

# **Influences of parents' education on their children's educational attainments: the role of parent and child perceptions**

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This paper is based on a talk given at the conference of the Centre for Research on the Wider Benefits of Learning, September 2004. There is consistent evidence that parents' education predicts children's educational outcomes, alongside other distal family characteristics such as family income, parents' occupations and residence location. A variety of explanations have been offered for these associations. In this paper, we review the most prominent explanations, present a comprehensive model of the influences of parents' education and then summarize some of the research we have done that focuses on the role of parental influences on children's academic achievement.

## **Introduction**

Probably the most prominent and direct explanation of the link between parents' education and their children's academic achievement relies on the assumption that parents learn something during schooling that influences the ways in which they interact with their children around learning activities in the home (see Eccles, 1993; Brody *et al.*, 1995; Corwyn & Bradley, 2002; Hoff *et al.*, 2002; Davis-Kean *et al.*, 2003; Davis-Kean, 2005). Advocates of this perspective argue that parents' education should influence parents' skills, values and knowledge of the educational system; which, in turn, should influence their educational practices at home and the skills children have to model, as well as the parents' ability to intervene in the educational system on their children's behalf. Much of the evidence linked to this

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perspective has focused on early language and reading interactions between parents and their children. Parents with more education both talk to, and use more complex and varied language with, their children, which, in turn, predict better language and reading skills through out childhood (Hoff, 2003). Parents with more education also have higher expectations for their children's education, which, in turn, predict greater educational attainment for their children (Alexander *et al.*, 1994).

Finally, parents with higher education make sure their children are exposed to lots of educational opportunities in their communities (see Furstenberg *et al.*, 1999). For example, highly educated parents in the US enroll their children in music lessons, science and computer programs, and educationally relevant summer camps. They are also more likely to enroll their children in the best private schools and to get tutoring help if their children start to have difficulty in school.

Another prominent set of explanations for the relation of parents' education to their children's academic achievement links parents' education to children's achievement indirectly through the impact of both parent education and family income on where the family can live and the types of jobs the parents are likely to have. According to this perspective, an individual's education influences whom she or he marries, the types of jobs both parents are likely to have and thus the income the parents are likely to earn. These demographic characteristics, in turn, will influence where the family can live. Together family income and family residence will influence the types of schools and the neighborhood opportunities and risks to which their children will be exposed (see Coleman, 1987; Furstenberg *et al.*, 1999). In turn, these school and neighborhood characteristics should directly influence the children's educational achievement through the kinds of learning opportunities they afford to the children and the kinds of risks that the children must cope with as they grow up.

These school and neighborhood characteristics should also influence the behaviors of parents in the home. If the parents can trust the schools and neighborhoods to provide many opportunities and few risks for their children, they are likely to allow their children to participate fully in these resources. In contrast, if the parents believe their neighborhood is quite dangerous and risky for their children, they are likely either to keep their children at home as much as possible or to enroll their children in schools and activities outside the community (Furstenberg *et al.*, 1999). Although the first of these options does protect the children from neighborhood dangers, it also limits the children's opportunity to participate in a wide variety of activities that could facilitate their educational achievement. The second option requires a great deal of family management, which requires time and money that families living in poor and dangerous neighborhoods are not likely to have.

Living in dangerous neighborhoods and having low paying, stressful jobs can also undermine parents' mental health, again making it difficult for poor parents to provide cognitively stimulating experiences for their children (McLoyd, 1998; Elder, 1999, original work published 1974). These kinds of stresses can also undermine parents' ability to even provide a warm, supportive and consistent home environment for their children, making it difficult for the children to engage fully in the learning opportunities provided by their schools.

From a slightly different but related perspective, Kohn (1969) argued that the type of jobs parents have should influence the values and goals they have for their children, which, in turn, should influence the parents' behaviors. Kohn argued that parents in working class jobs are more likely to value obedience and less likely to value intellectual curiosity than parents in professional jobs. These parents are also less likely to model the importance of intellectual activities at home. Together these characteristics are not likely to facilitate the development of high levels of intellectual curiosity and educational engagement in their children.

In summary, there are a variety of plausible links between parents' education and the educational attainment of their children. Educational characteristics influence where the family can afford to live, and how often the family has to move, which in turn, can influence both the perceived neighborhood risks and the level of stress that members of a family experiences. Together these neighborhood and perceived neighborhood characteristics can affect the financial and psychological resources families have to enact their preferred within- and outside-family management strategies.

The biggest caveat one needs to consider in thinking about all of the research testing these links is the potential role of genetic factors in accounting for at least some of the associations that have been identified. The amount and kind of education that parents get are very likely to be influenced by their various genetic endowments—endowments linked to intelligence, motivation and temperament. To the extent that they pass these endowments to their children, their children's educational attainments should also be facilitated. Although behavioral genetic studies confirm this prediction (Rowe *et al.*, 1999), there is solid cross-cultural, historical and intervention research documenting the impact of education on people's values, intellectual skills and worldviews (Coleman, 1987; Kohn, 1995; Eccles *et al.*, 1998).

In addition, very few studies have taken a comprehensive approach to testing these links. Until quite recently, most researchers looked at a very limited set of the wide range of plausible hypotheses and they have typically done so in a piecemeal fashion. Thus, few researchers have based their research on comprehensive models that provide a full picture of the processes and steps through which parents' education might actually influence children's academic achievement. Thus, at present we have to piece together information across a variety of studies to assess the support for these various purposed links.

To remedy this situation, we and our colleagues have developed a comprehensive model of family influences on children's development, including the children's engagement in educational activities. This model is illustrated in Figure 1. According to this model, distal parent characteristics such as genetic endowment, education, cultural group membership, occupation, income, etc., influence their children's educational attainment through their influence first on parents' beliefs and behaviors, which, in turn, influence their developing children's skills, values, motivation and self-concepts, which, in turn, influence the children's engagement in a wide variety of activities. This engagement, over time, determines the children's educational attainments.

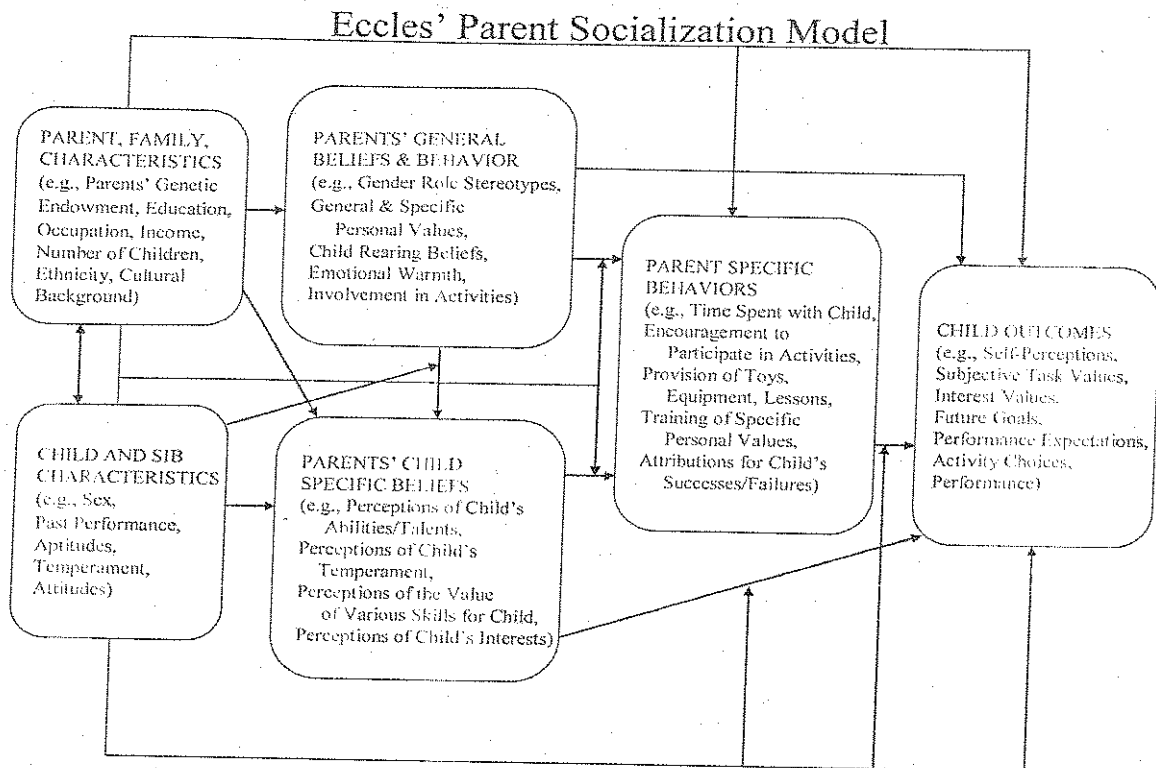


Figure 1. Eccles *et al.* parent socialization model

### Empirical studies

We now turn to some examples of how we have tested this model has been tested in various datasets. The first set of analyses were done by Davis-Kean (2005). The data come from the Child Development Supplement (CDS) of the Panel Study of Income Dynamics (PSID)—a study done in the US that began with a nationally representative sample of 18-year-old adults in the 1960s (Hofferth *et al.*, 1997). These individuals have been followed either annually or bi-annually ever since. Today, many of these people have had children, and some have had grandchildren. In 1995, the CDS began and all children from birth to 12 years of age living in the PSID sample families were studied. In many cases these were the grandchildren of the original sample of 18-year-olds. We summarize here the findings from a study focused on data from the 551 children who were 8- to 12-years-old. These children, although not a nationally representative sample of US children themselves, are the children of a nationally representative sample of 18-year-olds. Davis-Kean (2005) examined two linked questions:

- Does parent education affect the educational expectations that parents have for their children?

- Do parents' educational expectations for their children mediate the association of parents' education with both their own behaviors and their children's school behavior?

She hypothesized that both parent education and family income would influence parents' schooling expectations for their children, which, in turn would influence the intellectual investments parents make in their children at home (e.g., the amount of time they spend reading and providing intellectual stimulation to their children). She also predicted that parents' education and income would predict variations in such family process characteristics as family warmth and discipline techniques. Both of these family characteristics, in turn, should affect the children's performance on standardized achievement tests. In general, the results of the study supported these hypotheses. For example, she found that parents' education predicted parental expectations and that the associations of these expectations with the children's scores on a standardized test of academic knowledge were mediated by their association with the amount of reading and the extent of intellectual stimulation the parents' provided for their children. Thus, this analysis provides quite solid support for some portions of the comprehensive modeled illustrated in Figure 1. The PSID-CDS was only a cross-sectional sample but this model has been proven to be robust in longitudinal analysis finding differences across racial groups in the influence of parent's education on various home mediators (Davis-Kean *et al.*, 2003).

Even though this study (and subsequent ones) confirmed the hypothesis that the predictive association of parents' education with their children's school achievement is mediated by the relation of parents' education to parents' educational expectations for their children and the kinds of intellectual stimulation provided at home, the role that the child played in this process was not tested. The Eccles socialization model specifies that other child characteristics should mediate the impact of parents' behaviors and expectations on the children's academic performance. In particular, Eccles and her colleagues have argued that academic performance is influenced most directly by individuals' confidence in their abilities to succeed and by the subjective task value that individuals attach to the domain being studied (Eccles & Wigfield, 2002). Integrating this perspective with the socialization model illustrated in Figure 1 leads to following prediction: parents' education should influence children's academic achievement, in part, through its direct and indirect influence on their children's academic ability self-concepts.

Davis-Kean *et al.* (2002) tested this hypothesis using the PSID-CDS data set. They asked the following questions:

- Does parents' education predict their children's math and English ability self-concepts, as well as their scores on math and reading achievement tests?
- And are these relations also mediated by the parents' educational expectations for their children and both the cognitive stimulation and the emotional climate at home?

As Davis-Kean *et al.* (2002) show, the answer to this is yes! The relation between parents' education and each of these child characteristics are mediated by the relation of parents' education to the three hypothesized parent and family characteristics.

### **Mediational role of students' achievement-related self-perceptions**

As noted above, we believe that the impact of parents on children's academic achievement should be mediated through children's own self-perception. We believe that distal characteristics, like parents' education, jobs and education, influence parents' beliefs and behaviors, which, in turn, influence the children's perceptions of their own ability and the value the children attached to various achievement related tasks. These self and task beliefs, in turn, influence the children's engagement in various activities, which, in turn, should directly influence the children's actual achievement. Thus, we hypothesize that parents' education affects their educational aspirations for their children, which, in turn, affects their behavior, which, in turn, affects the children's beliefs about their own abilities, which, in turn, affect the children's involvement in school activities. We have already presented evidence supporting the first set of these hypotheses; namely that parents' education predicts parents' educational expectations for their children, as well as the parents' actual academic achievement-related behaviors.

Do we have any evidence for the second half of these hypotheses? Do parents' perceptions of their children's academic abilities actually predict children's own confidence in their academic abilities? In general, the answer is yes. In the next sections of this paper we draw on findings from two of our own datasets to illustrate our findings.

The Childhood and Beyond study (CAB) is a longitudinal community-based study of four school districts in South Eastern Michigan (Eccles *et al.*, 1993b). The participants are primarily white middle class families. The study began when the children were in the first, second and fourth grades (approximately aged 7, 8 and 9). The children, their parents, and their teachers were surveyed annually for three years. We measured each teacher's rating of the children's math ability, the parents' rating of their children's math ability and the children's rating of their own math ability. We also measured the children's actual math competence at Wave 1, and collected school records of achievement each year.

A first set of findings are shown in Figure 2, which show a set of bivariate correlations mapped onto a path model for the first and second waves of data. We treated the teachers' ratings of the children's math ability as an exogenous factor. As the figure highlights, parents and teachers agree about the children's actual math ability. There is a .76 correlation between the teachers' ratings of the children's math ability and the parents' ratings of the children's math ability. In contrast, the children's self-ratings were much less strongly related (.30) to their teachers' ratings of their math ability. In addition, over time, it was the parents' ratings of the children's math ability, not the teachers' rating of the children's math ability that predicted changes in the children's ratings of their own math ability. These findings suggest that

teachers' estimates of the children's math confidence may influence parents' views of their children's math ability. Then the parents' views influence how the children come to think about their own abilities. We found a similar pattern for language arts.

We have now followed these children through the end of secondary school and have found that the children's confidence in their own math and language arts abilities decline from the first to twelfth grade. Further, the rate of this decline is influenced by their parents' initial confidence in their children's ability as assessed during the elementary school years (Fredricks & Eccles, 2002). This relation holds true even when we control for the teachers' ratings of the children's actual math abilities and our standardized test measures of the children's actual math ability assessed early in elementary school.

These results are quite important because we know that children's confidence in their math ability influences how well they actually do in their math courses. These results suggest that children's academic performance is benefited to the extent that their parents have high confidence in their abilities. As noted earlier, parents' confidence in their children's abilities is directly related to parents' own education. Parents with higher education have more confidence in their children's academic abilities.

In summary, we are beginning to piece together the puzzle. Our data suggest a path of influence from parents' education to parents' beliefs and practices, and then to children's own self-concepts and values, and then finally to children's engagement

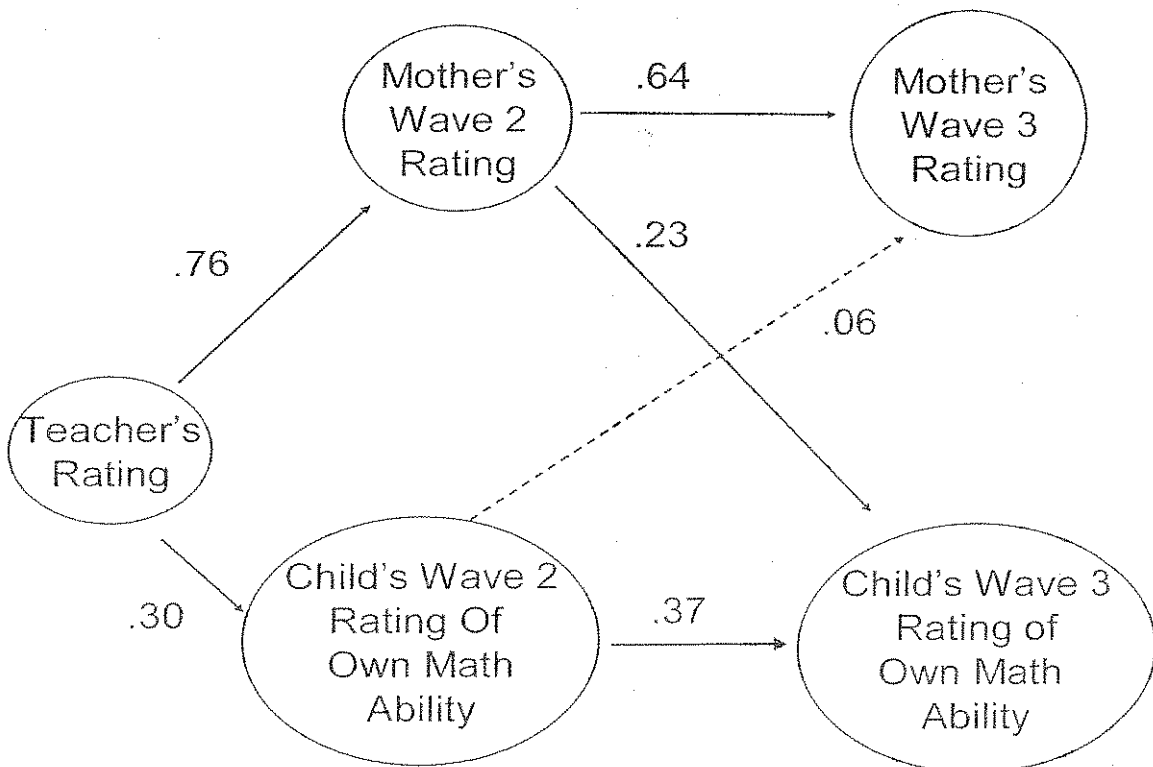


Figure 2. Correlations of teacher and parent ratings of child's math ability—CAB

in academic tasks and academic achievement. How do children's characteristics influence these pathways? We have addressed this question most extensively for gender.

### **Empirical studies: gendered socialization**

We have conducted extensive research on the role parents may be playing in discouraging girls from studying math and physical science. Although the findings we summarize now do not include parent education as a predictor, they do help us to further unpack the role that parents play in their children's academic achievement. Other works suggests that higher levels of parent education predict lower gender-role stereotypes and less gendered socialization practices within the family (Huston, 1983; Ruble & Martin, 1998).

The second dataset that has been developed to contain useful measures for our research question is the Michigan Study of Adolescent Life Transitions (MSALT)—a study that began in the 1990s when the students were in the sixth grade (Eccles *et al.*, 1993a). We have followed this population through to age 30. We focus here on the findings from the sixth and seventh grade. In the sixth grade, parents of daughters had lower expectations of their child's future performance in mathematics than parents of sons. In addition, parents of daughters had more confidence in their child's English abilities than in their child's mathematical abilities. Figure 3 shows this finding. The first set of bars is for math; the second set of bars is for English. These are parents' ratings of how they think their sons and daughters would do in high school math and English courses. As you can see, parents of daughters expected their child to do less well in math than in English courses. Parents of daughters also expected their child to do better in English courses than did parents of sons, but what's most important is that parents of daughters expected their child to do worse in math than in English. Parents of sons did not show this subject area difference.

The parents of daughters also believed that math was harder for their child than did parents of sons, and that their daughters had to work harder to do well in math than parents of sons, and that their daughters had to work harder to do well in mathematics than they would have to work in English. For example, Figure 4 shows parents' ratings of their children's effort in mathematics and English. Parents of daughters thought their child was working harder to do well in mathematics than did parents of sons. In contrast, parents of daughters thought their child was working less hard in English than did parents of sons.

Are these perceptions accurate? First, we asked the children how hard they worked in each subject area; the children's self-ratings mirrored the ratings of their parents. Next, we asked the children how much time they actually put into math and reading. On these measures, there were no gender differences. Third, we asked the teachers to rate how hard each student in the class worked on both math and reading. Again, there were no gender differences. Thus, although subjectively, girls and girls' parents think they are working harder in math than they are in English, and



### MSALT: Parents' Expectations for Adolescent Child's Future Performance

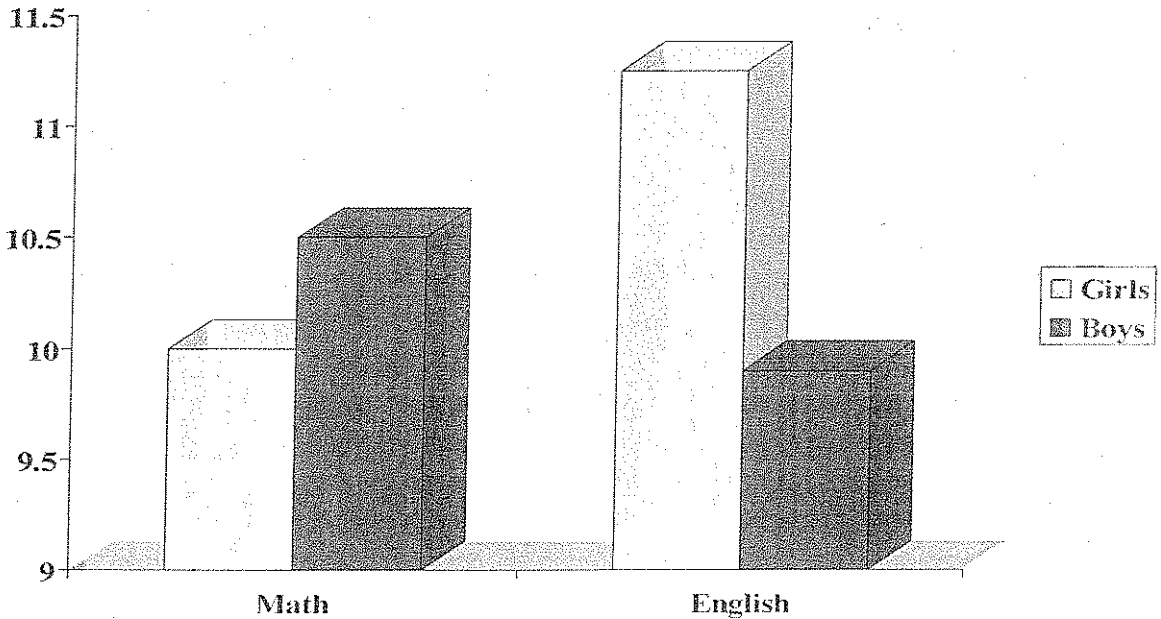


Figure 3. Parents' expectations for adolescent child's future performance—MSALT

harder than boys are in math, the time diary and the teachers' data suggest that these beliefs are not accurate.

So why might parents believe that their children are putting out differential effort in math and English, depending on their gender? The answer may lie in the interpretations or attributions that parents make of their children's performance. Thus, we asked the parents to imagine a time when their child got an A in math. Next, we asked them to rate how much they thought their child's success was due to hard work and how much it was due to natural talent. The results are shown in Figure 5. Parents of sons attributed their child's math success equally to both effort and natural talent. In contrast, the parents of daughters attributed their child's math success more to hard work than to actual ability. We also found that, over time, the more the parents think their child is doing well in math because of hard work, the lower they attribute natural talent to the reason children get good grades in math.

These gender differences in the causal attributions parents make for their children's school performance should influence the inferences that parents' draw about their children's math abilities, which, in turn, are likely to influence the children's own ability self perceptions and interest in math versus language arts. This is exactly what we found. Figure 6 summarizes the relevant findings. We did path analyses using parents' ratings of their daughters' math and English abilities. We also controlled for

### Parents' Rating of Adolescent Child's Effort in Math and English

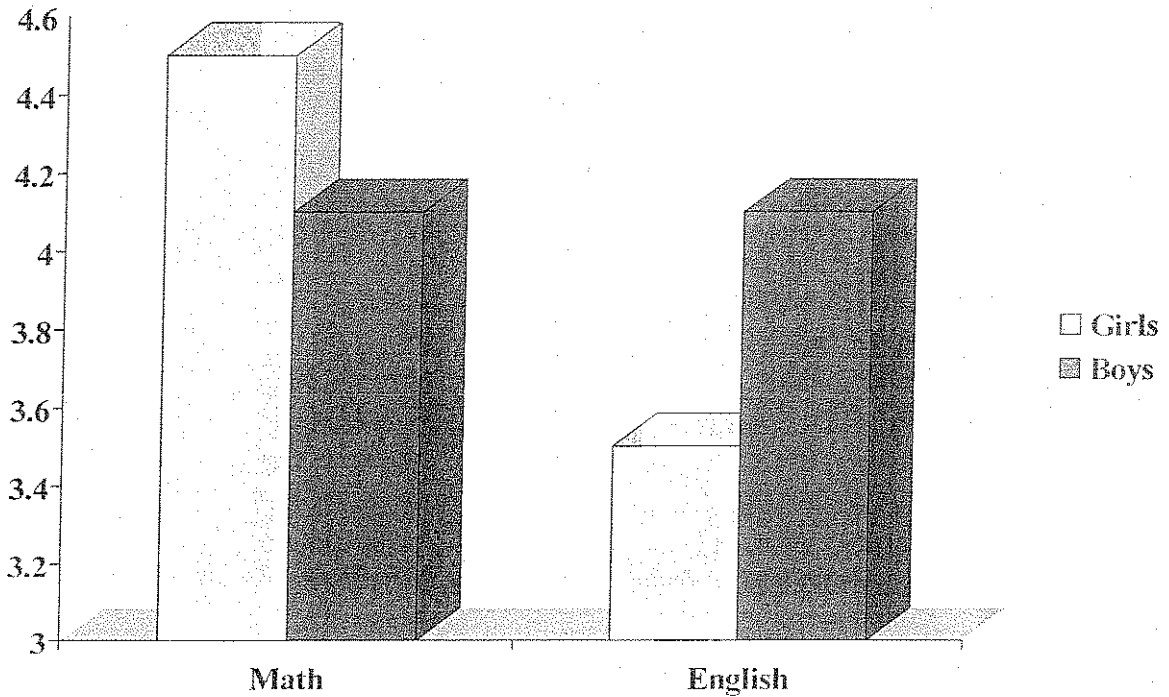


Figure 4. Parents' rating of adolescent child's effort in math and English

the teachers' rating of the children's actual math abilities. We used all three of these ratings to predict the girls' ratings of their own math and English abilities and interests. First, we found that parents' ratings of their daughter's math ability were the strongest predictor of the daughter's own math ability ratings. But even more interestingly, we found that parent's ratings of their daughter's English abilities undermined girls' interests in mathematics. Thus, independent of how good you actually are at mathematics, if your parents think you are better in English than in math, you will come to believe you are better at English than you are in mathematics. Most importantly, there was no evidence in this sample that the girls were any better at English than they were at math.

Now imagine what the implications of these gendered beliefs and process might be for our understanding of gender differences in adolescents' educational choices. Consider parent giving their daughter advice on what courses she should take in secondary school and what professions she should consider. If parents think that English is easier for their daughter, and that she has more ability in the language arts than in mathematics, they are likely to be biased toward encouraging her to go on in

### MSALT: Parents' Causal Attributions for Child's Math Successes

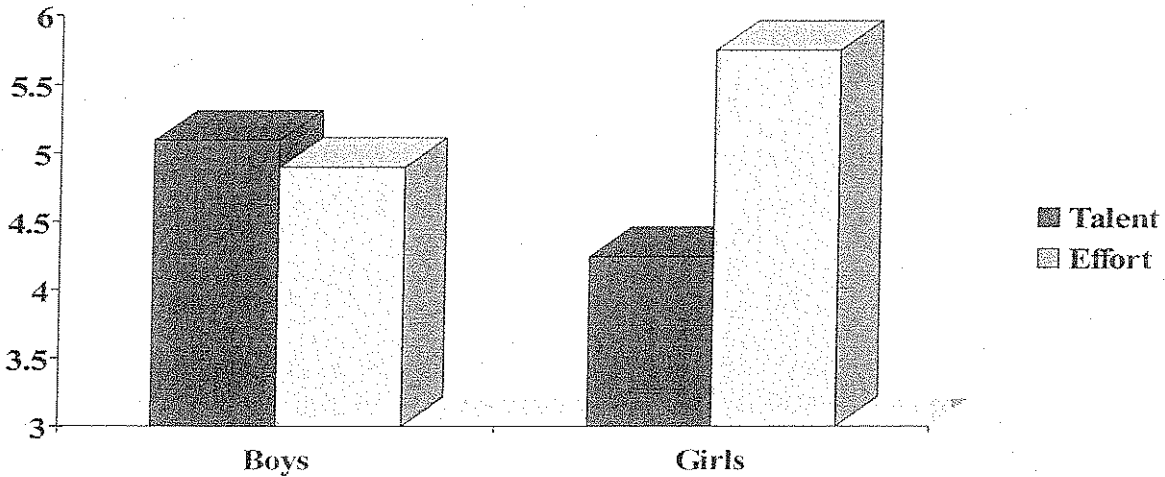


Figure 5. Parents' causal attributions for child's math successes—MSALT

the language arts rather than math, engineering or physical sciences. Most importantly, the biases emerge even though the girls were equally good in math and English.

In summary, parents' beliefs do appear to influence children's and adolescents' academic motivation and engagement. The evidence that we have shown so far suggests that parents' beliefs and behaviors are important pathways to examine if we are to understand children and adolescents' actual academic achievements. The next question is:

- Can parent education influence what parents believe in a way that will influence the parents' behaviors and, as a consequence, the children's actual educational and occupational outcomes?

### Conclusion

Both existing studies and the research summarized in this paper document the link between various parental characteristics, beliefs and behaviors and their children's educational attainments. We have shown that the relation of parents' education to their children's academic achievement and motivation is mediated by quite specific beliefs and behaviors. However, this is only one aspect of the complex system of parent and child interactions. There is still much to understand about the system before research can make any statements or conclusions regarding parental influence on children's attainment. How might we think about these issues in future research?

### MSALT: Impact of Mothers' Beliefs on Daughters' Math Confidence and Interest

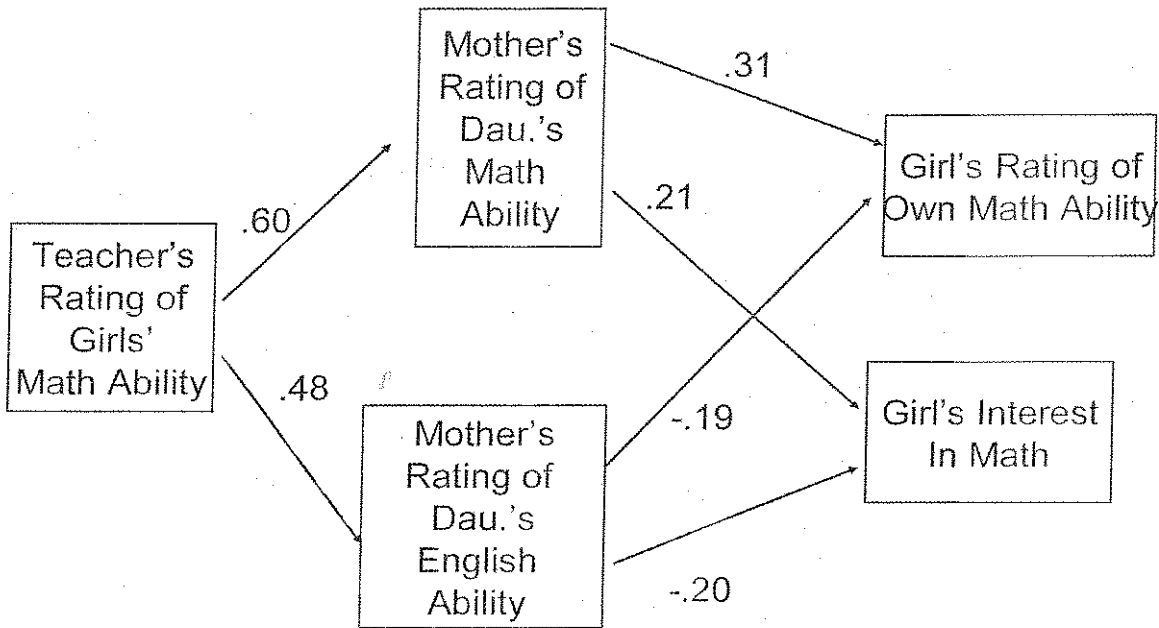


Figure 6. Impact of mothers' beliefs on daughters' math confidence and interest—MSALT

First, we need to think carefully about what aspects of parents' beliefs and behaviors are likely to be influenced by specific educational experiences. Then we need to think very carefully about how these specific parental beliefs and behaviors might actually influence children's educational attainments. For example, as noted earlier, parents' general education (number of years of standard schooling) is linked to parents' language competence, which should influence the ways in which parents communicate with their children. If so, then parental education might influence children's scores of standardized tests of vocabulary and linguistic competence through its impact on the parents' linguistic competence. But how much, and what types of, education are needed to get substantial enough gains in parents' communicative skills to change the nature of the ways in which parents' talk with their very young children? Is one year of additional attendance in standard schools enough or does one need to attend additional years of post secondary school to get sufficient gains? Would targeted educational interventions focused on teaching parents how to communicate better with their children be more effective?

Similarly, if we want to get more young women to consider taking courses in mathematics and physical science so that they will be more likely to consider careers

in these fields, what types of parent educational interventions are needed? Or what kinds of educational interventions are needed if we want more working class parents to socialize their sons to take academic achievement more seriously? Will additional years of standard schooling lead parents to engage in the kinds of behaviors likely to produce such effects in their children? Should we be surprised when the effects of such changes in parents' own education on their children's educational engagement and decisions are minimal? We think not. The challenge is to identify what types of educational interventions are needed to achieve each of our policy goals and then to create and reliably implement such programs. Only then can we adequately assess the extent to which specific types of parental education influence the educational attainments of their children.

### Notes on contributor

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