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Individual-level predictors of young children's aspirations

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ABSTRACT

Often young children already have some ideas about what they want to do in the future. Using data from a large UK cohort study, we investigated the individual determinants of seven-year-old children's aspirations, controlling for parental socio-economic background and parental involvement in learning. At age 7, not all children's aspirations were unrealistic (55.6% of children aspired to common occupations), few (1.2%) were fantasy, but most were gender-typical. White children had lower occupational aspirations and were more likely to have uncertain future orientations than other ethnic groups. The antecedents of fantasy aspirations, more typical of younger children, were difficult temperament and low school engagement. Uncertain aspirations were related to higher cognitive ability but also to lower school engagement. Higher occupational aspirations were directly related to higher family socio-economic status, and higher occupational and more intrinsic aspirations were associated with more school engagement (in turn, higher in girls and ethnic minority children). Boys, compared to girls, had lower, more extrinsic and more masculine aspirations, but were also more likely than girls to aspire to rare jobs and have fantasy or uncertain aspirations.

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Aspirations; children; Millennium Cohort Study (MCS)

Introduction

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 and Nurius 1986), distinct from expectations as they reflect what someone would like to achieve rather than what they think they will achieve. Aspirations in young people, even in children, tend to be occupational, reflecting the job one would like to do rather than desires regarding other life domains (Auger, Blackhurst, and Herting 2005).

There is much literature on adolescents' occupational aspirations (Bandura et al. 2001; Ashby and Schoon 2010). Adolescence is seen as a key stage in the development of aspirations, as teenagers become more focused on their future and show increased selectivity in goal-directed behaviour (Cantor 1990; Nurmi 2004). By contrast, the importance of ideas about the future in pre-adolescents has been largely overlooked, although the few, largely small-scale, studies on the antecedents of younger children's aspirations suggest that understanding how aspirations are formed may need to start earlier in development. Most of these investigations find that the development of aspirations depends on the individual as well as the context, which is usually approximated by opportunities and socialisation processes that differ across socio-economic status (SES) levels. For younger children, the main 'frame of reference' is the home and therefore parental SES is likely a key influence. The 'family investment model' therefore

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is an appropriate framework to consider in an empirical study of the antecedents of young children's aspirations. This model explains how differences in income result in differences in the types of goods and services purchased and used by the parents to build the human capital of their children (Kiernan and Huerta 2008). The present study follows Gottfredson's developmental theory of circumscription and compromise (see below), as well as predictions from the family investment model, to investigate the antecedents of the level, gender-typicality, realism, motivation and maturity of young children's aspirations. It uses data from the UK's Millennium Cohort Study (MCS), and classifies early (at age 7) aspirations to reflect the status of the occupations they involved, their masculinity/femininity and realism, and children's intrinsic/extrinsic motivation and general maturity.

Determinants of children's aspirations

In general, the aspirations of children develop from vague representations of possible future outcomes to more realistic career preferences. Two career development theorists (Ginzberg 1952; Gottfredson 1981) argue 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 their goals), but disagree over when fantasy aspirations become uncommon. Ginzberg (1952) called this the 'increasing realism of choice' and postulates that fantasy choices are common before age 11, after which children aspire to more realistic choices. According to Gottfredson's (1981) theory of circumscription and compromise, children develop career aspirations in four stages. Initially, aspirations are based on size and power (ages 3–5 years), followed by gender roles (ages 6–8), social valuation (ages 9–13) and unique personal characteristics (ages 14 and older). Therefore, by around age 5, children have moved from magical to intuitive thinking and no longer report, for example, that they would like to be animals or fantasy characters. At age 6 or 7, they are already socialised around gender, have incorporated gender stereotypes into their self-concepts (Eccles et al. 1993), view gender-atypical behaviour negatively and tend to avoid gender-atypical types of play (Stoddart and Turiel 1985).

Gender is a major factor in differentiating aspirations (Schoon and Eccles 2014) not only at that stage. In expressing career aspirations, females generally endorse intrinsic values, such as helping others, more than males who tend to favour power and money (Weisgram, Bigler, and Liben 2010). These gender differences emerge in childhood (Blakemore, Berenbaum, and Liben 2009) and are reflected in 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, Attwood, and Fuller 2010). Girls have consistently higher educational and occupational aspirations than boys (Mello 2008; Schoon, Martin, and Ross 2007). However, they also have lower levels of self-confidence in their abilities, regardless of aptitude, particularly in traditional male-dominated areas such as mathematics and science (Eccles 1987; Sullivan 2009), and are generally more realistic in their choices. In a longitudinal study in the US, for example, boys tended to consistently aspire to more fantasy-type occupations than girls across all ages (Helwig 2001).

Ethnicity seems to also differentiate children's aspirations significantly. In the UK, children from ethnic minorities tend to have higher educational and occupational aspirations than white children (Croll 2008; Goodman and Gregg 2010; Strand 2007), presumably because their parents are more academically ambitious 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 their schools and supervise them closely (Croll 2008; Strand 2011).

Another major influence is the parents' socio-economic background (Mau and Bikos 2000). As explained above, the family investment model predicts that levels of income and material resources, as well as time spent with the child, result in positive child outcomes as they equip children with the resources to expand their horizons. This investment can in turn impact on the level and type of aspirations a child may hold (Schoon, Martin, and Ross 2007). Research findings tend to show this link consistently: children from lower class backgrounds tend to have lower educational aspirations

(Schoon and Parsons 2002) and to aspire to less prestigious occupations than their more advantaged peers (Croll 2008). Parental social class also influences children's aspirations indirectly, via parents' aspirations and expectations for their children. In Britain, for example, parental social class significantly predicted parents' aspirations for adolescents' education in both the 1958 National Child Development Study and the 1970 British Cohort Study (Schoon and Parsons 2002; Schoon, Martin, and Ross 2007). Parents from higher social classes foster familiarity with higher status occupations via their jobs and social milieu, in turn related to the type of occupations aspired by their children. Educated parents are also more proactive and successful in enabling their children's competencies than less educated parents (Bandura et al. 1996; Elder 1995). In turn, parental investment in the child's human capital influences aspirations directly (Muller and Kerbow 1993; Stevenson and Baker 1987). It also likely influences them indirectly, via promoting children's school engagement (Moreira et al. 2013) and cognitive skills. For example, more masculine aspirations such as for manual and physical occupations tend to be associated with lower cognitive ability (Creed, Conlon, and Zimmer-Gembeck 2007), and children's aspirations are raised when they are doing well academically (Bond and Saunders 1999).

Finally, aspirations may be related to temperament. Temperament traits are early emerging basic dispositions in the domains of activity, affectivity, attention and self-regulation (Shiner et al. 2012) which shape the development of later outcomes (Shiner and Caspi 2012). There are well-documented connections between temperament and a wide variety of outcomes linked to aspirations, such as school readiness, academic achievement, psychopathology and vocational interests (Oakland et al. 2001; Shiner et al. 2012). For example, Pulkkinen (2001) found that lower occupational aspirations were a consequence of aggressive behaviour in boys, and low emotional control, anxiety and passivity in girls. Temperament may also predict aspirations indirectly, as it is related to other determinants of aspirations, such as parenting (Boivin et al. 2005) and SES. For example, Jansen et al. (2009) found that SES inequalities in temperament were already present in six-month-old infants.

The present study

The first of this study's aims was to investigate the pathways to occupational, masculine/feminine and extrinsic/intrinsic aspirations at age 7. We predicted that, as with older children, ethnicity would be a key determinant of these three ways of classifying young children's aspirations. We also anticipated gender-typical aspirations in both boys and girls, as proposed by Gottfredson. In line with the family investment model, we also expected lower SES to be related to lower aspirations both directly and indirectly via less parental involvement and lower cognitive ability. In turn, parental involvement in learning would be related to school engagement, cognitive ability and aspirations. Cognitive ability and school engagement would also be associated with high, intrinsic and feminine aspirations. As discussed, temperament would be related to SES, parental involvement and cognitive ability but also aspirations, such that easy temperament would be related to high, intrinsic and feminine aspirations. Finally, in line with findings from studies on adolescents, we expected aspirations to be higher in girls and ethnic minority children, and girls to be more likely than boys to have intrinsic aspirations.

The second aim was to explore these 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. We therefore expected these children to have lower cognitive ability, more difficult temperament and less attachment to school. We 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 competence perceptions, would be related to both higher parental involvement and higher cognitive ability. Finally, in line with previous research, we expected girls to be less likely than boys to have fantasy aspirations and dreams for rare occupations.

Method

Participants

We used data from MCS, a birth cohort study of over 19,000 children born in the UK in 2000–02. MCS was designed to over-represent areas with high proportions of ethnic minorities in England, areas of high child poverty in the UK and the three smaller UK countries (Plewis 2007). Children were eligible to take part in MCS if they were born between 9 January 2000 and 31 August 2001 (England & Wales), or between 23 November 2000 and 11 January 2002 (Scotland and Northern Ireland), and were resident in a stratified sample of electoral wards. Overall 19,244 families (19,519 children) have taken part in the MCS (for more information on number of children selected to participate and response rates see Plewis 2007 and Connelly and Platt 2014).[1] The MCS is a multidisciplinary study and includes measures of children's socio-emotional and cognitive development, attitudes and interests, as well as parents' health, resources, practices and a range of socio-economic background factors. Information has also been collected from schools and teachers regarding the child's behaviour and outcomes, as well as from external resources such as the National Pupil Database and the Indices of Multiple Deprivation.[2] Across all sweeps, fieldwork was conducted at the participants' homes by a team of interviewers via computer-aided personal and self-completion interviews.

In this study, we used information from the main respondent (usually the mother), their partner and the cohort child. In total, 18,552 families took part at MCS1 (age 9 months), 15,590 at MCS2 (age 3 years), 15,246 at MCS3 (age 5 years) and 13,857 at MCS4 (age 7 years), when aspirations were assessed (Hansen 2012). We used data from singletons and only the first-born twin or triplet so we only had one cohort member per family. Aspirations were assessed from the children's written responses to the open-ended question 'When you grow up, what would you like to be?' The question was in the Self-Completion Module, returned by 13,244 children. As most (92.5%) children gave only one aspiration, we focused on the first or only aspiration expressed. We had two analytic samples, one for each study aim. Our 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 (Flouri, Moulton, and Panourgia 2012). Our 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 (Moulton et al. 2015). Children's aspirations were therefore classified using several systems.

Measures

In model 1, o*ccupational aspirations* were classified, using the one-digit SOC2000 code from the Standard Occupation Classification 2000 into nine major groups, with 1 indicating the highest occupational status (Managers and Senior Officials) and 9 the lowest (Elementary Occupations). *Masculine/feminine aspirations* were coded using the proportion of UK working-age women in that occupation (using the four-digit level SOC2000) according to Quarter 2 (April–June) 2008 Labour Force Survey (LFS), 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). These asymmetrical categories are as proposed by Hakim (1998) to reflect a situation where women are in a minority. Non-occupational future states were also allocated an appropriate gender category where possible (e.g. masculine for 'Superman'). *Extrinsic/intrinsic aspirations* were coded following self-determination theory (Deci and Ryan 1985), according to which intrinsic aspirations involve such life goals as affiliation, community and personal development, whereas extrinsic aspirations involve such goals as wealth, fame and attractiveness. Aspirations were coded into four categories: 'extrinsic', 'extrinsic-intermediate', 'neutral' or 'intrinsic-intermediate'. Extrinsic reflected materialistic goals or concerns about image, power or popularity (for example, 'billionaire', 'famous' or 'supermodel'), while extrinsic-intermediate were goals that could reflect

interests in financial success, image, praise or popularity (for example, 'actor', 'singer' or 'beautician'). As very few children gave intrinsic responses, we merged intrinsic with 'intrinsic-intermediate' aspirations which could include intrinsic goals such as caring for or helping people and animals (such as 'nurse', 'doctor', 'teacher' or 'vet'). Aspirations that could not be identified as intrinsic or extrinsic (e.g. 'farmer') were coded as 'neutral'.

In model 2, '*non-rare*' were those jobs held by more than 0.1% of the UK working population in 2008, according to Quarter 2 (April–June) 2008 LFS. '*Rare*' occupations, taken together, accounted for a small percentage (6.6%) of the jobs of the adult working population in 2008, but a high proportion (37.8%) of the MCS children's aspired occupations. These jobs are typical of children's responses in other studies. 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' or 'good'), adult roles or future states (such as 'an adult', 'tall', 'a man' or 'a mum'). '*Uncertain*' aspirations combined the 'don't know' (n = 597) and the few (n = 22) 'nothing' responses.

Temperament was assessed at 9 months with 14 items from the Carey Infant Temperament Scale (Carey and McDevitt 1978). The items included three dimensions of the baby's temperament, namely mood (measured with five items such as 'is pleasant'), approachability (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 α = .55, α = .67 and α = .71, respectively.

Family SES at 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 learning was measured at age 5 with four items, for each of the main carer and their partner, on how frequently they engaged in the following with the child: doing musical activities; telling stories; drawing, painting or making things; and playing [α = .64 (main carer), α = .65 (partner)]. All items were on six-point scales (1 = 'never' to 6 = 'every day').

Cognitive ability was measured (in T scores) at age 5 with the second edition of the British Ability Scales of Naming Vocabulary, Pattern Construction, and Picture Similarities (Elliott 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'. The items are similar to constructs used in other studies (Solomon et al. 2000; Sammons et al. 2008).

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.

Analytic approach and hypothesised model

For both data-sets, we 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 our covariates, before assessing correlations among the primary variables for each study, and examining any differences in aspirations by gender and ethnicity. We then fitted structural equation models (SEMs) in Mplus 7.3 (Muthén and Muthén [1998] 2012). Our hypothesised model (inspired by the family investment model, as explained) is shown in Figure 1. Two models were fitted to investigate the influence of familial resources and individual characteristics on

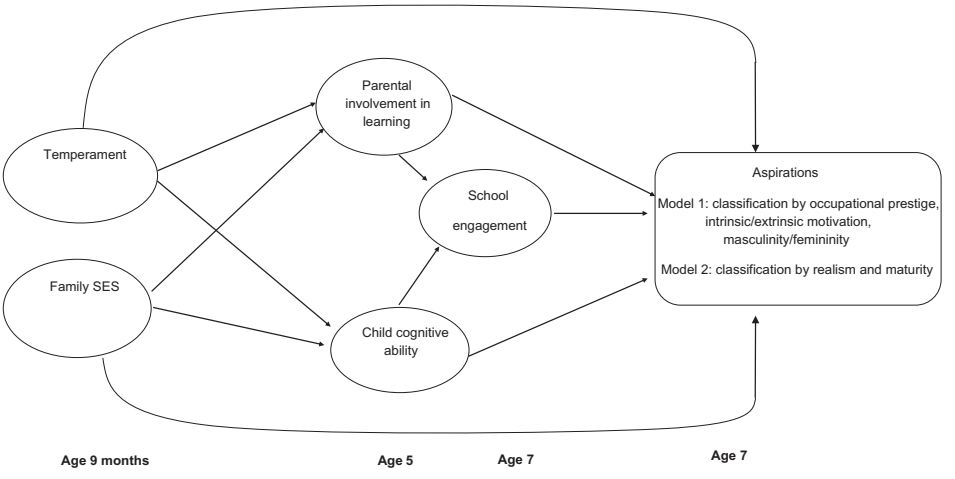

Figure 1. Hypothesized SEM predicting aspirations.

different aspects of children's aspirations, including their level, gender-typicality and motivation but also realism and maturity, as outlined in Gottfredson's theory. The first (model 1) predicts children's occupational, masculine/feminine and intrinsic/extrinsic aspirations, and the second (model 2) predicts children's aspirations classified by realism and maturity. Model 1 therefore involves three outcome variables and model 2 one. For comparison purposes, the two models were identical apart from the operationalisation of the response variables (aspirations) and the resulting sample size. Temperament, SES, parental involvement and school engagement were latent constructs loading on their scale items. In both models, covariances were specified for temperament and SES, for parental involvement and cognitive ability (also latent), and for aspirations in model 1. Temperament, parental involvement, cognitive ability, school engagement and aspirations were controlled for gender and ethnicity. Also, parental involvement and cognitive ability were adjusted for birth order, and aspirations for age.

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, unstandardised regression coefficients are reported in both models. Standardised regression coefficients are given where appropriate. For both models, our 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. We used this command along with the stratification, cluster and weight options to take account of the MCS sample design. In model 1, we used several measures of 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 order to conduct multigroup analysis by gender we tested for measurement invariance of each of the main instruments (Byrne 2012). However, the latent constructs were not equivalent across gender and therefore we could not proceed with multigroup analysis in this study.

Results

Descriptives and correlations

In both data-sets, 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 (Tables 1–2).

Table 1. Descriptive statistics (unweighted data) of model 1 variables in the analytic and non-analytic samples.

		Analytic sample (n = 11,656)			Non-analytic sample (n = 2,201)		
Variable	Range	*N*	*M*(SE)	95% CI	*N*	*M*(SE)	95% CI
Aspirations							
Occupational prestige (lower)	1–9	11,220	3.28 (0.02)	[3.25, 3.31]			
Motivation (more extrinsic)	1–4	11,656	2.02 (0.01)	[2.01, 2.04]			
Femininity/masculinity (more masculine)	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]
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		11,656	0.51 (0.01)	[0.50, 0.51]	2,201	0.42 (0.01)	[0.40, 0.44]
Ethnicity							
White		11,654	0.86 (0.00)	[0.85, 0.86]	2,199	0.83 (0.01)	[0.81, 0.84]
Mixed		11,654	0.01 (0.00)	[0.01, 0.01]	2,199	0.01 (0.00)	[0.01, 0.02]
Indian		11,654	0.03 (0.00)	[0.02, 0.03]	2,199	0.02 (0.00)	[0.01, 0.03]
Pakistani/Bangladeshi		11,654	0.06 (0.00)	[0.06, 0.06]	2,199	0.09 (0.01)	[0.08, 0.10]
Black		11,654	0.03 (0.00)	[0.03, 0.04]	2,199	0.04 (0.00)	[0.03, 0.05]
Other		11,654	0.02 (0.00)	[0.01, 0.02]	2,199	0.02 (0.00)	[0.01, 0.02]

Tables 3 and 4 show the aspiration categories by gender. Overall, for most children (91.2%) aspirations were 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 coded masculine, while 62.8% of girls' were feminine or ultra-feminine. Similarly, girls were more likely to have intrinsic than extrinsic 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 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 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 aspire to integrated jobs. White children were also more likely than other children to be uncertain of what they would like to be when they grow up.

Tables 6 and 7 show the pairwise correlations for the main variables in both analytic samples. All the bivariate pairwise correlations with children's aspirations were very low. As expected, low-prestige

Table 2. Descriptive statistics (unweighted data) of model 2 variables in the analytic and non-analytic samples.

		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		12,275	.57 (0.01)	[0.56, 0.58]			
Rare occupations		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]			
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]
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		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/Bangladeshi		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]

occupational aspirations were correlated with low family SES. Also, low-prestige, extrinsic and masculine aspirations were negatively associated with cognitive ability and school engagement. Not all types of mother and partner involvement were related to children's aspirations. Intrinsic aspirations were 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 related to more mother and partner involvement in musical activities, and more mother involvement in painting and drawing.

As expected, descriptive aspirations were associated with low cognitive ability and low SES, suggesting difficulties in development. Fantasy aspirations were correlated with low school engagement, but not cognitive ability, suggesting non-cognitive difficulties at school. Non-rare and descriptive aspirations were correlated with low SES, while aspirations for rare jobs and uncertain aspirations were related to high SES. Aspirations for rare jobs, for this age group, are likely to reflect higher competence perceptions, more typical in families with more socio-economic resources. Aspirations for non-rare jobs were associated with school engagement, low cognitive ability and difficult temperament. Aspirations for rare jobs were correlated with low school engagement, high cognitive ability and easy temperament.

Table 3. Percentage of children's aspired occupations (weighted data) by gender.

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

Table 4. Percentage of children's aspirations (weighted data) by gender.

	Total	Boys	Girls
	%	%	%
Aspiration assignment by	[95% CI]	[95% CI]	[95% CI]
Occupational prestige	(*n* = 11,220)	(*n* = 5,538)	(*n* = 5,682)
High	31.2 [29.9–32.5]	17.9 [16.6–19.3]	44.4 [42.6–46.2]
Medium	48.9 [47.7–50.2]	63.7 [62.2–65.2]	34.2 [32.6–36.0]
Low	19.9 [18.8–21.0]	18.4 [17.0–19.8]	21.4 [19.9–22.9]
Motivation	(*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]
Femininity/masculinity	(*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]

SEM paths

Figure 2 shows the path diagram of the SEM for the predictors of occupational, feminine/masculine and intrinsic/extrinsic aspirations (model 1), while Figure 3 those of the taxonomy of aspirations by realism and maturity (model 2). We outline the statistically significant findings for both models below. The overall fit for model 1 was good ($\chi^2(976) = 5903.58$, $p < .001$; RMSEA = .021; CFI = .907; TLI = .894). As the response variable in model 2 was an unordered category, no model fit information was available.

Table 5. 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 prestige	(*n* = 11,214)	(*n* = 9,455)	(*n* = 297)	(*n* = 292)	(*n* = 659)	(*n* = 362)	(*n* = 149)
High	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	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	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]
Motivation	(*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]
Femininity/ masculinity (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]
Femininity/ masculinity (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]

In model 1 (not shown in Figure 2), 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, 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 3), 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 and black children were less likely than white children to have fantasy aspirations, compared to non-rare occupational aspirations.

Table 6. Pairwise correlations of key observed variables for model 1 ($N = 11,656$).

	1	2	3	4a	4b	4c	4d	5	6a	6b	6c	6d	7a	7b	7c	7d	8a	8b	8c	9
(1) Lower aspirations	–																			
(2) More extrinsic aspirations	.22**	–																		
(3) More 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) 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**	.33**			
c) Picture similarities	–.03**	–.03**	-.05**	–.16**	–.13**	–.12**	–.11**	.06**	.03**	.03**	.06**	.04**	.05**	.02	.03**	.02	.30**	.33**	–	
(9) School engagement	-.08**	–.12**	–.12**	.00	–.01	–.02	–.00	–.00	.04**	.03**	.03**	.03**	.05**	.07**	.06**	.02*	–.00	.04**	.05**	–
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	11,062	11,052	11,074	9,669
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	55.95	50.84	54.50	16.60
SD	1.60	0.86	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	10.15	9.76	10.94	3.07

* <.05, **<.01.

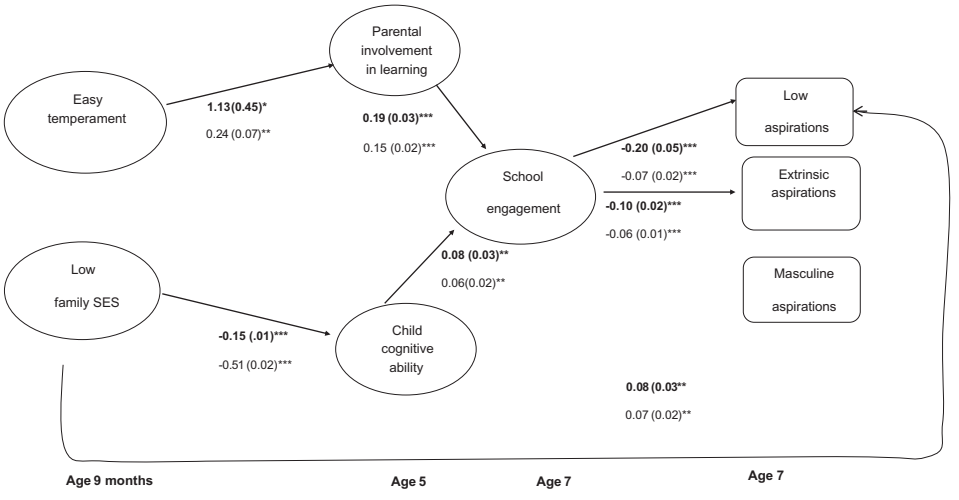

Figure 2. SEM results (model 1): classification of aspirations by occupational prestige, intrinsic/extrinsic motivation and masculinity/femininity. $N = 11{,}656$; $\chi^2(976) = 5903.58$, $p < .001$; RMSEA = .021; CFI = .907, TLI = .894, SRMR = .034.
Note: Diagram shows unstandardised regression coefficients 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. 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 was also controlled by birth order.

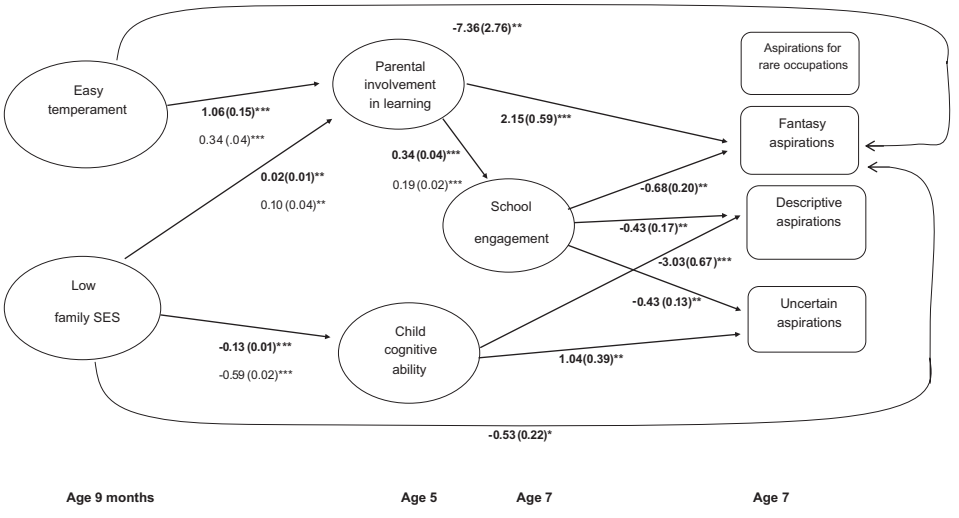

Figure 3. SEM results (model 2): classification of aspirations by realism and maturity. $N = 12{,}275$.
Note: See Figure 2. Reference category for aspirations: Aspirations for non-rare occupations.

As can be seen in model 1, and in line with the family investment model, low SES was directly, albeit weakly, related to low (less prestigious) occupational aspirations. As predicted, in model 1 school engagement was related to both parental involvement and cognitive ability and was negatively associated with low and extrinsic aspirations. Unexpectedly, there was no direct relationship between SES and parental involvement, nor an association between cognitive ability or parental involvement and aspirations. In model 1, the only antecedent of parental involvement in learning was easy temperament.

In model 2, high SES was directly, albeit weakly, related to fantasy aspirations. Low SES was related to fantasy aspirations indirectly via parental involvement. Unexpectedly, when other variables were

Table 7. Pairwise correlations of key observed variables for model 2 ($N = 12,275$).

	1a	1b	1c	1d	1e	2a	2b	2c	2d	3	4a	4b	4c	4d	5a	5b	5c	5d	6a	6b	6c	7
(1) Aspirations																						
(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) Temperament	−.04**	.04**	−.01	.01	.00	−.13**	−.07**	−.11**	−.09**	–												
(4) Mother involvement in learning:																						
(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 in learning:																						
(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**	.33**	–						
(c) Painting/drawing	.03**	−.02	−.00	−.02*	−.01	−.02	−.05**	−.02	−.01	.04*	.11**	.10**	.22**	.14**	.29**	.34**	–					
(d) Playing games/ with toys	−.04**	.05**	.00	−.02	−.01	−.07**	−.08**	−.05**	−.03**	.07**	.10**	.11**	.14**	.22**	.04**	.30**	.40**	–				
(6) Child cognitive ability:																						
(a) Naming vocabulary	−.05**	.06**	−.01	−.07**	.03**	−.34**	−.28**	−.27**	−.26**	.14**	.05**	.10**	.09**	.12**	.05**	.07**	.04**	.08**	–	.		
(b) Pattern construction	−.03**	.03**	−.01	−.04**	.03**	−.19**	−.16**	−.15**	−.16**	.06**	.00	.03**	.07**	.07**	−.00	0.01	.05**	.04	.33**	–		
(c) Picture similarities	−.01	.02	−.02	−.03**	.01	−.16**	−.13**	−.12**	−.11**	.06**	.03**	.03**	.06**	.04**	.04**	0.02	.02**	.02	.31**	.33**	–	
(7) School engagement	.07**	−.04**	−.03**	−.02	−.04**	.00	−.01	−.02	.00	−.00	.04**	.04**	.04**	.02**	.04**	.07**	.05**	.02	−.00	.05**	.05**	–
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	8,497	8,499	8,499	8,499	11,643	11,629	11,654	10,172
Mean	0.57	0.35	0.01	0.02	0.05	4.74	4.70	4.03	3.75	56.86	3.62	4.78	3.86	4.50	3.51	4.08	3.39	4.44	55.98	50.91	54.58	16.57
SD	0.50	0.48	0.11	0.15	0.22	1.99	2.12	2.04	2.09	6.40	1.55	1.29	1.21	1.19	1.49	1.47	1.22	1.11	10.16	9.76	10.96	3.08

* <.05, **<.01.

controlled for, rare occupational aspirations, compared to non-rare occupational aspirations, were not related to SES or any other family inputs in the model. Having rare, compared to non-rare, aspirations was explained by child gender and ethnicity only. Easy temperament was negatively associated with fantasy, compared to non-rare occupational aspirations, and, as in model 1, was directly related to parental involvement. In model 2, parental involvement was positively and school engagement was negatively related to fantasy aspirations, compared to non-rare occupational aspirations. As predicted, 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 cognitive ability and easy temperament was associated with parental involvement in learning.

In general (not shown in the figures), SES was lower in Pakistani/Bangladeshi compared to white families, temperament was easier in boys compared to girls and in all ethnic minority 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 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.

Discussion

In general, adolescence is seen as the key stage in the development of aspirations. As proposed by Gottfredson, however, young children are already developing dreams or ambitions for the future. Although these might be more unrealistic than adolescents', children in middle childhood have already acquired some of the attributes and skills needed to envisage possible futures. Using data from the MCS of children from age 9 months to 7 years, we examined individual determinants of aspirations at age 7. We classified aspirations in four ways. We first focused on the three dimensions of occupational prestige, masculinity/femininity in content, and type (extrinsic/intrinsic) of motivation. We then examined the realism and maturity of the aspiration.

For 91.2% of the children in our sample, aspirations involved an adult occupation, suggesting that at age 7 children already have ideas for future careers. A large proportion (55.6%) of the children aspired to occupations that are common in the UK population. This shows that in middle childhood 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 very few aspirations (1.2%) were fantastical. In general, most aspirations were gender-typical; 71.7% of boys gave masculine and 62.8% of girls gave feminine or ultra-feminine aspirations. There were important demographic differences, too. 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. Together, these findings suggest that gender differences in aspirations and gender role stereotypes are already evident in middle childhood, and ethnicity is a key determinant of younger children's as well as adolescents' aspirations.

As proposed by the family investment model, children from lower SES families had lower occupational aspirations. Family SES influenced MCS children's aspirations both directly and indirectly via cognitive ability, in turn linked to school engagement, which predicted higher occupational and more intrinsic aspirations. Children from more privileged backgrounds have more educational opportunities and greater access to financial and other resources. SES was only directly related to parental involvement in the realism and maturity model. The parental involvement construct used in this study comprised parent-child activities such as playing music or drawing, rather than parent-initiated teaching reading or maths, which may be more akin to the types of activities that higher SES families partake in with their children. In our study, the main antecedent of parental involvement was child temperament, in line with previous findings (Bates, Schermerhorn, and Petersen 2012). However, temperament was, in general, unrelated to later aspirations, with the exception of the direct association of difficult

temperament with fantasy aspirations, and the indirect relationship between easy temperament and fantasy aspirations via parental involvement. Fantasy aspirations are not typical for seven-year-olds, and may reflect developmental difficulties.

Unexpectedly, 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 related to school engagement which predicted both more intrinsic and more prestigious aspirations. Although children's ability is thought to influence aspirations, it is also the perception of one's ability, not tested here, that has been associated with aspirations (Strand and Winston 2008). Doing well encourages children to try, which results in them doing better and believing in their own ability (Bandura et al. 2001). In our study, cognitive ability was associated negatively with descriptive (e.g. 'tall') aspirations, as Gottfredson's model would predict, and positively with uncertain aspirations. In studies with adolescents too, having uncertain *occupational* aspirations was related to positive outcomes, unlike having uncertain *educational* aspirations (Gutman and Schoon 2012; Gutman, Schoon, and Sabates 2012). Finally, children with fantasy and descriptive aspirations were less engaged with school, perhaps because of their developmental difficulties. School engagement was related to more intrinsic goals and aspirations for more prestigious occupations. As identified by Gottfried (1990) and Eccles et al. (1983), intrinsic goals and academic motivation are highly inter-related, even in young children.

These important findings notwithstanding, our study has some limitations. The use of a large cohort is an important strength, but, as with all multi-purpose studies, there were limits to the scope of the questions included in MCS. Although the MCS children were given the opportunity to describe their aspirations in as much detail as they wished, they 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. In addition, aspirations are so far only available in one sweep, and so no validation across sweeps can be made. Further, as the seven-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. Finally, there were no child measures of self-efficacy to allow us to investigate whether perceived rather than actual ability was a determinant of aspirations at age 7. However, these limitations are outnumbered by important strengths. Our study showed that gender, ethnicity, SES and school engagement, all strongly associated with adolescents' aspirations, were also key determinants of several classifications of young children's aspirations. The development of aspirations is a life-long process, but it seems that aspirations may be shaped as early as in middle childhood, when their major influences are already evident.

Notes

1. The MCS data are freely available to researchers under standard access conditions via the UK Data Service (http://ukdataservie.ac.uk). The MCS is conducted by the Centre for Longitudinal Studies at the UCL Institute of Education. The MCS website, with documentation for the cohort and detailed information about current research and publications, is available at http://www.cls.ioe.ac.uk/mcs.
2. The online MCS data dictionary which provides details of all available variables can be accessed at http://cls.ioe.ac.uk/datadictionary.

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