

Parental Influences on Adolescents' Academic Motivation

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Parsons, Kaczala, and Adler (1982) found that parents' math-related beliefs have a strong influence on junior high schoolers' perceptions of their own math abilities, perceptions of the value of math, future expectations, and course plans. Parsons *et al.* also documented the role parents play in perpetuating sex differences in junior high students' beliefs about mathematics. Building on this work, this paper further examines the role parents play as socializers of achievement attitudes in their children, including the shaping of sex differences in these beliefs.

Several questions were addressed to determine the extent to which parents interpret their children's experiences in light of gender-role or ability stereotypes. Questionnaire data was gathered from approximately 1500 parents of sixth graders. Parents' beliefs about their children's math and English achievements on 7-point Likert-type scales, as well as information regarding parents' future aspirations for their children and use of encouragement strategies, were measured.

Consistent subject matter by sex of child interactions were found (see Figures 1-4). Parents of girls rated their child's English abilities more positively than her math abilities, despite the fact that the girls had been getting equivalent grades in math and English; parents of girls also rated English skills as more important for their child than math skills. Parents of boys showed the opposite pattern for both beliefs. Contrary to what one might expect given the current concern over girls and math, sex of child effects were more marked for English than for math and subject matter effects were more marked for boys than for girls.

To assess the impact of parental beliefs on children's self perceptions, these beliefs were entered as lagged predictors of the children's subsequent self-perceptions in a path analysis. Mother's results are depicted in Figures 5 and 6. The mothers' beliefs and the teachers' rating of the children's math ability were assessed in the fall while the child's self-perceptions were gathered in the spring. Fathers' data yielded comparable patterns. These path analyses (Figures 5 and 6) document the general impact of mothers' beliefs on children's math and English self-perceptions. Consistent with the findings of Parsons *et al.* (1982), mothers' ratings of their child's math ability had a positive and significant effect on the children's subsequent math and English self-perceptions. In addition mothers' ratings seemed to mediate the impact of teachers' ratings on the children's confidence in their own math ability and interest in math.

The paths also document an interesting across subject area suppression effect. Parents' ratings of their child's English abilities had a negative impact on the children's math ability self-perceptions after holding the children's math performance constant. This finding suggests that girls' confidence in their math ability is being undermined by two parental beliefs: first, an overestimation of how difficult math is for daughters, and second, high ratings of their daughters' English abilities.

Two possible explanations for the parents' beliefs regarding their children's differential abilities can be found in attribution theory and as a result of sex role stereotyping. In considering the latter, the patterns of data presented here made it seem probable that parents might try to steer boys and girls into different academic courses and into different occupations: courses and occupations that capitalize on what the parents believe are their children's strongest intellectual abilities. In fact, when asked what courses the parents considered most important as preparation for their child's future career, parents of daughters were more likely to choose English. Parents of boys chose math as the most important course for their son's future. Other courses that showed expected sex differences include computer science and mechanics/shop where parents were more likely to endorse these for their sons than their daughters, and biological science where the opposite endorsement pattern was found.

In addition, parents were also asked about their more general aspirations for their child's future. Using one-way analysis of variance by sex of child, parents of sons were more likely than parents of daughters to say that their child should be financially self-sufficient and be able to support a family as an adult. Mothers' concerns about future job stability were not related to child sex, though fathers' concerns are greater for boys than for girls.

Attribution theory would suggest that causal attributions for success and failure influence the inferences one draws from one's experiences. If parents make differential interpretations for boys' and girls' math successes, then parents may develop different views of their sons' and daughters' math competence despite similar school performance information. As a first step toward testing this reasoning, we compared the causal attributions made by approximately 80 parents who were asked, in a home survey, about their child's math successes and failures. Parents rated the importance of each of the causal attributions listed in Tables 1 and 2 on a 7-point scale ranging from not at all important to very important. Parents, especially mothers, of boys rated talent as a relatively more important reason for their sons' math successes than parents of daughters; in contrast,

parents, especially mothers, of girls rated effort as a relatively more important reason for their daughters' math successes than parents of sons. These results suggest that parental attribution differences may underlie parents' sex-differentiated perceptions of their children's math abilities.

To test this hypothesis, we correlated parents' attributions with their perceptions of their children's math ability. Attribution theory suggests that attributing success to talent should have a positive effect on perceptions of one's child's math ability; conversely, attributing success to effort should have a negative impact on perceptions of one's child's math ability since effort and ability are typically considered to be compensating causes. As is clear in Table 3, the relationship between parents' causal attributions for their children's math successes and parents' rating of their child's effort and talent confirm these predictions. This pattern of relationship could explain why parents perceive their daughters as being less able in math than sons despite the fact that boys and girls get equivalent grades and test scores in both of the samples discussed here.

Finally, having examined the impact of parental beliefs on their children, and exploring possible explanations for these beliefs, we also wanted to assess the influence of parental practices on their children's attitudes and behaviors. To do this, two additional items were entered into a path analysis with parents' ratings of their child: whether the parent encouraged the child to take advanced math courses, and whether the parent used any strategies to motivate the child to do better in math. Similar results were found for both parents, and the mothers' findings are depicted in Figure 7 (for clarity of presentation, not all paths are included). Teachers' ability ratings appeared to have the greatest impact on the mothers' perceptions that influenced behavior.

A direct path illustrated that when the teacher rated the child as having low math ability, the mother was more likely to use strategies to motivate the child to do better. Also, when the child was rated by the teacher as having low math ability, the mother perceived her/him as trying harder, and the mother was more likely to try and motivate the child. High ability teacher ratings led to mothers' perceptions that math was very important, causing them to encourage their children to take advanced math, and leading in turn to these children perceiving math as being very useful. In addition, a high ability teacher rating was linked to the mother's feeling that she could influence her child's math performance. This led to the child perceiving math as being more useful, and to the likelihood that the mother would utilize motivation strategies. While these are expected results, it is the effect of

using strategies that is interesting. There is a negative relationship between using motivational techniques and the child's grade. This may suggest that mothers try and motivate children who have lower ability to begin with, thus, the negative relationship with grade. It may also be the case that these children, regardless of their ability level, react negatively to what might be perceived as interference from their parents.

It seems clear, then, from the data presented here that parents can have a strong influence on their adolescent's academic motivation. Parental beliefs and attitudes, as well as parental behavior, impact on their children's perceptions of their abilities, the value of courses, and their future plans.

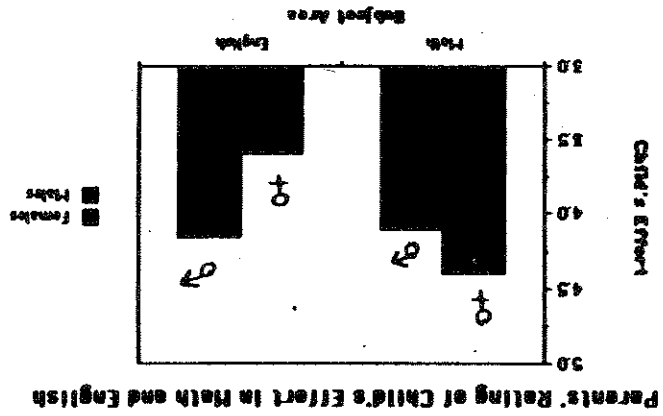


Figure 2

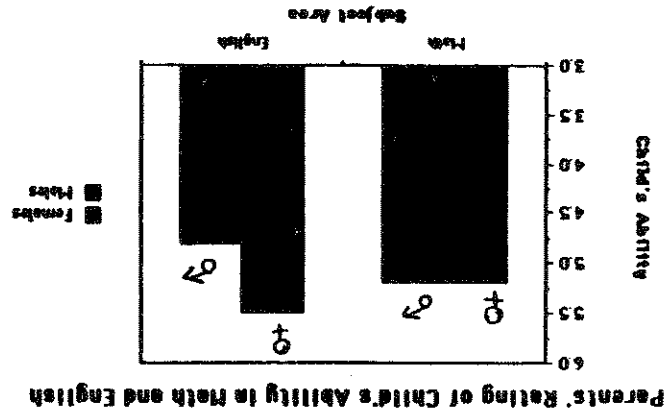


Figure 1

Figure 3

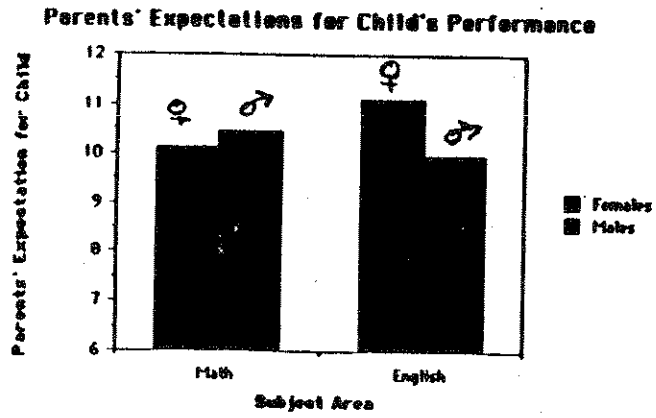
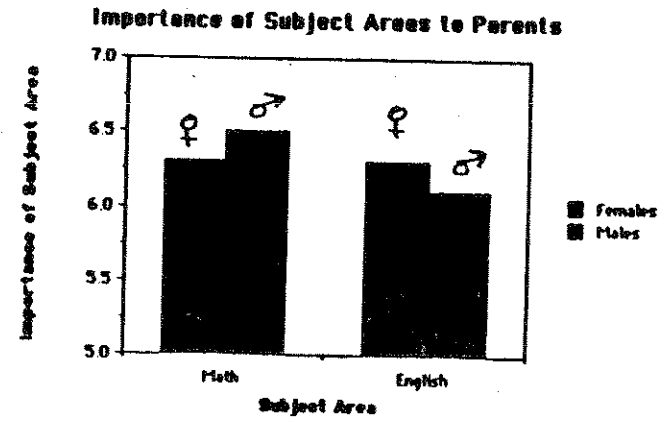
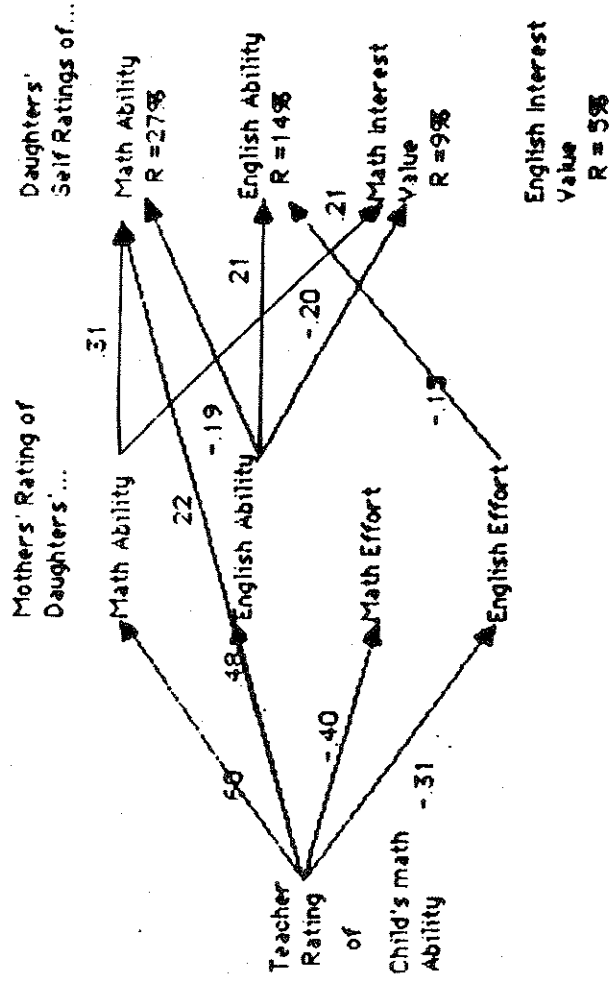


Figure 4





N=920

FIGURE 5. Mothers' Influence on Daughters' Self-Perceptions

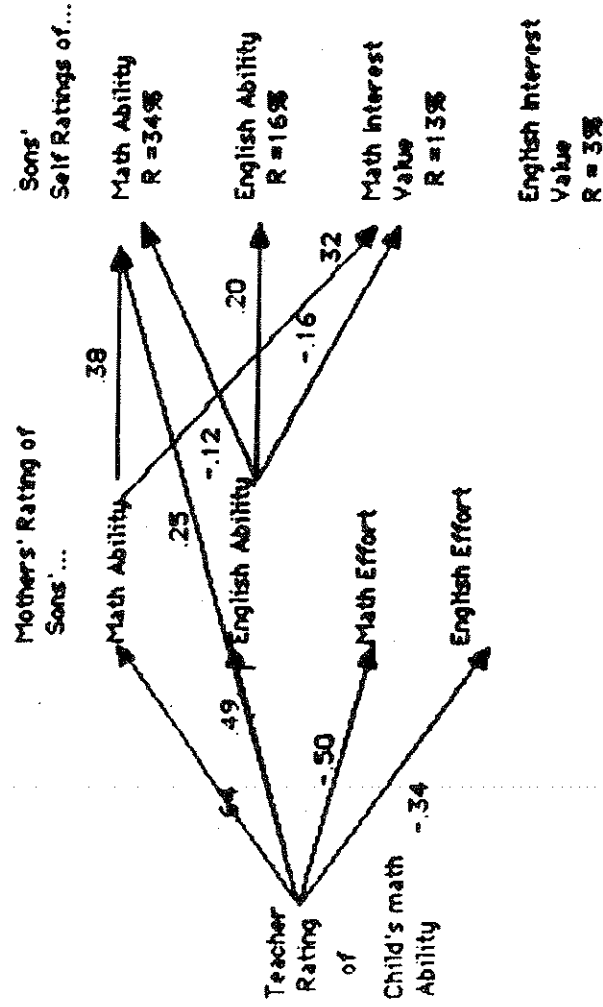


FIGURE 6. Mothers' Influence on Sons' Self-Perceptions

n=920

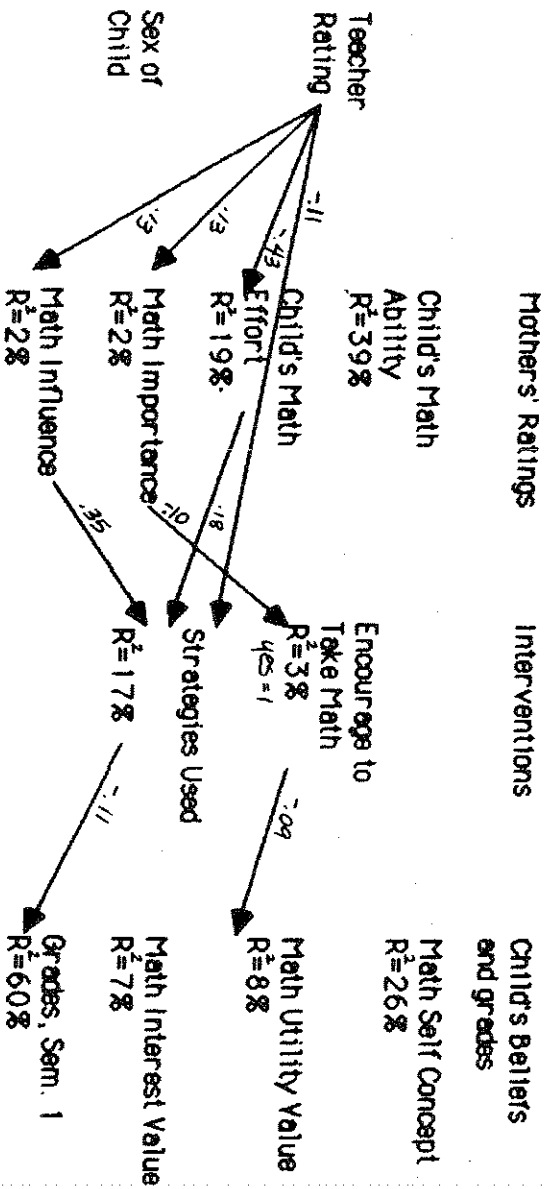


Figure 7. Mothers' Strategies

N=1170

Impact of child sex on parents' achievement-related perceptions and expectations for mathematics

Table 2

Variable	Mothers		Fathers	
	F-ratio	Boys	F-ratio	Boys
General school performance	5.08	5.50	5.08	7.71*
Current math performance	4.75	4.83	4.75	3.52†
Future math performance	5.33	5.33	5.33	5.44
Minimum standard for math	12.54	12.25	9.04	2.95†
Maximum standard for math	9.29	9.04	9.29	9.56
Relative minimum standard	1.96	1.96	1.96	11.93*
Required effort	3.75	4.83	3.75	4.38
Relative effort	1.79	2.38	11.25*	1.88
Talent	5.17	4.71	5.17	5.38
Relative talent	2.25	1.83	5.83*	5.38
Doing as well as possible	2.75	2.83	3.47	5.81*
Success attributions	3.86*	4.21	5.00	5.25
Talent	5.19	4.21	5.19	4.44
Enjoyment	5.29	4.63	5.29	4.81
Effort	3.74†	5.75	4.96	4.01
Task easiness	3.17	3.63	2.73	4.50*
Teacher help	5.42	4.88	5.06	4.44
Parent help	2.79	2.67	2.00	2.38
Good day	3.50	3.71	2.57	3.25
Failure attributions	2.54	3.09	1.60	3.30†
Lack of talent	3.04	3.57	3.40	2.56
Lack of enjoyment	5.08	5.43	5.33	5.25
Lack of effort	3.73	4.65	3.73	5.25
Task difficulty	3.47†	4.65	3.73	5.25
Task of teacher help	3.83	3.52	3.14	2.94
Lack of parent help	3.38	3.48	2.14	2.63
Bad day	3.39	3.30	2.86	3.13

Note: F-ratios are derived from 2-way ANOVAs with child math ability level and child sex as independent factors.

Items regarding maximum and minimum grade standards are coded from 1 (F) to 14 (A+). Items about relative minimum standard, relative effort, and relative talent are rated on 3-point scales. The items about performance matching potential is rated on a 4-point scale. All other items are rated on 7-point scales.

*F's range from 16 to 18
†F's range from 30 to 32
F's.05
F's.10
F's.01

Impact of child's math ability level on parents' achievement-related perceptions and expectations for mathematics

Table 1

Variable	Mothers			Fathers		
	High	Average	Low	High	Average	Low
General school performance	6.31	5.38	4.19	16.75*	5.94	3.93*
Current math performance	5.94	4.75	3.69	11.13*	5.94	4.88
Future math performance	6.25	5.31	4.44	8.15*	6.06	5.19
Minimum standard for math	13.13	12.63	11.44	12.50*	13.06	12.81
Maximum standard for math	9.63	9.19	8.69	9.75	9.00	2.95†
Relative minimum standard	2.06	1.94	1.88	1.81	1.81	2.95†
Required effort	3.81	4.50	4.56	3.75	4.88	4.93*
Relative effort	1.81	2.19	2.25	2.47†	1.94	2.13
Talent	5.88	4.81	4.13	12.40*	5.69	5.68*
Relative talent	2.38	1.88	1.88	3.73†	2.06	2.06
Doing as well as possible	3.31	2.69	2.38	5.95*	3.31	3.00
Success attributions	5.63	4.50	3.69	7.77*	5.63	3.83†
Enjoyment	5.56	4.88	4.44	4.88	4.44	4.44
Effort	4.63	5.75	5.69	3.18†	5.19	5.19
Task easiness	3.19	3.13	3.88	3.87	3.10†	3.10†
Teacher help	4.75	5.13	5.56	4.25	5.25	3.41†
Parent help	2.13	2.06	4.00	7.08*	1.75	2.63
Good day	2.94	3.75	4.13	2.67	3.19	3.19
Failure attributions	2.00	2.88	3.50	3.00†	1.53	2.38
Lack of talent	2.60	3.31	3.94	2.80	3.50	2.97†
Lack of effort	4.93	5.31	5.50	5.67	4.94	4.53†
Lack of enjoyment	2.80	3.13	4.53	4.31	3.67†	3.67†
Task difficulty	2.80	3.50	4.69	2.84†	2.79	3.25
Lack of teacher help	2.73	2.56	4.94	6.92*	2.28	2.50
Lack of parent help	3.20	3.06	3.80	3.07	2.94	2.94

Note: F-ratios are derived from 2-way ANOVAs with child math ability level and child sex as independent factors.

Items regarding maximum and minimum grade standards are coded from 1 (F) to 14 (A+). Items about relative minimum standard, relative effort, and relative talent are rated on 3-point scales. The items about performance matching potential is rated on a 4-point scale. All other items are rated on 7-point scales.

*F's range from 16 to 18
†F's range from 30 to 32
F's.10
F's.05
F's.01
F's.001
F's.0001

Table 3

Mothers' success attributions and math-related perceptions.

Math-related Perceptions	Success Attributions	
	Talent	Effort
Required effort	-.34*	.30*
Relative effort	-.54*	.52*
Talent	.67*	-.43*
Relative talent	.42*	-.50*

Note: Relative effort and relative talent items are rated on 3-point scales. All other items are rated on 7-point scales.

*p<.05

*p<.01

*p<.001

*p<.0001

