Ambitious mothers-successful daughters: Mothers' early expectations for children's education and children's earnings and sense of control in adult life

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Abstract

Background: Mothers' expectations for their children's educational attainment are related to children's educational and occupational attainment. Studies have yet to establish, however, long term links between maternal expectations and offspring earnings, which are not always related to occupational attainment especially in women, or between maternal expectations and offspring sense of control and self-efficacy, which are pivotal factors in career choice and development. **Aims**: To explore the role of mothers' expectations for their children's educational attainment in children's earnings attainment and sense of control later in life. **Method**: Data from sweeps of the 1970 British Cohort Study (BCS70) were used. The study sample was those cohort members with complete information on all the variables of interest. The study sample (N=3,285) was more educated and less disadvantaged than the whole sample. If cohort members of this type are more likely to have a mother who has high expectations then our results are biased downwards, which suggests that we underestimate the effect of expectations on our two outcome variables. **Results**: Mothers' expectations at age 10 were positively related to daughters' sense of control at age 30 even after controlling for ethnicity, educational attainment, and concurrent partner, parent, and labor market participation status, as well as the following confounding variables (measured at ages 0-10): general ability and general ability squared, locus of control, emotional and behavioral problems and emotional and behavioral problems squared, socio-economic disadvantage, parental social class, parental family structure, and mother's education, child-rearing attitudes and mental health. Mothers' expectations had no effect in sons' adult outcomes. **Conclusions:** Given that women are particularly at risk for poor psychological and economic outcomes in adulthood, and that this study likely underestimated the effect of expectations on these two outcomes, this is an important conclusion. **Keywords**: earnings; expectations; parenting; sense of control

Introduction

There is considerable evidence for the link between mothers' high expectations for their children's academic pursuits and children's educational (Eccles, Wigfield, & Schiefele, 1998; Englund, Luckner, Whaley, & Egeland, 2004; Fan & Chen, 2001; Ganzach, 2000; Juang & Silbereisen, 2002; Sandefur, Meier, & Campbell, 2006), occupational (Bond & Saunders, 1999), or psychological (Pomerantz & Wei, 2006) outcomes. Recent evidence suggests that the link may be even stronger in children at risk for low attainments such as children from lower socio-economic groups (Casanova, García-Linares, de la Torre, & de la Villa Carpio, 2005), and children with negative perceptions of their academic competence (Pomerantz, Ng, & Wang, 2005). In his discussion on the ways in which maternal expectations, as a measure of family's social capital, can influence children's attainments Coleman (1988) argued that mother's expectations about the eventual educational attainment of her children are related to children's attainments because they reflect her interest, concern, and personal investment in the life of her children (Sandefur et al., 2006). Studies have yet to establish, however, long term links between maternal expectations and offspring earnings, which are not always related to occupational attainment, especially in women (Budig, 2002), or between maternal expectations and offspring sense of control and self-efficacy, which are pivotal factors in career choice and development (Bandura, 1997; Bandura, Barbaranelli, Caprara, & Pastorelli, 2001). Sense of control (sometimes referred to as 'personal control' (e.g., Pearson, 2006)) overlaps substantially as a concept with human agency, and in particular personal agency (Bandura, 2001).

This lack of evidence for the link between mothers' expectations and children's earnings attainment and sense of control in adult life is unfortunate given that there are several reasons why maternal expectations might be linked to both. First, studies testing human capital models of growth have shown that maternal expectations are related to

children's expectations (Jodl, Michael, Malanchuk, Eccles, & Sameroff, 2002), and children's ability and mothers' involvement in their children's education (Bond & Saunders, 1999), which are likely to be related to children's wages via their effects on educational and occupational attainment (Kilbourne, Farkas, Beron, Weird, & England, 1994). Second, mothers' high expectations are related to children's "hardiness" (Khoshaba & Maddi, 1999), or the inter-related attitudes of commitment, control and challenge, that help managing stressful circumstances by turning them into growth-inducing experiences (Maddi, 1997). Conversely, low maternal expectations for children's coping are related to overprotective parenting which predicts children's anxious behavior (Kortlander, Kendall, & Panichelli-Mindel, 1997) that in turn predicts low attainments (Kessler, Foster, Saunders, & Stang, 1995).

Although maternal expectations are anticipated to be related to both sons' and daughters' sense of control and earnings, they are expected to be particularly influential for daughters' outcomes. This is for two reasons. One is that, as parents with traditional gender schemas are more likely than parents with nontraditional schemas to have offspring with gender-typed cognitions about themselves or others (Tenenbaum & Leaper, 2002), mothers who value higher education for their daughters are likely to have daughters with nontraditional gender-typed cognitions, such as a sense of control. Nontraditional gender-typed cognitions are, in turn, related to less sex-typical (and usually better-paid) occupations in women (Kilbourne et al., 1994). Another, borrowed from evolutionary theory, is that maternal expectations may make a greater difference in daughters simply because low status parents (for example, mothers compared to fathers) invest more in low status offspring (for example, daughters compared to sons). According to the Trivers-Willard hypothesis (Trivers & Willard, 1973), individual status interacts with investment in offspring such that high status individuals invest more in boys, and low status individuals invest more in girls;

mothers - as the lower status parents - invest more in daughters than in sons (even though they may have similar expectations for both daughters and sons). Testing a variant of the Trivers-Willard hypothesis, Hopcroft (2005), for instance, showed that sons of high status fathers attain more education than daughters, whereas daughters of low status fathers attain more education than sons.

The present study

To explore the long term effect of maternal expectations in childhood on offspring earnings attainment and sense of control in adult life after controlling for important confounding variables this study used longitudinal data from the 1970 British Cohort Study (BCS70). Since, compared to men, women both earn a lot less and experience more educational and career-related barriers which diminish feelings of control (Bussey & Bandura, 1999), the analyses in this study were carried out separately by gender. In accordance to Bronfenbrenner's (1979) paradigm, the confounding variables that were controlled for reflected factors from different 'ecological' domains, i.e., factors related to family and factors within the person.

With respect to the role of family-related factors mother's depressed mood, non-authoritarian parenting and education as well as parental social class, socio-economic disadvantage and family structure were controlled for as these factors are related to both parental inputs and children's earnings or sense of control. Maternal depressed mood, for instance, is associated with both low maternal expectations (Silverberg, Marczak, & Gondoli, 1996) and children's low attainments and poor mental health (Ensminger, Hanson, Riley, & Juon, 2003), whereas mothers' authoritarianism and psychological control are linked with children's maladaptive achievement strategies (Aunola, Stattin, & Nurmi, 2000) and underachievement (Aunola & Nurmi, 2004). Parental social class and poverty, on the other hand, adversely affect children's outcomes through various pathways: Poor parents have little

money, time, or energy to devote to developing children's human capital or earning potential, have little time for supervising children, and are less plugged into job finding networks (Corcoran, 1995). Similarly, poor and in particular poor minority parents are less able to buy neighborhood resources for their children as they can afford housing only in disadvantaged neighborhoods that provide low quality schools, less social control, and fewer jobs networks (Bandura, 2001). Low parental education is also related to both children's low earnings, as less educated parents may be less effective in developing their children's human capital (Feinstein, 2003), and parents' low expectations (Wright, Caspi, Moffitt, Miech, & Silva, 1999). Finally, non-intact parental family structure, through the psychological distress from losing a parent, the reduced family income and the reduced parental supervision and involvement (McLanahan & Sandefur, 1994), is related to school dropout, teenage pregnancy and delinquency in children which are, in turn, associated with children's low earnings (Powell & Parcell, 1997) and low adult attainments in general (Sigle-Rushton, Hobcraft, & Kiernan, 2005).

With respect to the role of individual factors this study adjusted for the effects of children's locus of control, general ability, educational attainment, ethnicity, and psychological maladjustment, as measured with emotional and behavioral problems. Locus of control correlates highly with career expectations (Mau, Domnick, & Ellsworth, 1995; Tokar, Fischer, & Subich, 1998), whereas educational attainment is a strong predictor of both earnings (Corcoran, 1995; Pulkkinen, Nygren, & Kokko, 2002) and (especially in women) sense of control (Xiao, 2000), and is also related negatively to parental poverty and positively to social class through their effects on physical development and general ability (Richards & Wadsworth, 2004). On the other hand, ethnicity was controlled for as, compared to their counterparts, ethnic minority children report lower perceived occupational self-efficacy and career considerations, more perceived educational barriers, and lower self-efficacy for coping

with perceived career-related barriers (Luzzo & McWhirter, 2001). Psychological maladjustment is a negative correlate of both earnings (Downey & Coyne, 1990) and sense of control (DeNeve, 1999; Diener, Suh, Lucas, & Smith, 1999), and is, in turn, associated with both family's socio-economic disadvantage and parents' ill mental health (Downey & Coyne, 1990). Finally, squared terms for general ability at age 5 and emotional and behavioral problems at age 5 were included to capture nonlinearities in the ability-adult outcomes (Ashenfelter & Rouse, 1998) and the psychopathology-adult outcomes (McLeod & Kaiser, 2004) relationships, as neither earnings nor sense of control may be linear to ability and psychopathology (Card, 2001).

Method

Participants

This study used data from sweeps of the 1970 British Cohort Study (BCS70). BCS70 is a continuing longitudinal study of all children born between 5 and 11 April 1970 in England, Scotland and Wales. Survivors at 1 month (N=16,771) of the initial sample of 17,196 children were followed up at ages 5, 10, 16, 26 and 30, and 1501 newcomers (e.g., immigrants) were incorporated in the original sample between ages 5-16. Age 34 (Sweep 6) data have just been deposited. A total of 92.3% of the children's parents were born in the UK and were of white Caucasian origin, and 5.3% of children were born to single mothers. Although there was a relatively small under-representation of children born to teenage unmarried mothers, high parity and adopted and immigrant children, bias resulting from non-response at the 5-year and 10-year assessments was small (Thompson, Hollis, & Richards, 2003). At birth information was collected by the midwife present at birth, and from clinical records. In 1975 and 1980 parents were interviewed by the Health Visitor, cohort members undertook ability tests, and the school health service gathered medical information on each cohort child. At ages 10 and 16 head and class teachers also completed questionnaires. The

follow-up at age 26 was carried out by a postal survey, and at age 30 data were collected by interview with the cohort member. In all, 11,261 (5,471 male and 5,790 female) cohort members took part in the 30-year follow-up in 2000. At age 26 (Sweep 4) the achieved sample was 9,003. The response rates were generally high during the childhood years and remained above 70% in adulthood (Plewis, Calderwood, Hawkes, & Nathan, 2004). This is despite the fact that Sweeps 1 and 3 were handicapped by limited funding and a teachers' strike, and Sweep 4 was a postal survey for which it is more difficult to achieve high response. For this study the sample size was restricted to those cohort members who provided complete information on all the measures used (see next section). The resultant samples were 1520 men and 1765 women.

Measures

Mothers' expectations for children's educational attainment, age 10

Mothers' expectations for children's educational attainment were measured as in Schoon and Parsons (2002), Sandefur et al. (2006), and Schoon, Martin, and Ross (2007). In 1980 (when cohort members were aged 10), mothers were asked the following question about their expectations for their child regarding school leaving age and further education: 'At what age do you think your child will finally leave school' ('16' (the minimum school leaving age), '17' or '18'). Following Schoon and Parsons (2002) and Sandefur et al. (2006) we further collapsed these three groups into two groups coded as (1)=leave at 18, and (-1)=leave at 16 or 17.

Sense of control, age 30

Sense of control was measured at age 30 with 3 dichotomous items (Flouri, 2005): 'I usually run my life more or less as I want', 'I usually get what I want out of life', and 'I usually have control over my life'. Cronbach's alpha for the whole BCS70 cohort was .55.

Earnings attainment, age 26

At age 26 the BCS70 cohort was asked to report their employment status and, if employed or self-employed, their weekly earnings. The (corrected) weekly earnings of the study sample ranged from £3.46 to £1,000.

Family-related and individual factors in childhood (birth to age 10)

The *family-related factors* were mother's child-rearing attitudes (assessed when cohort members were aged 5) and five factors tapping maternal characteristics and family's socio-economic circumstances. Mother's non-authoritarian child-rearing attitudes were measured with 13 5-point items anchored with 'strongly agree' and 'strongly disagree' (Osborn, Butler, & Morris, 1984). Sample items were: 'Children should accept what parents say' and 'Child with only own ideas will not learn' (both inversely coded). The scale has good psychometric qualities (Thompson et al., 2003). In the study sample Cronbach's alpha was .69. The five family's and mother's characteristics were family structure (assessed as 'intact' if the cohort member lived with the same parent figures since she/he was born until age 10 or 'otherwise'), parental social class at birth, socio-economic disadvantage at age 5, and mother's depressed mood and education at age 5. Parental social class was measured with the Registrar General's measure of social class which defines social class according to job status and the associated education, prestige or lifestyle, and is assessed by the current or last held job. It is coded on a 6-point scale ranging from 'unskilled' to 'professional'. In cases in which there was no father the mother's social class was used. Socio-economic disadvantage at age 5 was assessed using a summative index giving an overall score of material disadvantage that ranges from 0 to 3 on the basis of presence or absence of three variables (Schoon et al., 2002). These were: overcrowding (>= 1 person per room), no housing tenure, and shared use or no access to a bathroom, indoor lavatory and hot water. Maternal depressed mood was measured with the Malaise Inventory (Rutter, Tizard, & Whitmore, 1970), a 24-item list of symptoms from the Cornell Medical Index. The Malaise symptoms are positive responses to items such as 'feel

miserable and depressed', 'get annoyed by people', and 'have had a nervous breakdown'. The scale has high internal consistency (Cronbach's alpha was .89 in the study sample) whereas receiver operating characteristic analysis has shown that its validity holds for men and women separately and for different socio-economic groups, by reference to external criteria covering current or recent psychiatric morbidity and service use (Rodgers, Pickles, Power, Collishaw, & Maughan, 1999). Finally, mother's education was assessed when the cohort member was aged 5 and was coded (1) the mother had some (at least vocational) qualifications or (-1)=the mother had no qualifications.

The *childhood individual factors* included in the study were general ability and emotional and behavioral problems at age 5, general ability at age 5 squared, emotional and behavioral problems at age 5 squared, and internal locus of control at age 10. At age 5 general ability was measured with the Human Figure Drawing test, developed by Goodenough (1926) and Harris (1963), which is a modified version of the Draw-a-Man test. Although concerns have been raised regarding the validity of the Human Figure Drawing test, the test correlates well with conventional IQ tests, such as Binet's (Binet & Simon, 1905) or Wechsler's (1949)[1], and it has been evaluated as a measure of intelligence (Schoon et al., 2002; Scott, 1981). With a theoretical range of 0-30 the BCS70 cohort achieved scores from 0-23. The test has good reliability (.94) in the BCS70 (Osborn et al., 1984). Emotional and behavioral problems in childhood were assessed with the Rutter 'A' Health and Behaviour Checklist (Rutter et al., 1970), which was completed by the parent. 0-2 ratings ('no problems', 'somewhat', and 'definite') were made on 27 items reflecting internalizing and externalizing behavior problems. Sample items include: the child 'has headaches', 'has sleep problems', 'worries', 'is fidgety', 'destroys things', 'fights', and 'is unsettled'. Cronbach's alpha for the whole cohort was .81. Finally, internal locus of control was measured with a 16-item scale (Butler et al., 1980) completed by the cohort member at age 10. Items include 'wishing makes things

[1] For example, it correlates well (.69) with the WISC-R Performance (Fabry & Bertinetti, 1990).

happen' and 'nice things are only through luck' (both inversely coded). Cronbach's alpha for the whole study sample was .60.

Contemporaneous factors (ages 26-30)

These were educational attainment at age 26, and labor market participation status (employed/self-employed, unemployed, or outside the labor force), being partnered and having children at age 30. At age 26 the highest qualifications of cohort members were grouped into 6 major categories (ranging from 0 'no qualifications' to 5 'first or higher degree'), roughly equivalent to National Vocational Qualification (NVQ) levels. These were: No Qualifications; NVQ1/Sub-GCSE (General Certificate of Secondary Education); NVQ2/GCSE grades A-C (grades D and E, which are the last two grades of the 5-point grade system ranging from A to E, are classified as failures); NVQ3/GCSE A Level (Advanced Level); NVQ4/Sub-degree higher education, and NVQ5/first or higher degree[2] (Bynner & Joshi, 2002).

Results

The data were analyzed using Stata. First, we considered the issue of missing data. Although we could have used other methods such as imputation or selection models, comparing the selected sample with the full sample we found significant differences on the observable characteristics. Table 1 shows the descriptive statistics for the complete sample and the sample we used in the analysis after listwise omission. Table 1 also shows when our sample was significantly different from the complete sample available. As can be seen in the Table it seems that in general the study sample was more educated and less disadvantaged

[2] The General Certificate of Secondary Education (GCSE) was introduced in 1986 with first examinations in 1988. It is the principal means of assessing pupil attainment at the end of compulsory secondary education. A ('Advanced') levels remain the 'gold standard' academic qualification for the 16-19-year-old age group. These will normally be taken over two years (full-time) at a sixth form college, school sixth form, a tertiary college or a college of Further Education, and can give entry to Higher Education. Normally two or three A levels are studied (by those with the appropriate entry qualifications, usually five or more GCSEs at grades A-C).

than the whole sample. If cohort members of this type are more likely to have a mother who has high expectations then our results are biased downwards - suggesting that we underestimate the effect of expectations on our two outcome variables.

(Insert Table 1 about here)

To consider the effect of mother's expectations at age 10 on sense of control at age 30 and weekly pay at age 26 the following equations were estimated using ordinary least squares regression. Each equation was estimated separately for men and women as a set of nested models.

$$sc = \alpha_1 + \beta_1 ctm + \beta_2 cnf + \beta_3 \exp + \beta_4 cnf2 + \varepsilon_1 (1)$$

where sc is sense of control at 30, α is the constant, ctm is the set of contemporaneous factors, cnf is the set of confounding factors, exp is mother's expectations at age 10, cnf^2 is the set of the two confounding factors of general ability and emotional and behavioral problems squared to capture curvilinear effects, and ε is the error term.

$$wg = \alpha_1 + \gamma_1 ctm + \gamma_2 cnf + \gamma_3 \exp + \gamma_4 cnf2 + \varepsilon_1 (2)$$

where wg is weekly pay at 26, α is the constant, ctm is the set of contemporaneous factors, cnf is the set of confounding factors, exp is mother's expectations at age 10, cnf^2 is the set of the two confounding factors of general ability and emotional and behavioral problems squared to capture curvilinear effects, and ε is the error term[3].

Table 2 presents the results obtained when estimating equation (1) using the data for men only. Model 1 contains just the contemporaneous factors measured at ages 26-30. Compared to those without any qualifications, those with O levels, A levels, sub degree

[3] The alternative method of running fully interactive models with a dummy for female and interacting all the variables with the female term was also used (results available from the authors). However, the subgroup analysis is easier to read whilst the fully interactive model produced similar point estimates with slightly revised standard error.

higher education and University education had greater sense of control at age 30. Being partnered at 30 had a positive effect on sense of control. Being unemployed or not participating in the labor market had negative effects on sense of control.

Model 2 adds to Model 1 the confounding factors measured between birth and age 10. As a set of variables they were jointly significant at 1%. The only variable that was statistically significant (at 1%) in this set was emotional and behavioral problems measured at 5, which has a negative effect on sense of control at 30. Although the effects of being partnered, being unemployed and being outside the labor force were somewhat reduced by the inclusion of the confounding factors they largely retained their magnitude in this model. In contrast, the confounding factors entered completely mediated the effect of qualifications on sense of control.

Model 3 adds to Model 2 mother's expectations for child's higher education at age 10. However, mother's expectations were not significantly different from zero and did not add to the model fit. Model 4 adds to Model 3 the squared terms for general ability at age 5 and for emotional and behavioral problems at age 5. For male cohort members' sense of control at age 30, however, these quadratic terms were not individually or jointly significant.

(Insert Table 2 about here)

Table 3 presents the results obtained when estimating equation (1) using the data for women only. Once again Model 1 contains just the contemporaneous factors measured at ages 26-30. Compared to those without any qualifications, both those with sub degree higher education and those with a University degree at 26 had a higher sense of control at 30. Being partnered at 30 and not being unemployed at 30 had positive effects on the female cohort member's sense of control. Similar to the male cohort members' results the effect of being partnered at 30 largely retained its magnitude across the nested models, and the effect of

highest qualification obtained lost its significance once confounding factors were entered in Model 2.

Model 2 adds to Model 1 the confounding factors measured between birth and age 10. The only variable that was significant (at 1%) in this set was child's internal locus of control measured at age 10. The effect of child's internal locus of control was not reduced by the inclusion of mother's expectations and of general ability squared and emotional and behavioral problems squared, and it retained its magnitude across the nested models.

Model 3 adds to Model 2 mother's expectations for child's higher education at age 10. Mother's expectations were significant at 1% and added to the model fit. Model 4 added to Model 3 the squared terms for general ability and for emotional and behavioral problems at age 5 which were, however, neither individually nor jointly significant. Therefore, for the female cohort members the statistically significant predictors of sense of control at age 30 were the contemporaneous factors of being partnered and not being unemployed, and the childhood (age 10) factors of internal locus of control and maternal expectations.

(Insert Table 3 about here)

Table 5 shows the results obtained when estimating equation (2) using the data for men only. Model 1 contains just the dummies for the highest qualification obtained by age 26. Compared to those with no qualifications, only those with a University degree earned more per week. This effect was completely mediated by the inclusion of the confounding factors in Model 2.

Model 2 adds to Model 1 the confounding factors measured between birth and age 10. Child's internal locus of control at age 10 and general ability at age 5 had positive effects on the weekly pay at 26 for male cohort members. In addition, being white had a negative effect on earnings. This unexpected finding may be due to the small sample of non-white cohort

members available (just 2% of the whole sample). Compared to those from the highest social class, those from manual social classes earned less at age 26.

Model 3 adds to Model 2 mother's expectations for child's higher education at age 10. However, mother's expectations were not significantly different from zero and do not add to the model fit. Model 4 adds to Model 3 the squared terms for general ability at age 5 and for emotional and behavioral problems at age 5. These are not individually or jointly significant.

(Insert Table 4 about here)

Table 5 shows the results obtained when estimating equation (2) using the data for women only. Model 1 contains just the dummies for the highest qualification obtained by 26. Compared to those with no qualification by age 26 those with O levels, A levels, sub degree higher education and University education earned more at age 26.

Model 2 adds to Model 1 the confounding factors measured between birth and age 10. Internal locus of control at age 10 had a positive effect on the weekly pay at 26. In contrast, experiencing socio-economic disadvantage at 5 had a negative effect on weekly pay at 26.

Model 3 adds to Model 2 mother's expectations for child's higher education at age 10. Although mother's expectations were not significantly different from zero they did add to model fit at 10% significance.

Model 4 adds to Model 3 the squared terms for general ability at age 5 and for emotional and behavioral problems at age 5, which added to model fit at 10% significance.

(Insert Table 5 about here)

In conclusion, for male cohort members the statistically significant concurrent variables predicting sense of control at age 30 were being partnered and participating in the labor market, whilst the statistically significant variables predicting weekly pay were internal locus of control at age 10 and non-manual parental social class. For female cohort members internal locus of control at age 10 was the only factor that was important for predicting both

sense of control and weekly pay in adulthood. Statistically significant variables predicting sense of control at age 30 for female cohort members were mother's expectations at age 10 and being partnered and not being unemployed at age 30. Additional variables predicting weekly pay were at least A level equivalent educational attainment and absence of socio-economic disadvantage in childhood. Therefore, maternal expectations at age 10 were only a predictor for female cohort members' sense of control at 30.

Discussion

This study explored the long term effect of mothers' expectations in children's earnings and sense of control in adult life after controlling for confounding factors. The results showed that mothers' expectations for their children's education were related to children's positive adult outcomes, although they were so only in daughters. In particular, mothers' high expectations for their daughters were related to daughters' sense of control in adult life even after controlling for educational attainment, partner and parent status, labor market participation outcome, ethnicity, general ability, locus of control, early emotional and behavioral problems, early socio-economic disadvantage, parental social class, parental family structure, and maternal education, parenting and mental health. Mothers' expectations had no effect in sons' adult outcomes. By showing that early socio-economic disadvantage and parental social class predicted later earnings attainment, and that educational attainment predicted sense of control in adult life, this study, in line with other research (e.g., Schoon et al., 2007), suggested that life chances and opportunities remain circumscribed by one's social origin. At the same time, however, it showed that some of the intrafamilial processes influencing personal agency apply differently to men and women.

An explanation why maternal expectations predicted daughters' but not sons' outcomes might be that, as discussed earlier, mothers' nontraditional gender schemas lead them to value higher education for their daughters. Mothers with nontraditional gender schemas are in

turn likely to have daughters with similar nontraditional gender-typed cognitions, such as sense of control. It will be interesting to explore in the future if the effect of maternal expectations on daughters' sense of control is mediated by job type and job status. Another explanation may be that maternal expectations make a greater difference in daughters simply because mothers as the low status parents invest more in daughters than sons (even if they may have similar expectations for both daughters and sons). Future research should explore mother's involvement as a mediator of the maternal expectations-child outcomes association, and child's gender as a moderator of the maternal expectations-maternal involvement association. Of course, only experimental studies manipulating maternal expectations will be able to address the issue of causality in the maternal expectations-child outcomes association.

Caution is needed in interpreting this study's findings, however. Firstly, there remain the limitations of any longitudinal study, and in particular attrition. The study sample was only those cohort members with complete data on all the variables used in the regression models. Although it is difficult to address the issue of attrition within this framework, the attrition in this study is likely to have led to a less disadvantaged group remaining in the sample. If we assume the cohort members remaining in the sample to be more likely to have had mothers with high expectations, then the attrition, like the sample selection, will have led to an underestimate of the effect of maternal expectations on our two outcomes. Secondly, only a modest amount of the variance in offspring outcomes was explained by the variables in the statistical models. Thirdly, and perhaps more importantly, maternal expectations were assessed by simply asking mothers at what age they thought their child would leave school which is related to parents' socio-economic status and educational attainment. Although other studies (e.g., Schoon & Parsons, 2002; Sandefur et al., 2006, and Schoon et al., 2007) have supported the utility of this item, future research should carefully assess the value and limitations of this proxy measure and establish if it has acceptable psychometric properties.

Fourthly, and related to this, both of the control scales used demonstrated very modest reliability. Fifthly, earnings were self-reported and so method and source bias cannot be discounted. Despite these limitations, however, this study showed that mothers' expectations are related to daughters' later positive psychological outcomes. Given that women are particularly at risk for poor psychological and economic outcomes in adulthood, and that this study likely underestimated the effect of expectations on these two outcomes, this is an important conclusion.

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Table1: Descriptive statistics and bias analysis results

	Men		Women	
	Full Sample Mean (SD) or %	**Model Sample Mean (SD) or %**	**Full Sample Mean (SD) or %**	**Model Sample Mean (SD) or %**
Dependent Variables				
Sense of control, age 30	5.64 (0.67)	5.75* (0.57)	5.68 (0.67)	5.78* (0.56)
Weekly pay (corrected), age 26	237.29 (110.59)	240.79 (108.48)	176.02 (87.32)	177.13 (84.78)
Contemporaneous factors (age 26-30)				
Highest qualification attained, age 26				
None	6%	4%*	5%	4%
NVQ1	18%	18%	16%	18%
NVQ2	38%	40%	43%	40%*
NVQ3	10%	10%	12%	10%*
NVQ4	5%	5%	4%	5%
NVQ5	23%	23%	20%	23%*
Cohort member is partnered, age 30	63%	68%*	70%	73%*
Cohort member has children, age 30	33%	32%	53%	42%*
Cohort member is unemployed, age 30	4%	2%*	2%	0.1%*
Cohort member is not participating in the labor market, age 30	6%	2%*	24%	14%*
Confounding factors (birth to age 10)				
Child's internal locus of control, age 10	26.04 (2.15)	26.50* (2.08)	25.94 (2.10)	26.31* (2.04)
Parental social class, birth				
Social class 1	7%	2%*	6%	3%*
Social class 2	16%	13%*	17%	13%*
Social class 3	46%	44%	46%	46%
Social class 4	14%	18%*	14%	17%*
Social class 5	12%	15%*	12%	15%*
Social class 6	5%	8%*	5%	6%
Cohort member is white Caucasian British, age 5	97%	98%*	96%	98%*
Intact family structure, birth until age 10	87%	92%*	86%	92%*
Socio-economic disadvantage, age 5	0.88 (0.87)	0.71* (0.84)	0.86 (0.86)	0.63* (0.80)
General ability (z scores), age 5	-0.23 (1.26)	-0.04* (1.11)	0.04 (1.18)	0.19* (1.02)
Emotional and behavioral problems, age 5	9.97 (5.66)	9.28* (5.30)	9.17 (5.40)	8.64* (4.95)
Mother's non-authoritarian child-rearing attitudes (z-scores), age 5	-0.01 (1.02)	0.10* (0.94)	-0.01 (1.03)	0.16* (0.93)
Mother has qualifications, age 5	45%	53%*	45%	55%*
Mother's depressed mood, age 5	4.40 (3.60)	3.94* (3.24)	4.39 (3.68)	3.86* (3.35)
Mother's expectations (age 10)				
Mother has expectations for child's higher education	40%	49%*	43%	51%*
Observations	**2378 to 6059**	**1520**	**2650 to 5676**	**1765**

The smallest full sample for both men and women is for maternal expectations and weekly pay whilst the largest full sample is for maternal expectations and sense of control.

* indicates the sample used in the models is significantly different at 5% to the full sample.

Table 2: Unstandardised regression coefficients (and standard errors) predicting, controlling for other factors, sense of control at age 30 from mother's expectations at age 10 in men

Predictors	MEN			
	Model 1	Model 2	Model 3	Model 4
Contemporaneous factors (age 26-30)				
Highest qualification attained, age 26				
NVQ1	0.03	-0.03	-0.03	-0.03
	(0.08)	(0.08)	(0.08)	(0.08)
NVQ2	0.17*	0.08	0.08	0.08
	(0.08)	(0.08)	(0.08)	(0.08)
NVQ3	0.24**	0.13	0.12	0.12
	(0.09)	(0.09)	(0.09)	(0.09)
NVQ4	0.20*	0.10	0.10	0.10
	(0.10)	(0.10)	(0.10)	(0.10)
NVQ5	0.28**	0.16	0.15	0.15
	(0.08)	(0.09)	(0.09)	(0.09)
Cohort member is partnered, age 30	0.14**	0.13**	0.13**	0.13**
	(0.03)	(0.03)	(0.03)	(0.03)
Cohort member has children, age 30	-0.04	-0.04	-0.04	-0.04
	(0.04)	(0.04)	(0.04)	(0.04)
Cohort member is unemployed, age 30	-0.24*	-0.22*	-0.22*	-0.21
	(0.11)	(0.11)	(0.11)	(0.11)
Cohort member is not participating in the labor market, age 30	-0.29**	-0.26*	-0.26*	-0.25*
	(0.10)	(0.10)	(0.10)	(0.10)
Confounding factors (birth to age 10)				
Child's internal locus of control, age 10		0.01	0.01	0.01
		(0.01)	(0.01)	(0.01)
Parental social class, birth				
Social class 1		-0.11	-0.10	-0.11
		(0.11)	(0.11)	(0.11)
Social class 2		-0.13	-0.12	-0.13
		(0.07)	(0.07)	(0.07)
Social class 3		-0.12	-0.11	-0.11
		(0.06)	(0.06)	(0.06)
Social class 4		-0.04	-0.04	-0.05
		(0.06)	(0.06)	(0.06)
Social class 5		-0.07	-0.07	-0.07
		(0.06)	(0.06)	(0.06)
Cohort member is white Caucasian British, age 5		0.04	0.05	0.05
		(0.11)	(0.11)	(0.11)
Intact family structure, birth until age 10		0.03	0.04	0.03
		(0.05)	(0.05)	(0.05)
Socio-economic disadvantage, age 5		-0.03	-0.03	-0.03
		(0.02)	(0.02)	(0.02)
General ability (z scores), age 5		0.02	0.02	0.01
		(0.01)	(0.01)	(0.01)
Emotional and behavioral problems, age 5		-0.01**	-0.01**	0.00
		(0.00)	(0.00)	(0.01)
Mother's non-authoritarian child-rearing attitudes (z-scores), age 5		-0.03	-0.03	-0.03*
		(0.02)	(0.02)	(0.02)
Mother has qualifications, age 5		-0.03	-0.04	-0.04
		(0.03)	(0.03)	(0.03)

Mother's depressed mood, age 5		-0.01	-0.01	-0.01
		(0.01)	(0.01)	(0.01)
General ability (z scores) squared, age 5				-0.01
				(0.01)
Emotional and behavioural problems squared, age 5				-0.00
				(0.00)
Mother's expectations (age 10)				
Mother has expectations for child's higher education			0.02	0.02
			(0.03)	(0.03)
Constant	5.51**	5.59**	5.59**	5.54**
	(0.08)	(0.24)	(0.24)	(0.25)
Observations	1520	1520	1520	1520
R-squared	0.05	0.07	0.07	0.07
F Statistics (whole model)	8.05**	4.71**	4.53**	4.36**
F Statistics (Wald test for joint significance of extra variables)	8.05**	2.49**	0.52	2.20

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

Table 3: Unstandardised regression coefficients (and standard errors) predicting, controlling for other factors, sense of control at age 30 from mother's expectations at age 10 in women

Predictors	WOMEN			
	Model 1	Model 2	Model 3	Model 4
Contemporaneous factors (age 26-30)				
Highest qualification attained, age 26				
NVQ1	0.09	0.09	0.09	0.10
	(0.12)	(0.12)	(0.12)	(0.12)
NVQ2	0.16	0.14	0.12	0.13
	(0.12)	(0.12)	(0.12)	(0.12)
NVQ3	0.23	0.18	0.15	0.16
	(0.12)	(0.12)	(0.12)	(0.12)
NVQ4	0.30*	0.26	0.23	0.24
	(0.13)	(0.13)	(0.13)	(0.13)
NVQ5	0.25*	0.18	0.14	0.15
	(0.12)	(0.12)	(0.12)	(0.12)
Cohort member is partnered, age 30	0.11**	0.11**	0.12**	0.12**
	(0.03)	(0.03)	(0.03)	(0.03)
Cohort member has children, age 30	-0.02	-0.02	-0.02	-0.02
	(0.03)	(0.03)	(0.03)	(0.03)
Cohort member is unemployed, age 30	-0.43**	-0.42**	-0.42**	-0.42**
	(0.14)	(0.14)	(0.14)	(0.14)
Cohort member is not participating in the labor market, age 30	-0.01	-0.02	-0.02	-0.02
	(0.04)	(0.04)	(0.04)	(0.04)
Confounding factors (birth to age 10)				
Child's internal locus of control, age 10		0.02**	0.02**	0.02**
		(0.01)	(0.01)	(0.01)
Parental social class, birth				
Social class 1		0.03	0.05	0.05
		(0.10)	(0.10)	(0.10)
Social class 2		0.03	0.05	0.05
		(0.07)	(0.07)	(0.07)
Social class 3		-0.01	0.00	-0.00
		(0.06)	(0.06)	(0.06)
Social class 4		0.03	0.03	0.03
		(0.06)	(0.06)	(0.06)
Social class 5		0.00	0.01	0.01
		(0.06)	(0.06)	(0.06)
Cohort member is white Caucasian British, age 5		0.02	0.05	0.06
		(0.01)	(0.01)	(0.01)
Intact family structure, birth until age 10		0.01	0.01	0.02
		(0.05)	(0.05)	(0.05)
Socio-economic disadvantage, age 5		-0.02	-0.01	-0.01
		(0.02)	(0.02)	(0.02)
General ability (z scores), age 5		0.00	0.00	0.01
		(0.01)	(0.01)	(0.01)
Emotional and behavioral problems, age 5		-0.00	-0.00	-0.00
		(0.00)	(0.00)	(0.01)
Mother's non-authoritarian child-rearing attitudes (z-scores), age 5		0.00	-0.00	-0.00
		(0.02)	(0.02)	(0.02)
Mother has qualifications, age 5		0.00	-0.00	-0.00
		(0.03)	(0.03)	(0.03)
Mother's depressed mood, age 5		-0.00	-0.00	-0.00
		(0.00)	(0.00)	(0.00)

General ability (z scores) squared, age 5				0.01
				(0.01)
Emotional and behavioral problems squared, age 5				-0.00
				(0.00)
Mother's expectations (age 10)				
Mother has expectations for child's higher education			0.09**	0.09**
			(0.03)	(0.03)
Constant	5.52**	4.95**	4.93**	4.90**
	(0.12)	(0.25)	(0.25)	(0.25)
Observations	1765	1765	1765	1765
R-squared	0.03	0.04	0.04	0.04
F Statistics (whole model)	5.21**	2.84**	3.07**	2.87**
F Statistics (Wald test for joint significance of extra variables)	5.21**	1.31	8.01**	0.55

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

Table 4: Unstandardised regression coefficients (and standard errors) predicting, controlling for other factors, weekly pay at age 26 from mother's expectations at age 10 in men

Predictors	MEN			
	Model 1	Model 2	Model 3	Model 4
Contemporaneous factors (age 26-30)				
Highest qualification attained, age 26				
NVQ1	-0.63	-11.69	-11.73	-11.68
	(15.60)	(15.68)	(15.67)	(15.68)
NVQ2	21.74	0.91	-0.10	0.07
	(14.83)	(15.23)	(15.23)	(15.24)
NVQ3	29.53	1.07	-1.88	-1.78
	(16.56)	(17.34)	(17.43)	(17.44)
NVQ4	20.59	-10.38	-12.34	-12.03
	(19.04)	(19.58)	(19.61)	(19.62)
NVQ5	53.89**	16.75	13.34	13.44
	(15.27)	(16.47)	(16.59)	(16.60)
Confounding factors (birth to age 10)				
Child's internal locus of control, age 10		3.09*	2.83*	2.79*
		(1.40)	(1.41)	(1.41)
Parental social class, birth				
Social class 1		-44.21*	-41.50*	-40.55*
		(20.46)	(20.51)	(20.56)
Social class 2		-44.03**	-41.43**	-40.47**
		(13.35)	(13.44)	(13.49)
Social class 3		-13.92	-11.38	-10.92
		(11.41)	(11.51)	(11.52)
Social class 4		-16.32	-15.30	-14.78
		(12.04)	(12.05)	(12.07)
Social class 5		-14.78	-13.72	-13.32
		(12.23)	(12.24)	(12.25)
Cohort member is white Caucasian British, age 5		-58.36**	-55.02**	-55.13**
		(20.69)	(20.78)	(20.79)
Intact family structure, birth until age 10		-13.10	-12.84	-12.44
		(10.05)	(10.05)	(10.07)
Socio-economic disadvantage, age 5		-4.44	-3.77	-4.01
		(3.66)	(3.68)	(3.69)
General ability (z scores), age 5		5.37*	5.02*	5.14
		(2.52)	(2.52)	(2.66)
Emotional and behavioral problems, age 5		-0.00	0.03	-1.22
		(0.57)	(0.57)	(1.58)
Mother's non-authoritarian child-rearing attitudes (z-scores), age 5		5.07	4.82	4.91
		(3.07)	(3.07)	(3.07)
Mother has qualifications, age 5		9.10	7.94	8.08
		(6.22)	(6.26)	(6.26)
Mother's depressed mood, age 5		-1.24	-1.22	-1.22
		(0.95)	(0.95)	(0.95)
General ability (z scores) squared, age 5				0.25
				(1.03)
Emotional and behavioral problems squared, age 5				0.06
				(0.06)
Mother's expectations (age 10)				
Mother has expectations for child's higher education			10.47	10.68
			(6.42)	(6.43)

Constant	215.57**	247.55**	245.08**	250.38**
	(14.18)	(46.62)	(46.62)	(47.04)
Observations	1520	1520	1520	1520
R-squared	0.03	0.06	0.07	0.07
F Statistics (whole model)	9.13**	5.41**	5.28**	4.83**
F Statistics (Wald test for joint significance of extra variables)	9.13**	4.00**	2.66	0.39

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

Table 5: Unstandardised regression coefficients (and standard errors) predicting, controlling for other factors, weekly pay at age 26 from mother's expectations at age 10 in women

Predictors	WOMEN			
	Model 1	Model 2	Model 3	Model 4
Contemporaneous factors (age 26-30)				
Highest qualification attained, age 26				
NVQ1	12.33	9.97	9.71	11.86
	(16.78)	(16.79)	(16.78)	(16.82)
NVQ2	33.71*	25.53	24.39	25.85
	(16.28)	(16.37)	(16.37)	(16.39)
NVQ3	65.17**	51.74**	49.44**	50.33**
	(16.98)	(17.17)	(17.22)	(17.22)
NVQ4	65.88**	55.62**	53.29**	55.17**
	(18.32)	(18.48)	(18.52)	(18.54)
NVQ5	102.23**	82.21**	78.90**	80.36**
	(16.51)	(16.94)	(17.04)	(17.06)
Confounding factors (birth to age 10)				
Child's internal locus of control, age 10		2.87**	2.75**	2.81**
		(0.99)	(0.99)	(0.99)
Parental social class, birth				
Social class 1		-9.38	-7.39	-8.25
		(14.22)	(14.26)	(14.25)
Social class 2		-17.30	-16.21	-16.47
		(9.90)	(9.92)	(9.91)
Social class 3		-7.14	-5.85	-6.32
		(8.62)	(8.65)	(8.65)
Social class 4		1.56	1.92	1.87
		(8.99)	(8.99)	(8.98)
Social class 5		-3.21	-2.76	-3.18
		(9.06)	(9.06)	(9.05)
Cohort member is white Caucasian British, age 5		-6.67	-3.97	-3.21
		(13.33)	(13.42)	(13.48)
Intact family structure, birth until age 10		7.40	7.31	7.98
		(7.02)	(7.02)	(7.02)
Socio-economic disadvantage, age 5		-8.14**	-8.01**	-7.95**
		(2.58)	(2.58)	(2.58)
General ability (z scores), age 5		0.94	0.91	1.56
		(1.85)	(1.85)	(1.88)
Emotional and behavioral problems, age 5		0.27	0.28	1.82
		(0.41)	(0.41)	(1.19)
Mother's non-authoritarian child-rearing attitudes (z-scores), age 5		-0.75	-1.09	-1.14
		(2.11)	(2.12)	(2.12)
Mother has qualifications, age 5		6.04	5.58	5.36
		(4.21)	(4.22)	(4.21)
Mother's depressed mood, age 5		0.48	0.50	0.52
		(0.62)	(0.62)	(0.62)
General ability (z scores) squared, age 5				1.46
				(0.76)
Emotional and behavioral problems squared, age 5				-0.07
				(0.05)
Mother's expectations (age 10)				
Mother has expectations for child's higher education			7.07	7.05
			(4.25)	(4.25)

Constant	126.07**	64.31	62.22	50.48
	(16.04)	(35.03)	(35.03)	(35.43)
Observations	1765	1765	1765	1765
R-squared	0.14	0.16	0.17	0.17
F Statistics (whole model)	58.71**	18.03**	17.28**	15.99**
F Statistics (Wald test for joint significance of extra variables)	58.71**	3.14**	2.77	2.75

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