 (0.25)	[48.86, 49.84]
Picture similarities	20-80	11062	55.95 (0.10)	[55.76, 56.14]	1958	54.61 (0.24)	[54.18, 55.16]
Parental involvement in home-based learning, at age 3:							
Learning the ABC or the alphabet	1-5	10604	3.19 (0.01)	[3.16, 3.22]	1963	3.11 (0.03)	[3.05, 3.17]
Teaching numbers or counting	1-5	10604	4.19 (0.01)	[4.17, 4.21]	1963	4.12 (0.03)	[4.07, 4.17]
Teaching songs, poems etc.	1-5	10604	4.28 (0.01)	[4.26, 4.30]	1963	4.16 (0.03)	[4.11, 4.21]
Painting or drawing	1-5	10604	4.22 (0.01)	[4.21, 4.24]	1963	4.16 (0.02)	[4.11, 4.20]

Values at age 3:							
Popular		10256	0.04 (0.00)	[0.04, 0.04]	1873	0.04 (0.01)	[0.03, 0.05]
Work hard		10256	0.13 (0.00)	[0.12, 0.14]	1873	0.14 (0.01)	[0.13, 0.16]
Help others		10256	0.19 (0.00)	[0.18, 0.20]	1873	0.17 (0.01)	[0.15, 0.18]
Obey		10256	0.12 (0.00)	[0.11, 0.13]	1873	0.15 (0.01)	[0.13, 0.16]
Religious		10256	0.04 (0.00)	[0.04, 0.05]	1873	0.04 (0.00)	[0.03, 0.04]
Think for themselves		10256	0.48 (0.01)	[0.47, 0.49]	1873	0.47 (0.01)	[0.45, 0.49]
Maternal psychological distress at 9 months	0-9	10943	1.68 (0.02)	[1.65,1.72]	2039	1.70 (0.04)	[1.62,1.77]
Maternal qualifications at 9 months	1-8	11220	4.76 (0.02)	[4.73,4.80]	2114	5.00 (0.05)	[4.91,5.08]
Paternal qualifications at 9 months	1-8	11246	4.70 (0.02)	[4.65,4.74]	2117	4.94 (0.06)	[4.83,5.04]
Maternal Standard Occupational Class (SOC) at 9 months	1-9	10242	5.05 (0.03)	[5.00, 5.10]	1849	5.27 (0.06)	[5.15, 5.38]
Paternal Standard Occupational Class (SOC) at 9 months	1-9	8464	4.61 (0.03)	[4.55, 4.67]	1523	4.80 (0.07)	[4.66, 4.94]
Age (years) at sweep 4		11656	7.23 (0.00)	[7.23,7.24]	2201	7.25 (0.01)	[7.23,7.26]
Girl		11656	0.51 (0.01)	[0.50,0.51]	2201	0.42 (0.01)	[0.40,0.44]
Ethnicity:							
White		11650	0.84 (0.00)	[0.84,0.85]	2201	0.81 (0.01)	[0.79,0.82]
Mixed		11650	0.03 (0.00)	[0.02,0.03]	2201	0.03 (0.00)	[0.03,0.04]
Indian		11650	0.03 (0.00)	[0.02,0.03]	2201	0.02 (0.00)	[0.01,0.02]
Pakistani		11650	0.06 (0.01)	[0.06,0.06]	2201	0.09 (0.01)	[0.08,0.10]
Black		11650	0.03 (0.00)	[0.03,0.04]	2201	0.04 (0.00)	[0.03,0.04]
Other		11650	0.01 (0.00)	[0.01,0.02]	2201	0.01 (0.00)	[0.01,0.02]
Birth order	1-11	11656	1.94 (0.01)	[1.92,1.96]	2201	1.96 (0.02)	[1.91,2.00]
Intact family at 9 months		11246	0.85 (0.00)	[0.85, 0.86]	2,117	0.82 (0.01)	[0.80, 0.84]

Appendix XVI: Chapter 9, descriptive statistics (unweighted data) of study variables in the analytic and non-analytic samples for model 2

		Analytic sample (n = 12,275)			Non-analytic sample (n = 1,582)		
Variable	**Range**	**N**	**M(SE)**	**95% CI**	**N**	**M(SE)**	**95% CI**
Aspirations							
Non-rare		12,275	.57 (0.01)	[0.56, 0.58]			
Rare		12,275	.35 (0.00)	[0.34, 0.35]			
Fantasy		12,275	.01 (0.00)	[0.01, 0.01]			
Descriptive		12,275	.02 (0.00)	[0.02, 0.03]			
Uncertain		12,275	.05 (0.00)	[0.05, 0.05]			
Parent-reported SDQ at age 7:							
Hyperactivity	0 -10	11,965	3.31 (0.02)	[3.26, 3.35]	1,457	3.97 (0.07)	[3.83, 4.11]
Conduct problems	0 -10	12,007	1.36 (0.01)	[1.33, 1.38]	1,465	1.73 (0.05)	[1.64 1.82]
Emotional symptoms	0 -10	11,983	1.51 (0.02)	[1.47, 1.53]	1,460	1.80 (0.05)	[1.70, 1.90]
Peer problems	0 -10	11,991	1.19 (0.01)	[1.17, 1.22]	1,461	1.59 (0.05)	[1.50, 1.68]
Teacher-reported SDQ at age 7:							
Hyperactivity	0 -10	7,858	2.79 (0.03)	[2.73, 2.85]	868	3.77 (0.11)	[3.56, 3.98]
Conduct problems	0 -10	7,858	0.75 (0.02)	[0.72, 0.78]	870	1.04 (0.06)	[0.93, 1.15]
Emotional symptoms	0 -10	7,857	1.41 (0.02)	[1.37, 1.45]	868	1.66 (0.07)	[1.53, 1.79]
Peer problems	0 -10	7,855	1.12 (0.02)	[1.08, 1.16]	870	1.46 (0.06)	[1.34, 1.59]
Cognitive ability at age 5:							
Naming vocabulary	20-80		54.58 (0.10)	[54.39, 54.78]	1,376	50.45 (0.33)	[49.80, 51.10]
Pattern construction	20-80	11,654	50.91 (0.09)	[50.73, 51.09]	1,360	47.88 (0.31)	[47.27, 48.49]
Picture similarities	20-80	11,643 11,629	55.98 (0.09)	[55.80, 56.17]	1,377	53.80 (0.29)	[53.22, 54.37]
Parental involvement in home-based learning, at age 3:							
Learning the ABC or the alphabet	1-5	11,174	3.19 (0.01)	[3.16, 3.21]	1,393	3.10 (0.04)	[3.03, 3.18]
Teaching numbers or counting	1-5	11,174	4.20 (0.01)	[4.18, 4.21]	1,393	4.07 (0.03)	[4.01, 4.13]
Teaching songs, poems etc.	1-5	11,174	4.28 (0.01)	[4.26, 4.30]	1,393	4.11 (0.03)	[4.05, 4.18]
Painting or drawing	1-5	11,174	4.22 (0.01)	[4.21, 4.24]	1,393	4.14 (0.03)	[4.09, 4.20]

Values at age 3:							
Popular		10,812	0.04 (0.00)	[0.04, 0.04]	1,317	0.04 (0.01)	[0.03, 0.05]
Work hard		10,812	0.13 (0.00)	[0.12, 0.14]	1,317	0.15 (0.01)	[0.13, 0.17]
Help others		10,812	0.19 (0.00)	[0.18, 0.19]	1,317	0.18 (0.01)	[0.16, 0.21]
Obey		10,812	0.12 (0.00)	[0.12, 0.13]	1,317	0.15 (0.01)	[0.13, 0.17]
Religious		10,812	0.04 (0.00)	[0.04, 0.04]	1,317	0.04 (0.01)	[0.03, 0.05]
Think for themselves		10,812	0.48 (0.01)	[0.47, 0.49]	1,317	0.44 (0.01)	[0.41, 0.47]
Maternal psychological distress at 9 months	0-9	11,538	1.68 (0.02)	[1.64,1.72]	1,444	1.77 (0.05)	[1.67,1.86]
Maternal qualifications at 9 months	1-8	11,823	4.74 (0.02)	[4.71,4.78]	1,511	5.23 (0.05)	[5.13,5.33]
Paternal qualifications at 9 months	1-8	9,043	4.69 (0.02)	[4.64,4.73]	1,071	5.15 (0.07)	[5.02,5.28]
Maternal Standard Occupational Class (SOC) at 9 months	1-9	10,809	5.04 (0.02)	[4.99, 5.09]	1,282	5.46 (0.07)	[5.32, 5.60]
Paternal Standard Occupational Class (SOC) at 9 months	1-9	8,932	4.60 (0.03)	[4.54, 4.65]	1,055	5.00 (0.09)	[4.83, 5.17]
Age (years) at sweep 4		12,275	7.23 (0.00)	[7.23,7.24]	1,582	7.25 (0.01)	[7.23,7.26]
Girl		12,275	0.50 (0.01)	[0.49,0.51]	1,582	0.42 (0.01)	[0.39,0.44]
Ethnicity:							
White		12,269	0.85 (0.00)	[0.84,0.85]	1,582	0.77 (0.01)	[0.75,0.80]
Mixed		12,269	0.03 (0.00)	[0.02,0.03]	1,582	0.03 (0.01)	[0.03,0.04]
Indian		12,269	0.03 (0.00)	[0.02,0.03]	1,582	0.02 (0.00)	[0.02,0.03]
Pakistani		12,269	0.06 (0.00)	[0.05,0.06]	1,582	0.11 (0.01)	[0.10,0.13]
Black		12,269	0.03 (0.00)	[0.03,0.04]	1,582	0.04 (0.01)	[0.03,0.05]
Other		12,269	0.01 (0.00)	[0.01,0.02]	1,582	0.02 (0.00)	[0.01,0.02]
Birth order	1-11	12,275	1.93 (0.01)	[1.91,1.95]	1,582	2.02 (0.03)	[1.97,2.08]
Intact family at 9 months		11,850	0.85 (0.00)	[0.85, 0.86]	1,513	0.80 (0.01)	[0.78, 0.82]

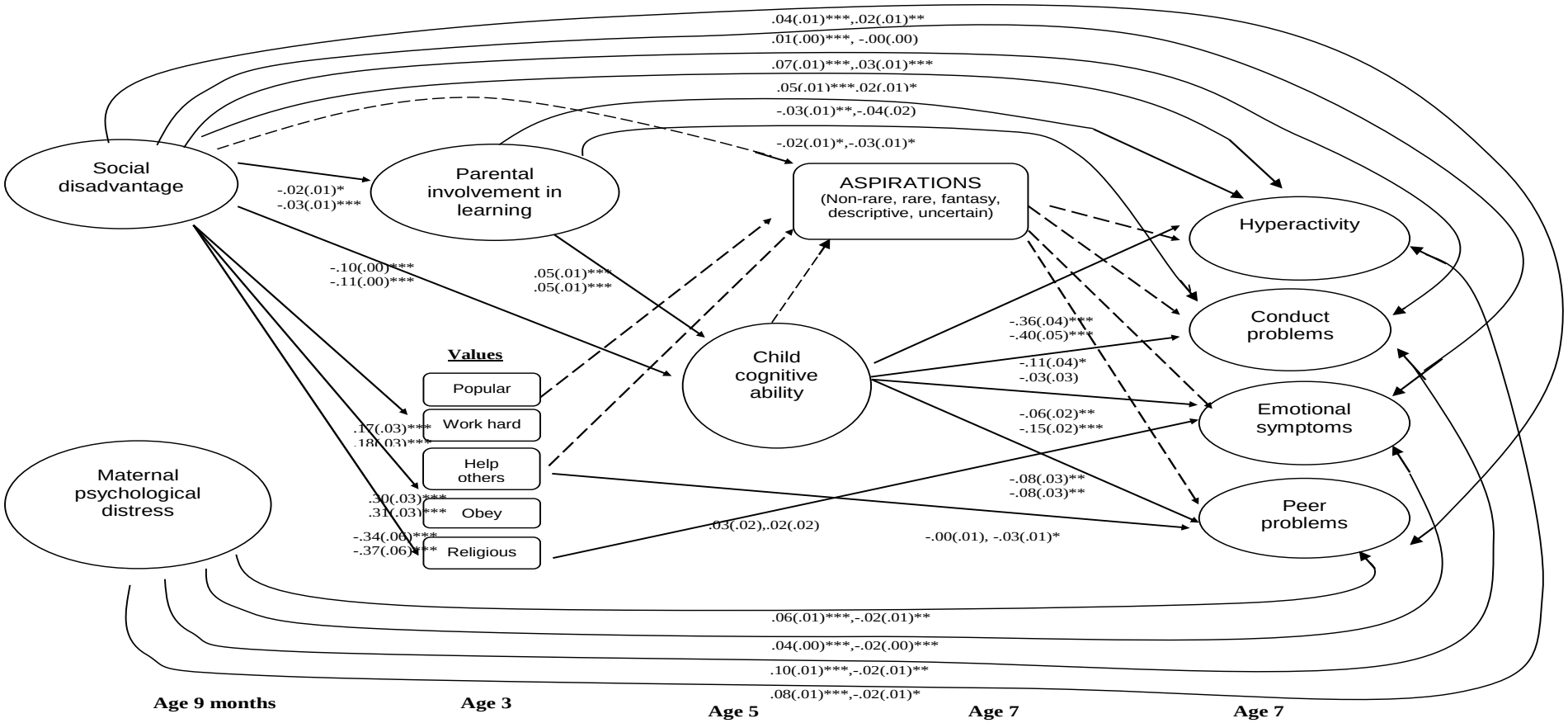
Appendix XVII: Chapter 9, model 1: Three ways of classifying aspirations: Covariates – Age, gender, ethnicity and birth order

(Unstandardized beta coefficient and standard error) n = 11,656

	Age in years	Gender	Mixed	Indian	Pakistani/Bangladeshi	Black	Other ethnic group	Birth order
Reference:		Ref: Boys	Ref: White	Ref: White	Ref: White	Ref: White	Ref: White	
Low occupational aspirations	-	-0.16(0.04)***	-0.33(0.12)**	-0.52(0.13)***	-0.82(0.12)***	-0.42(0.13)**	-0.69(0.21)**	-
Extrinsic aspirations	-	-0.48(0.02)***	0.01(0.05)	-0.15(0.07)*	-0.34(0.06)***	0.02(0.07)	-0.27(0.09)**	-
Masculine aspirations	-	-1.47(0.03)***	0.06(0.06)	0.06(0.08)	-0.20(0.07)**	-0.04(0.09)	0.09(0.10)	-
Social disadvantage	-	-	-0.32(0.14)*	-0.03(0.19)	1.79(0.15)***	-0.02(0.17)	0.38(0.20)	
Parental involvement in home-based learning	-	0.17(0.02)***	0.00(0.05)	-0.04(0.05)	-0.43(0.05)***	-0.36(0.05)***	-0.29(0.06)***	-0.06(0.01)***
Parental values								
(Ref: thinking for themselves)								
Popular	-	-0.15(0.01)*	0.01(0.15)	0.29(0.17)	-0.04(0.15)	-0.27(0.20)	-0.24(0.20)	0.05(0.09)
Work hard	-	-0.04(0.04)	0.07(0.12)	0.54(0.13)***	-0.02(0.10)	0.18(0.10)	-0.02(0.26)	-0.01(0.02)
Help others	-	-0.03(0.04)	-0.10(0.12)	-0.18(0.11)	-0.25(0.10)*	-0.29(0.11)**	-0.34(0.20)	0.02(0.02)
Obey	-	-0.02(0.04)	0.07(0.11)	0.14(0.12)	0.27(0.10)**	0.52(0.09)***	0.43(0.22)	0.04(0.02)*
Religious	-	0.17(0.06)**	0.40(0.15)**	0.37(0.13)**	1.60(0.11)***	1.21(0.10)***	0.76(0.17)***	0.09(0.02)***
Child cognitive ability	-	0.06(0.01)***	-0.06(0.04)	-0.19(0.03)***	-0.34(0.03)***	-0.31(0.04)***	-0.29(0.06)***	-0.07(0.01)***
Parent report SDQ								
Hyperactivity	-0.12(0.03)***	-0.18(0.02)***	0.06(0.04)	-0.01(0.04)	-0.17(0.04)***	-0.10(0.05)*	-0.19(0.06)**	-0.03(0.01)***
Conduct problems	-0.00(0.02)	-0.10(0.01)***	0.05(0.03)	-0.02(0.03)	-0.15(0.03)***	-0.10(0.04)**	-0.16(0.05)**	0.01(0.01)
Emotional symptoms	0.00(0.01)	0.01(0.01)	0.00(0.02)	-0.02(0.02)	-0.00(0.02)	-0.03(0.02)	-0.00(0.02)	-0.02(0.00)***
Peer problems	-0.02(0.02)	-0.04(0.01)***	0.06(0.02)**	0.08(0.03)**	0.07(0.02)**	0.04(0.02)	0.05(0.03)	-0.01(0.00)
Teacher report SDQ								
Hyperactivity	-0.12(0.03)***	-0.24(0.02)***	0.06(0.04)	-0.09(0.05)*	-0.19(0.05)***	-0.06(0.05)	-0.13(0.11)	-0.01(0.01)
Conduct problems	0.01(0.01)	-0.06(0.01)***	0.03(0.02)	-0.03(0.02)	-0.03(0.02)	0.05(0.02)*	-0.03(0.06)	0.00(0.00)
Emotional symptoms	-0.04(0.01)**	0.02(0.01)*	-0.02(0.02)	-0.09(0.03)**	-0.10(0.03)***	-0.02(0.03)	-0.09(0.03)**	-0.01(0.00)
Peer problems	-0.02(0.01)	-0.02(0.01)*	0.01(0.02)	-0.03(0.02)	-0.02(0.03)	0.03(0.03)	-0.02(0.03)	-0.01(0.00)

Statistically significant (*p<.05; **p<.01; ***p<.001), - = not used as control

Appendix XVIII: Chapter 9, pathway model predicting parent and teacher-reported emotional and behavioural problems in young children's



Note: Diagram shows unstandardised regression coefficients and standard errors. Statistically significant (*p < .05; **p < .01; ***p < .001) results are shown and also significant pathways in previous model. Controls for family structure and child's ethnicity were included in each regression path from social disadvantage. Maternal psychological distress was adjusted for family structure. Each regression path at age 3 and 5 was adjusted for the child's gender, ethnicity and birth order. Aspirations were controlled for the child's gender and ethnicity. Problem behaviour was adjusted for the child's age, gender, ethnicity and birth order.