Do primary school children's career aspirations matter?

The relationship between family poverty, career aspirations, and emotional and behavioural problems

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Abstract

The association between family poverty and children's emotional (internalising) and behavioural (externalising) problems is well-established. In this study we extended previous research by examining the role of young children's career aspirations in the association between family poverty and internalising and externalising problems. Using data from the UK's Millennium Cohort Study (MCS), we tested a path model linking family poverty and maternal qualifications (as a proxy for family-level human capital) to children's internalising and externalising problems via their career aspirations at age 7 years. We also investigated whether aspirations moderate the association between family poverty and internalising and externalising problems. We found that career aspirations were related to maternal qualifications but not family poverty or externalising problems, and were higher in girls. As expected, family poverty was significantly associated with both externalising and internalising problems. Aspirations moderated the association between family poverty and externalising problems, such that the association between family poverty and externalising problems was weaker among children with higher career aspirations.

Key words: family socio-economic disadvantage, career aspirations, emotional and behavioural problems

Acknowledgements

1   Introduction

The association between family poverty and child outcomes is well-established (Hackman, Farah & Meany, 2010). In general, studies in the UK and the USA find that family poverty has larger associations with measures of children's cognitive ability and achievement than with measures of children's behaviour, mental health and physical health, both in the short (Kiernan & Mensah, 2009) and the longer (Duncan, Ziol-Guest & Kalil, 2010) term. However, there is also a long history of research documenting the association of poverty and children's emotional (internalising) and behavioural (externalising) problems (for recent studies see Ackerman, Brown & Izard, 2004; Costello, Compton, Keeler & Angold, 2003; McLoyd, 1998; National Institute of Child Health and Human Development Early Child Care Research Network, 2005; Tracy, Zimmerman, Galea, McCauley & Vander Stoep, 2008). Two perspectives have been put forward to explain how the effect of poverty on child outcomes may be mediated (Kiernan & Huerta, 2008 for a review). The family investment model posits that income is associated with positive child development as it enables families to purchase the materials, experiences and services that benefit a child's development and wellbeing. The family stress model posits that low income influences a child's development through its impact on parental mental health, which influences parenting practices which in turn are associated with both cognitive and emotional and behavioural outcomes in children. In general, there is evidence in support of the family investment model for both types of child outcomes, and in support of the family stress model for emotional and behavioural outcomes. For example, Linver, Brooks-Gunn and Kohen (2002) showed that although the provision of stimulating experiences in the home explained the association between poverty and both types of child outcomes, maternal emotional distress and parenting practices explained the association between poverty and children's behaviour problems.

At the same time, however, there is evidence for great variability in the outcomes of children exposed to even powerful risk factors, such as poverty. Researchers usually categorise the factors that may explain why some children escape the consequences of such contextual risk (i.e. show 'resilience') by providing empirical evidence that the interaction between a range of individual characteristics, family qualities, environmental influences or a combination of all influences promote a 'degree of protection' from risk (Greenberg, 2006; Luthar, Cicchetti & Becker, 2000; Maddi, 2005; Masten, 2001). These protective factors are usually, but not necessarily, resource factors (that is, they promote positive outcomes in general). One potential individual-level protective factor may be children's career aspirations. We carried out this study, using data from the UK's Millennium Cohort Study (MCS), to test this. In particular, we tested whether the association between family poverty and problem behaviour (internalising and externalising) in primary school children would be weaker among those with higher career aspirations.

1.1   The role of children's aspirations

Career aspirations in adolescence have been explored as determinants of educational outcomes in several studies (Croll, Attwood & Fuller, 2009; Eccles, 2009; Schoon, Parsons & Sacker, 2004). However, few studies have looked at how they may be related to emotional and behavioural outcomes (Beal & Crockett, 2010). Even fewer have examined how they may be related to emotional and behavioural outcomes in primary school children, and none,

to the best of our knowledge, considered how aspirations may be related to children's emotional and behavioural resilience (i.e. better than expected emotional and behavioural outcomes). The lack of research in the role of primary school children's aspirations as a moderator of the effect of contextual risk on problem behaviour is unfortunate. As children in primary school are still relatively young, their aspirations may reflect their sense of hope for the future more than their assessment of ability and constraints[i]. Early aspirations may, therefore, be a very good proxy for a cluster of variables that have been associated (negatively or positively) with resilience, such as hopelessness or self-perceptions regarding competence (Cicchetti & Rogosch, 2009). The findings from research about the relationship between career aspirations and behaviour in adolescence provide indirect evidence that, even in older children, career aspirations may be more usefully viewed as a moderator of the relationship between behaviour and its correlates rather than as a correlate of behaviour[ii]. For example, Beal and Crockett (2010) showed that career aspirations were not related to either of their measures of problem behaviour (i.e. delinquency and substance use[iii]).

1.2   The present study

Although the association between family poverty and child outcomes is, in general, not disputed, it is difficult to isolate the causal impact of poverty, as many factors might jointly determine family income and child development. Parental cognitive ability is a prime example. Parents with higher cognitive ability are both more successful in the labour market, and more likely to provide a higher quality home and learning environment for their children, regardless of how much money they may be spending on materials such as books or computers. To avoid attributing to family income what should be attributed to correlated determinants of both family income and child outcomes, we adjusted in this study for maternal qualifications as a proxy for maternal cognitive ability. The added benefit of including this variable in our models is that maternal qualifications can be treated as an indicator of level of human capital in the family. Parental human capital, in turn, determines directly and indirectly – through parental aspirations (Bandura, Barbaranelli, Caprara & Pastorelli, 2001) – children's career aspirations, the resilience factor we explored in this study. In our study, children's career aspirations were their long-term occupational goals (i.e. the children's written responses to the following question, asked when they were aged 7, 'when you grow up, what would you like to be?") ranked on prestige.

2   Method

We used data from the first four surveys of the MCS: at ages nine months, three years, five years and seven years. MCS is a longitudinal survey drawing its sample from all live births in the UK over a period of 12 months, beginning on 1 September 2000 in England and Wales, and 3 months later in Scotland and Northern Ireland. The sample was drawn slightly later in Scotland and Northern Ireland so as not to coincide with other surveys being carried out on families with babies in these areas at the same time (Plewis, 2007). The MCS was designed to over-represent areas with high proportions of ethnic minorities in England, areas of high child poverty, and the three smaller UK countries. In all, there were nine strata:

- England-advantaged
- England-disadvantaged
- England-ethnic
- Wales-advantaged
- Wales-disadvantaged
- Scotland-advantaged
- Scotland-disadvantaged
- Northern Ireland-advantaged
- Northern Ireland-disadvantaged[1] (Plewis, 2007).

The MCS, unlike many child development studies, interviewed the father's or mother's partner if resident in the child's household. In general, any parents of cohort members (including step, foster and adoptive) and their partners (including same-sex partners) were eligible for interview. If there were no parents in the household, the main carer of the cohort member (and his or her partner) was selected for interview. In all, the total number of families taking part in each survey was:

- 18,552 at the Age 9 Months Survey
- 15,590 at the Age 3 Survey
- 15,246 at the Age 5 Survey
- 13,857 at the Age 7 Survey.

There were main interviews in 18,532 families at age nine months, 15,448 at age three, 15,210 at age 5, and 13,797 at age 7 (Hansen, 2010). The Age 7 Survey included a new mode of data collection: the child paper self-completion questionnaire, completed by 13,244 cohort children. As the child self-completion questionnaire included the question on aspirations ('when you grow up, what would you like to be?'), 13,244 was our initial sample size. Of these 13,244 children, 1,887 were discarded if the child's response to the aspiration item was missing (full item non-response [blanks]) or was judged to be invalid (i.e. if the response was 'don't know'/non-interpretable, or a non-career aspiration [for example 'rich',

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[1] The disproportionately stratified design of the MCS was to ensure adequate representation of all UK countries; areas in England with higher minority ethnic populations in 1991 (where at least 30 per cent of the population was black or Asian) and disadvantaged areas (apart from the ethnic minority areas above, drawn from the poorest 25 per cent of areas based on the Child Poverty Index). Therefore 'advantaged' areas were those that were not 'disadvantaged' (or 'ethnic' in England). 'Ethnic' areas were those which, in the 1991 Census of Population, had an ethnic minority indicator of at least 30 per cent; disadvantaged areas were those that were not 'ethnic'. The geography of electoral wards was used as a sampling frame.

'princess']). For 9,198 of these 11,357 children, there were complete data for our response variable: total emotional and behavioural difficulties at age seven. This number included children in the same family (for example, members of twin pairs). Therefore records for only one child per family (in this study cohort number 'a') were used, making the number of cohort members equal to the number of families (N = 9,074, our analytical sample).

2.1   Measures

Emotional and behavioural problems were measured at the Age 7 Survey with the main respondent's report of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ is a 3-point (ranging from 0 to 2), 25-item scale measuring four domains of difficulties (hyperactivity, emotional symptoms, conduct problems and peer problems), as well as prosocial behaviour. Each SDQ scale has five items, such as:

- 'restless, overactive, cannot stay still for long' (hyperactivity)
- 'many fears; easily scared' (emotional symptoms)
- 'often lies or cheats' (conduct problems)
- 'gets on better with adults than with other children' (peer problems)
- 'considerate of other people's feelings' (prosocial behaviour).

A total difficulties scale score is calculated by summing the scores for hyperactivity, emotional symptoms, conduct problems and peer problems. Therefore, as scores may range from 0 to 10 for each scale, the total difficulties score ranges from 0 to 40. Cut-off scores for the borderline/abnormal range (the SDQ cut-off score identifies 20 per cent of the population) are 16 for total difficulties, 6 for emotional symptoms, 4 for conduct problems, 6 for hyperactivity and 4 for peer problems (www.sdqinfo.org). In our sample, internal consistency was low for peer and conduct problems (Cronbach's alpha were .57 and .59 respectively) and acceptable for all the other scales. In particular, Cronbach's alpha was .64 for emotional symptoms, .78 for hyperactivity and .82 for total difficulties. The percentage of children scoring in the borderline/abnormal range for total difficulties or for the specific emotional and behavioural problems was not in line with what would be expected in a general community sample. At the Age 7 Survey only 3.2 per cent of our analytical sample was in the borderline/abnormal range for emotional symptoms, 7.1 per cent for peer problems, 7.9 per cent for conduct problems, 16.7 per cent for hyperactivity, and 7.1 per cent for total difficulties.

Family poverty was measured at the Age 7 Survey with a dichotomous variable indicating whether the family was above or below the poverty line. The poverty line for equivalised net family income is set at 60 per cent of the UK national median household income. In all, 26 per cent of children in our sample lived below the poverty line at age 7.

Career aspirations were measured by the UK Standard Occupational Classification 2000 (SOC2000; Office for National Statistics, 2008) of the children's aspired occupations. As discussed earlier, at age 7, children were asked to write what they would like to be when they grow up. Children gave qualitative responses which we subsequently coded[iv]. Most aspirations were career-orientated (occupational). All aspired occupations were coded for status using SOC2000, which classifies occupations on a scale of 1 to 9, with 1 indicating the highest level of occupational status and 9 the lowest, as follows:

SOC1 Managers and senior officials
SOC2 Professional occupations
SOC3 Associate professional and technical occupations
SOC4 Administrative and secretarial occupations
SOC5 Skilled trades occupations
SOC6 Personal service occupations
SOC7 Sales and customer service occupations
SOC8 Process, plant and machine operatives
SOC9 Elementary occupations.

Few children wrote down more than one aspiration, and in these cases we used the first aspiration stated. Children's career aspirations tended to be high, with 81.3 per cent of our sample aspiring to a SOC1, SOC2 or SOC3 occupation.

Control factors were sampling stratum, and child's gender and age at the day of the interview. The mean age of our sample was 7.23 years (SD = 0.25, ranging from 6.45 to 8.10 years). In all, 51.1 per cent of our analytical sample were girls.

Mother's educational qualifications were measured by the highest educational qualification the mother had achieved at the Age 7 Survey. This ranged from 1 to 6 ('level 5', i.e. first/higher degree), roughly equivalent to National Vocational Qualification (NVQ) levels. For a total of 32.8 per cent of our sample the highest qualification obtained was NVQ level 4, for 26.5 per cent NVQ level 2, for 15.8 per cent NVQ level 3, for 7.4 per cent NVQ level 5, and for 6.4 per cent NVQ level 1. There were 2.2 per cent who had obtained a qualification abroad and 8.9 per cent had none of these qualifications.

2.2 Analytic strategy

In the sections below we describe our approach to data analysis and present our study findings. First we describe how we tested whether those children in our analytical sample (N = 9,074) were different (at $p < .05$) from those in the initial sample (N = 13,244) not included in our analytical sample on our study variables. Then we present some descriptive analyses results that show how career aspirations at age 7 differed by family poverty and child's sex. We then explain how we dealt with missing data, we describe our Confirmatory Factor Analysis (CFA) of the SDQ scales and finally, we present the results from the Structural Equation Models (SEMs) we fitted. In our first SEM we regressed our SDQ constructs on aspirations. We specified both aspirations and SDQ to be regressed on age, sex, family poverty, the maternal qualifications dummies (with NVQ level 5 as reference) and the stratum dummies (with England-advantaged as reference). We then investigated if career aspirations moderate the association between family poverty and emotional and behavioural problems. Therefore, in our second SEM we added the interaction between aspirations and family poverty. In both SEMs, we included MCS sampling stratum as a covariate. The inherent assumption in this approach is that, conditioning on the design variables, the sampling mechanism is ignorable. Our analyses were carried out in SPSS 18 and in Mplus (Muthén & Muthén, 2010), which provides model fit information. Good fit for models is, in general, indicated by a value below .05 on the Root Mean Square Error of Approximation (RMSEA) and the Standardised Root Mean Square Residual (SRMR), and above .95 on the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI).

3   Results

3.1   Bias analysis

As expected, those in the analytical sample were, in general, a selective sample. Compared with those included in our analytical sample, those excluded from our analytical sample scored higher on both broad and specific emotional and behavioural problems, had mothers with lower qualifications, and were more likely to be boys and live in poverty. There was no difference in age or in the SOC of the occupational aspirations between the two samples. However, as can be seen in Table 1, which shows the average total difficulties score by level and type of aspiration in children with a valid total difficulties score, those children who were excluded from the sample because they gave no response to the aspiration item or because their response was uncodable, 'don't know' or a non-career aspiration tended to have elevated total difficulties scores. As Table 2 shows, most of the children who were excluded because they did not give a response or because their response was uncodable or a non-career aspiration tended to come from families living in poverty at age 7. Children giving a 'don't know' response to the aspiration item appeared to be an exception. Table 3 suggests that career aspirations in our analytical sample tended to be gendered. A total of 44 per cent of girls (compared to 16 per cent of boys) aspired to a SOC2 occupation. The majority of boys (64 per cent), compared to a third of girls (34 per cent), aspired to a SOC3 occupation. In general, skilled trades occupations (SOC5) appeared to be more popular with boys and personal service occupations (SOC6) with girls. Process, plant and machine operatives (SOC8) and elementary occupations (SOC9) were, in general, not popular with girls.

Table 1 Total difficulties score (Age 7 Survey) by type and level of aspiration*

	N	Mean	Std. Deviation
SOC1	185	7.14	5.35
SOC2	2766	6.61	5.00
SOC3	4422	7.01	5.12
SOC4	15	6.73	4.76
SOC5	528	7.38	5.58
SOC6	825	6.58	4.62
SOC7	108	7.99	5.98
SOC8	130	9.18	5.83
SOC9	95	7.25	6.34
'don't know' response	518	7.16	5.17
blank (no response)	489	7.40	5.40
non-interpretable response	170	8.00	5.10
non-career aspiration	308	8.24	5.79
Total	10,559	7.01	5.16

* Note: in families with twin and triplet cohort members, records for only one child per family (cohort number 'a') were used.

Table 2 Family poverty by type and level of child's aspiration, Age 7 Survey*

		Family poverty (OECD below 60% median poverty indicator)		Total
		Above poverty line	Below poverty line	
SOC1	Count	160	80	240
	% within	66.7%	33.3%	100.0%
SOC2	Count	2433	1008	3441
	% within	70.7%	29.3%	100.0%
SOC3	Count	3895	1505	5400
	% within	72.1%	27.9%	100.0%
SOC4	Count	18	3	21
	% within	85.7%	14.3%	100.0%
SOC5	Count	456	183	639
	% within	71.4%	28.6%	100.0%
SOC6	Count	722	295	1017
	% within	71.0%	29.0%	100.0%
SOC7	Count	98	39	137
	% within	71.5%	28.5%	100.0%
SOC8	Count	111	63	174
	% within	63.8%	36.2%	100.0%
SOC9	Count	75	50	125
	% within	60.0%	40.0%	100.0%
'don't know' response	Count	466	155	621
	% within	75.0%	25.0%	100.0%
blank (no response)	Count	392	233	625
	% within	62.7%	37.3%	100.0%
non-interpretable response	Count	134	87	221
	% within	60.6%	39.4%	100.0%
non-career aspiration	Count	254	137	391
	% within	65.0%	35.0%	100.0%
Total	Count	9214	3838	13052
	% within	70.6%	29.4%	100.0%

* Note: in families with twin and triplet cohort members, records for only one child per family (cohort number 'a') were used.

Table 3   Level of aspiration by child's sex, Age 7 Survey*

			SOC									Total
			1	2	3	4	5	6	7	8	9	
sex	boy	Count	93	720	2844	5	429	118	43	118	63	4433
		Expected count	90.4	1351.3	2160.3	7.3	257.9	403.0	52.8	63.5	46.4	4433.0
		% within sex	2.1%	16.2%	64.2%	.1%	9.7%	2.7%	1.0%	2.7%	1.4%	100.0%
		% within SOC	50.3%	26.0%	64.3%	33.3%	81.3%	14.3%	39.8%	90.8%	66.3%	48.9%
		% of total	1.0%	7.9%	31.3%	.1%	4.7%	1.3%	.5%	1.3%	.7%	48.9%
		Std. residual	.3	-17.2	14.7	-.9	10.7	-14.2	-1.3	6.8	2.4	
	girl	Count	92	2046	1578	10	99	707	65	12	32	4641
		Expected count	94.6	1414.7	2261.7	7.7	270.1	422.0	55.2	66.5	48.6	4641.0
		% within sex	2.0%	44.1%	34.0%	.2%	2.1%	15.2%	1.4%	.3%	.7%	100.0%
		% within SOC	49.7%	74.0%	35.7%	66.7%	18.8%	85.7%	60.2%	9.2%	33.7%	51.1%
		% of total	1.0%	22.5%	17.4%	.1%	1.1%	7.8%	.7%	.1%	.4%	51.1%
		Std. residual	-.3	16.8	-14.4	.8	-10.4	13.9	1.3	-6.7	-2.4	
Total		Count	185	2766	4422	15	528	825	108	130	95	9074
		Expected count	185.0	2766.0	4422.0	15.0	528.0	825.0	108.0	130.0	95.0	9074.0
		% within sex	2.0%	30.5%	48.7%	.2%	5.8%	9.1%	1.2%	1.4%	1.0%	100.0%
		% within SOC	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of total	2.0%	30.5%	48.7%	.2%	5.8%	9.1%	1.2%	1.4%	1.0%	100.0%

* Note: in families with twin and triplet cohort members, records for only one child per family (cohort number 'a') were used.

3.2 Missing data imputation

Although missingness on the covariates in our analytical sample was negligible (less than 1 per cent), we generated five multiple imputed datasets (Graham, Olchowski & Gilreath, 2007) in SPSS 18 using the Markov Chain Monte Carlo (MCMC) procedure. In the imputation we included all the child, family and area study variables as predictor and predicted variables in a fully inclusive model (Collins, Schafer & Kam 2001). Thereafter, we carried out a CFA of the SDQ items, and fitted SEMs in Mplus, which pooled the results from the analyses carried out in each imputed dataset.

3.3 Confirmatory Factor Analysis (CFA)

We first created latent constructs of emotional, peer, conduct and hyperactivity problems by the items of the observed emotional, peer, conduct and hyperactivity symptoms. We compared this first order latent factor solution with second order latent factor solutions (internalising by emotional and peer problems; externalising by hyperactivity and conduct problems; total difficulties by emotional, peer, conduct and hyperactivity problems) and a third order latent factor solution (total difficulties by externalising and internalising). The model that fitted data best was the model in which externalising loaded on conduct and hyperactivity problems, and internalising loaded on emotional and peer problems. However, the fit was rather poor (RMSEA = .06; CFI = .86; TLI = .84; SRMR = .04). Model fit improved considerably when we replicated these analyses by parcelling items (Bandalos, 2002). Item parcelling is a procedure for combining individual items and using these combined items as the observed variables, typically as the observed variables in CFA or SEM. Parcels are an alternative to using the individual items, and are typically created by taking the sum or mean of a set of items within a factor. Again, the model that fitted data best was the one in which internalising loaded on emotional and peer problems, and externalising loaded on hyperactivity and conduct problems (RMSEA = .05; CFI = .94; TLI = .92; SRMR = .04).

3.4 Structural Equation Models (SEMs)

We then regressed internalising and externalising problems on aspirations. We specified both aspirations and internalising and externalising problems to be regressed on age, sex, family poverty, the maternal qualifications dummies (with NVQ level 5 as reference), and the stratum dummies (with England-advantaged as reference). This model fitted data well on the RMSEA (.04) and SRMR (.03) although CFI and TLI were low (.85, and .81, respectively). Table 4 shows the model results. As can be seen in the table, both internalising and externalising problems were higher in children living in disadvantaged areas in England, children whose mothers had low qualifications, and children whose families lived in poverty. Low aspirations were associated (at $p = .05$) with internalising problems. Aspirations (results not shown in the table) were higher in girls ($\beta = .06$, $p < .001$) and children living in ethnic areas in England ($\beta = .07$, $p < .001$). They were lower in children in disadvantaged areas of Northern Ireland ($\beta = -.03$, $p < .001$) and among children whose mothers achieved either of the two lowest NVQ levels (NVQ1: $\beta = -.03$, $p < .05$; NVQ2: $\beta = -.06$, $p < .01$). Family poverty failed marginally to be associated with low aspirations ($\beta = .02$, $p = .06$) [v].

Table 4 Model results (standardised regression coefficients)

	Externalising	Internalising
Design stratum: England-advantaged (ref)		
England-disadvantaged	.070***	.089***
England-ethnic	-.001	.098***
Wales-advantaged	-.014	-.012
Wales-disadvantaged	.027	.018
Scotland-advantaged	-.003	-.028
Scotland-disadvantaged	.016	.003
Northern Ireland-advantaged	-.031*	-.030*
Northern Ireland-disadvantaged	.002	-.004
Family lives below the poverty line	.143***	.163***
Maternal qualifications: NVQ5 (ref)		
Maternal qualifications: NVQ1	.126***	.067***
Maternal qualifications: NVQ2	.113***	.088***
Maternal qualifications: NVQ3	.062**	.051*
Maternal qualifications: NVQ4	.004	.016
Maternal qualifications: overseas qualifications only	.055***	.050***
Maternal qualifications: none of the above	.167***	.142***
Girl	-.182***	-.018
Age	-.037**	-.013
Low career aspirations	.018	.026

*p < .05; **p < .01; ***p < .001

In the next step, we added the interaction between aspirations and family poverty on internalising and externalising problems. The interaction term was significant on externalising problems (β = .02, se = .01, p < .05), which suggests that the association between poverty and externalising problems was weaker among children with higher career aspirations[vi].

4   Discussion

The role of aspirations in achievement in adolescence has attracted a lot of research, especially in the fields of sociology of education and educational psychology. Adolescence is a period of exploration, when dreaming about and planning for the future emerges as an important developmental task. Future-oriented cognitions, such as aspirations, change in adolescence. Aspirations initially develop as vague representations of possible future outcomes based on societal norms and parental expectations. With development, adolescents' aspirations become more realistic, based on their interests, perceived abilities, and individual characteristics as well as the opportunities available to them (Eccles, 2009). So before they become more realistic, do they matter, especially for children living in poverty? This study, in line with recent evidence from another UK longitudinal study (Burgess & Umaña-Aponte, 2011) suggested they do. The association between family poverty and acting out (externalising) behaviour was weaker among children with higher career aspirations. This effect was robust to adjustment for maternal qualifications, a powerful correlate of both aspirations and emotional and behavioural problems in children (Beal & Crockett, 2010).

We acknowledge that this interpretation assumes that the effect is causal. Future research into why 7-year-olds with fewer problems than is typical among those in poverty had higher career aspirations will be very informative. We also acknowledge that results may change when we adjust for more covariates from more surveys, when we explore the role of other aspects of career aspirations that are perhaps more relevant than prestige to the lives of 7-year-old children, or when we explore the role of non-career aspirations. However, we note that even at this young age the great majority of the children stated a career rather than a life aspiration, which suggests that career aspirations (or what they may be proxy measures for) may be important. Previous research using the British Household Panel Survey has shown that despite a general tendency to aspire to the types of occupations held by their parents, young people overall were very ambitious (Croll, 2008). However, 'over-ambitious' adolescents – that is, those holding aspirations exceeding their educational attainment (Croll, 2008) or their expectations (Yates, Harris, Sabates & Staff, 2011) – from manual backgrounds were much less likely than their peers from professional, managerial and technical backgrounds to achieve high status occupations (Croll, 2008), and more likely to become NEET (not in employment, education or training) by age 18 (Yates et al., 2011). Confirming and complementing these findings, we too showed that there was a lot of ambition in the MCS children. At age 7, more than 80 per cent of the children in our sample who stated a career aspiration aspired to at least an associate professional and technical occupation. Although Croll (2008) and Yates et al. (2011) found 'excessive' ambition to be particularly detrimental for adolescents from less advantaged backgrounds, our study showed that a similar misalignment between level of aspiration and level of family income was positively associated with behavioural adjustment in our 7-year-olds: the association between family poverty and acting out behaviour was weaker among children holding higher career aspirations.

We think that there are three important design differences between the two earlier studies mentioned above and ours that could explain this difference in the findings. First, the developmental stage difference is of such magnitude that it is likely that aspirations in our

study are an entirely different construct. Aspirations were measured at age 15 in Croll (2008), age 16 in Yates et al. (2011), and age 7 in our study. Second, the timing and type of outcomes are different. Our outcomes were emotional and behavioural rather than occupational, and were measured in middle childhood rather than in adult life. Third, family disadvantage in our study was measured as income poverty rather than low social class position. We do not think that this difference makes the three studies difficult to compare because we controlled for maternal qualifications, a correlate of parental social class. However, we acknowledge that our measure of disadvantage is more likely than parental social class to vary over time. Therefore, had we modelled it as time varying, our results might have been different.

The future analyses we plan using the aspirations data in MCS will address these issues, as well as any concerns that with a longer list of covariates and a truly longitudinal approach the aspirations of 7-year-olds may be of little consequence for their emotional and behavioural outcomes. We note, however, that our approach likely underestimated not overestimated the effect of aspirations on emotional and behavioural problems. Our sample in this study was conditional on a career aspiration being present. Therefore, children stating non-career aspirations, those giving responses indicating uncertain aspirations (for example 'don't know' answers), or those giving an uncodable response or no response were excluded from the sample. However, these groups of children had more emotional and behavioural problems, which suggests that their exclusion made the sample a lot more well-adjusted than would be expected. This, in turn, suggests we likely underestimated the effect of aspirations on emotional and behavioural problems. Our future analytic plans involve using the aspirations of the MCS children in such a way as to both minimise sample selection and increase our confidence in drawing causal inferences. For example, when the age 11 aspirations data become available for the millennium cohort, we will be able to investigate to what extent a change in emotional and behavioural outcomes is related to a change in aspirations.

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Notes

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[i] By contrast – as aspirations initially develop as vague representations of possible future outcomes based on societal norms and parental expectations (Nurmi, 2004) – children may already show gendered visions of their future and their career aspirations, or show class bias. Earlier work using qualitative data from the 1958 British birth cohort study found that at only a slighter older age (age 11) children showed clear patterns of gendered visions of their imagined future as adults (Elliott & Morrow, 2007). Research with a more recent cohort of 11-year-olds from the British Household Panel Survey (BHPS), however, showed no gender stereotyping in hopes for the future (Croll et al., 2009). Social class background had little impact on how children described their imagined future in the first but not the second study. More recent work, using the BHPS data (Polavieja & Platt, 2011) and data from the first 1994 quarter to the last 2008 quarter of the Labour Force Survey, has shown that during that period real life occupations were more segregated for women than were aspired occupations for 11 to 15 year old girls.

[ii] A moderator is a variable that affects the direction and/or strength of the relation between an independent (or predictor) variable and a dependent (or criterion) variable. Moderation means that the effect of the predictor variable on the criterion variable is altered by the moderator. Moderation is usually captured by an interaction between the predictor variable and the moderator variable. A mediator is a variable that accounts for the relation between the predictor variable and the criterion variable.

[iii] By contrast, studies that have measured adolescents' life aspirations as approach or avoidance goals (for a review, see Massey, Gebhardt & Garnefski, 2008) have found associations between problem behaviour and aspirations. For example, anxiety has been positively related to greater avoidance goals, while depression has been related to both fewer approach goals and greater avoidance goals (Dickson & MacLeod, 2004a; 2004b). Approach goals are personal goals representing attempts to move from a present state towards some desired state (for example, 'complete all my schooling' or 'get my own place'). Conversely, avoidance goals are personal goals representing attempts to move away from some undesired state (for example, 'not be unemployed' or 'not get a divorce').

[iv] The aspirations coding for this study was undertaken by the following Masters in Psychology students whose research projects in 2010-11 on the career and life aspirations of the MCS children at age 7 were supervised by Eirini Flouri: Sarah Godwin, Laura Mora Diaz, Christiana Christoforou, Elli-Natassa Xanthopoulou, Ioanna Konstantopoulou and Eleni Lekka. We have built on this work and developed a more detailed coding scheme, which will become generally available (Flouri, Moulton, & Panourgia, forthcoming 2012).

[v] As higher SOC values indicate lower prestige (aspired) occupations, the signs of the main effects we report in the main text have been modified to aid interpretation. For example, the coefficient for girl was β = -.06, which suggests that compared to boys, girls' occupational aspirations were of lower SOC (i.e. of higher prestige).

[vi] The sign of the effect of the interaction term is positive, which suggests that the association between family poverty and externalising outcomes was stronger at higher levels of the moderator (i.e. SOC of the aspired occupation). But because a higher SOC value suggests that the aspired occupation was of lower prestige, the interaction effect suggests that the association was stronger when career aspirations were lower (or that the association between family poverty and behavioural problems was weaker when career aspirations were higher).