

## Parents and Gender-Role Socialization During the Middle Childhood and Adolescent Years

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in collaboration with

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A small but growing literature is emerging on the effects of parental beliefs and stereotypes. Several researchers (e.g., Eccles, Jacobs, & Harold, 1990; Goodnow & Collins, 1990;

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Jacobs, 1987; Yee & Eccles, 1988) have suggested that such beliefs are important because of their impact on the expectations and goals parents develop for their children, on parents' perceptions of their children's interests and talents, and on the ways in which parents interact with their children. Previous studies have documented the positive impact of parents' confidence in their children's academic abilities on children's own self-perceptions and actual performance (e.g., Alexander & Entwisle, 1988; Eccles-Parsons, Adler, & Kaczala, 1982). These studies clearly indicate that parents' expectations for their children's performance in both math and English have an impact on children's subsequent performance as well as on their view of their own math and language abilities. By late elementary school this effect is stronger than the effect of the children's own current performance levels in these subject areas. But what factors are shaping parents' expectations for their children's performance potential in various activities? And exactly how are parents' beliefs actually affecting their children's self-perceptions, interests, and performance?

This chapter outlines a theoretical framework developed by Eccles and her colleagues to investigate (a) the influences on parents' beliefs regarding their children's abilities across several activity domains, and (b) the processes through which these beliefs may affect both children's performance and involvement in various activities, and perceptions of their own competence in these activity domains (see Figure 4.1). This model is based on the assumption that parents' views of their children's competencies in various activities are influenced by several social factors in addition to the children's actual performance level in each activity domain. Primary among these social factors are the status characteristics of parents and children, and parents' interpretative belief systems. With regard to gender, parents' gender-role belief systems, in interaction with their child's sex, should affect the inferences parents draw from their children's behavior about their children's competence in various gender-role-stereotyped activity domains. These inferences, in turn, should affect parents' expectations for their children's future performance in these activities, and should affect the opportunities these parents give their children to develop skills in these activity domains. Over the past 15 years, Eccles and her colleagues have gathered extensive longitudinal information from children and their families in two different studies directly relevant to these hypotheses. This chapter summarizes the major relevant results from these two studies. The results presented represent three activity domains: math, reading/English, and sports.

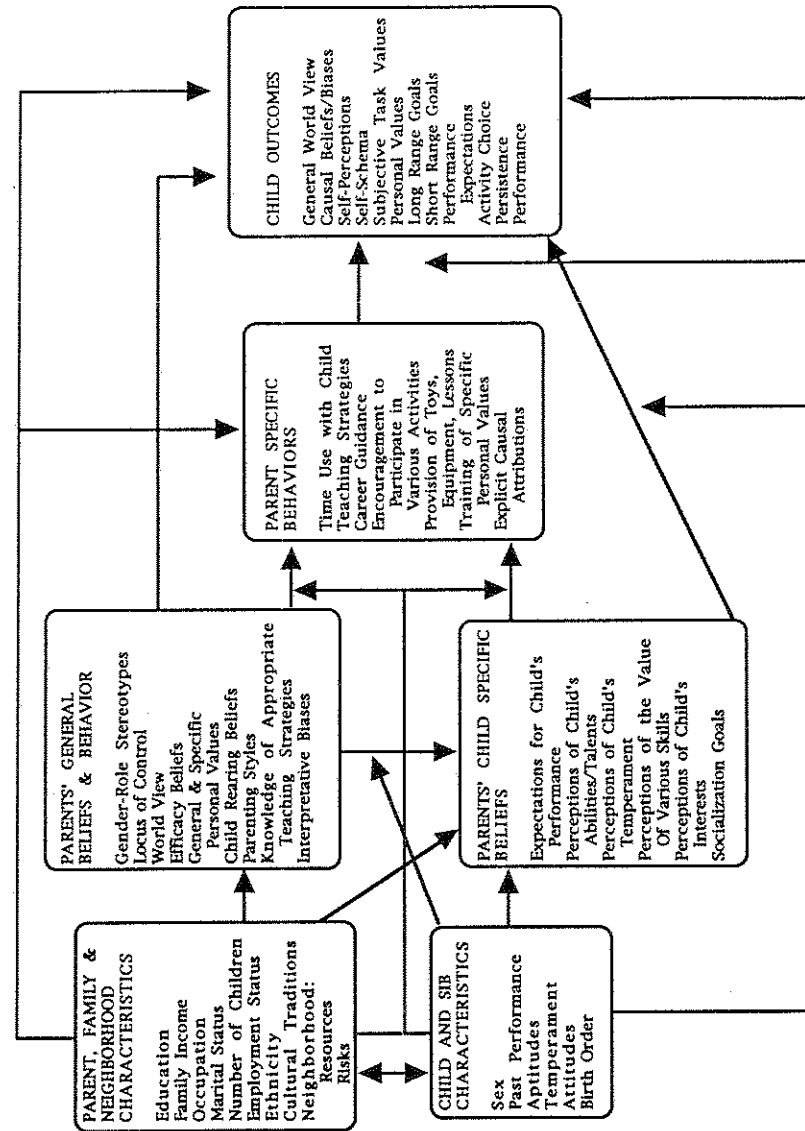


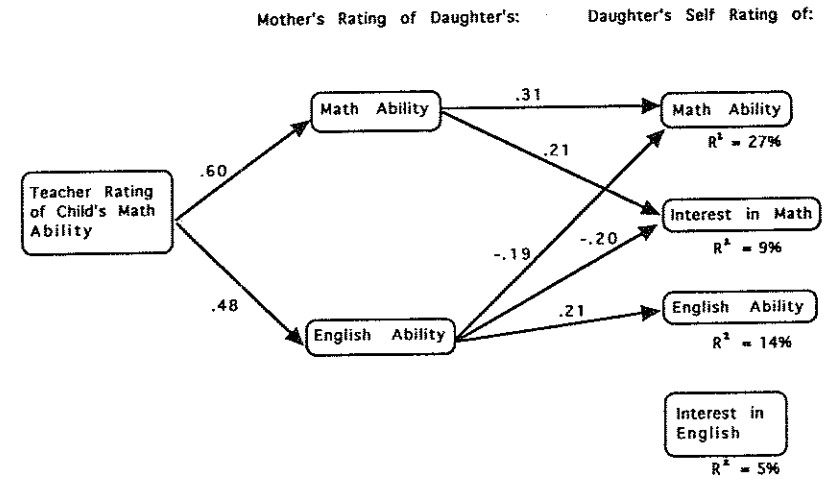
Figure 4.1. General Model of Family Socialization Influences

### Background Findings and New Data Sources

In Eccles's earlier work, she documented the fact that parents' perceptions of their children's math ability have a significant effect on the children's view of their own math ability—an effect that is independent of the impact of the child's actual performance on both the parents' and children's perceptions of the children's math ability (Eccles-Parsons, Adler, & Kaczala, 1982). We have replicated and extended this work in two new studies—henceforth referred to as Study 1 and Study 2.

*Study 1* (The Michigan Study of Adolescent Life Transitions—MSALT) is a 7-year longitudinal study of adolescent development in the context of the family and the school. In 1983 approximately 2,000 sixth grade, early adolescents were recruited into this study. About 1,000 of their families agreed to participate as well. These families have been participating in the study since that time. They represent a wide range of socioeconomic backgrounds. Parents were asked a series of questions regarding their perceptions of their child's competency and talent, their expectations for their child's future performance, and the importance they attach to competence in each of three domains (math, reading/English, and sports) using 7-point Likert-type response scales. Similar to Eccles's previous work, these items have good psychometric properties and factor into highly reliable scales (see Eccles-Parsons et al., 1982, and Eccles et al., 1991, for details). Due to limited space only the data from the mothers are summarized in this chapter. The fathers' data, however, yield a very similar story. In addition, only data collected in the fall and spring of the adolescents' sixth grade school year (1983-1984) are summarized herein.

The first question asked of these data was whether parents' beliefs had any influence on their children's self-perceptions, as was found by Eccles-Parsons et al. (1982). Some of the results relevant to this question are shown in Figure 4.2. Although these results are for daughters only, a similar pattern emerged for sons. As can be seen, mothers' ratings of their children's abilities in math and English are related to the teacher's ratings of the children's math ability (we had the teachers rate only the math ability due to limitations in the amount of time that teachers would spend filling out individual student ratings). But, more importantly, these results replicate Eccles's previous findings: Parents' view of their children's ability in both math and English have an



**Figure 4.2.** Mother's Influence on Daughter's Self-Perceptions

NOTE: All paths significant at  $p < .01$  or better. Path coefficients are standardized.

important impact on the children's own self-perceptions. Furthermore, we have now analyzed this relationship using cross-lagged, longitudinal structural equation modeling procedures. Such procedures allow one to compare the relative across-time impact of parents' beliefs on changes in children's self-perceptions versus the across-time impact of children's self-perceptions on changes in parents' beliefs. The results are consistent with the hypothesized causal direction. As one would expect, the parent and child perceptions are reciprocally related at synchronous time points. Over time, however, mother's perceptions of their children's ability are more strongly related to change in the children's self-perceptions than vice versa, even when an independent indicator of the children's competence is included as a control. The goodness of fit index for this cross-lagged structural model was .98, indicating a very good fit of the model to the data.

Figure 4.2 illustrates two other important findings. First, mothers' perceptions of their daughters' English ability are negatively related to their daughters' perceptions of their own math ability. Apparently, there are two consequences of having your mother think you are very good in English: (a) you also think you are good in English and (b) you think you are less good in mathematics than your math teacher thinks you are. These results suggest that having a mother think you are very good in

English undermines your estimates of your own math ability and interest. Second, Figure 4.2 illustrates the fact that mothers' perceptions of their children's math and English abilities also mediate the impact of performance (as rated by a teacher) on the children's interest in doing mathematics and English respectively. Thus, your mother's perception of your abilities affects your interest in particular subjects as well as your estimate of your own ability in these subjects.

Based on these findings and on work by Alexander and Entwisle (1988), we have been studying the influences on parents' perceptions of their children's abilities. Clearly parents' perceptions in the academic domains are related to objective information provided by the school about how well their child is doing. But we are interested in identifying the other more subjective influences on parents' perceptions of their children's abilities. Gender is a very important organizing construct for addressing this question. We know in the academic domain, for example, that sex differences in performance in mathematics are small, don't emerge with great regularity prior to secondary school, and are not evident at any age in school grades (Eccles, 1984, 1989; Hyde, Fennema, & Lamon, 1990). Nonetheless, our previous research has shown that parents believe that gender differences in math talent exist (Yee & Eccles, 1988). We have replicated this effect in Study 1. The results are summarized in the top half of Table 4.1. In addition, there are gender-role stereotypic differences in these parents' perceptions of their children's ability in English and sports (see Table 4.1).

We have also replicated the results with a much younger sample, henceforth referred to as *Study 2* (The Michigan Study of Middle Childhood). This is a 4-year longitudinal study of the development of elementary-school-aged children in the context of the family and the school. In 1986, approximately 600 children and their families were recruited into this study and have been studied annually since then. The children were in either kindergarten, first grade, or third grade. Similar scales and items as used in Study 1 were used in Study 2. The data summarized in this chapter were collected in the spring and summer of the first year of the study (1987). The gender-of-child effects are summarized in the bottom half of Table 4.1. Gender-role stereotypic differences emerged for both English and sports. Parents of daughters rated their child as more competent in English than parents of sons and vice versa for sports. However, there was no sex-of-child effect for the parents' perceptions of these younger children's mathematical competence. Apparently this effect depends on the age of the child: Evidence

Table 4.1  
Sex-of-Child Effects on Parents' Perceptions

VARIABLES	DOMAINS								
	Math			English/Reading			Sports		
	Girls' Mean	Boys' Mean	F	Girls' Mean	Boys' Mean	F	Girls' Mean	Boys' Mean	F
<i>Adolescent Transition Study</i> <sup>1</sup>									
Parent perception of current competence	5.45	5.40	<1.00	5.65	4.99	101.71***	4.84	5.22	25.75***
Parent perception of task difficulty	4.10	3.80	12.10***	3.73	4.24	39.20***	3.77	3.47	13.21***
Parent perception of natural talent	4.76	5.01	9.85*	5.03	4.51	46.76***	4.22	4.87	59.76***
Parent perception of future performance	5.36	5.34	<1.00	5.59	5.02	74.99***			
Parent perception of performance in career	5.17	5.42	11.17***	5.41	4.87	54.91***			
Parent perception of importance	6.38	6.50	9.21**	6.34	6.34	<1.00	3.80	4.10	12.90***
<i>Middle Childhood Study</i> <sup>2</sup>									
Parent perception of current competence	5.38	5.34	<1.00	5.67	5.27	10.28***	4.50	4.98	16.41***
Parent perception of task difficulty	2.08	2.02	<1.00	1.64	2.01	8.33**	2.57	2.15	11.77***
Parent perception of natural talent	5.01	5.15	1.45	5.41	5.11	7.00**	4.31	4.74	12.35***
Parent perception of future performance	5.99	5.91	<1.00	6.36	5.95	19.13***	5.02	5.52	19.91***
Parent perception of importance	6.26	6.46	8.12**	6.65	6.63	<1.00	4.20	4.72	20.00***

NOTES: 1. Mothers of 6th graders, approximate  $N = 900$ . 2. Parents of kindergartners, 1st, and 3rd graders, approximate  $N = 500$ .  
\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

from our previous studies and from Study 1 indicates that the gender-of-child effect in the math domain is found consistently among parents of children in Grades 6 or 7. These effects are even stronger by the time the children are in senior high school.

### Questions for Analysis

The first question is: Why do parents hold these gender-differentiated perceptions of their children's competencies? The second issue of concern is the impact of parents' gender-differentiated perceptions on their children's behaviors and activity preferences. We know, for example, that males are more likely to enroll in advanced math courses and to major in math-related fields whereas females are more likely to major in languages and literature in college (see Eccles, 1984, 1987, 1989). There are also quite large gender differences in children's and adolescents' participation in various sport activities, especially competitive team sports (Eccles & Harold, 1990). Thus, the second question is: Do these gender differences result from parents' gender-differentiated expectations for their daughters and sons?

### *Why Do Parents Hold These Gender-Differentiated Beliefs?*

Many explanations have been offered to account for the gender-role stereotyping of people's ratings of males' and females' competencies in various domains. The most critical issue for this chapter is the extent to which parents' stereotypical perceptions of their children are either accurate or are a reflection of processes linked to perceptual bias. This is a very difficult issue to settle unequivocally because it is impossible to reach consensus on what criteria should be used to assess the accuracy of gender-role stereotypes. There is agreement that parents' perceptions of their children's competence in academic subjects are highly correlated with teacher's ratings of the children's competence and with various indicators of the children's performance and achievement, such as school grades and standardized test scores (Alexander & Entwisle, 1988; Eccles-Parsons et al., 1982). But are their gender-role stereo-

typed perceptions an accurate reflection of true gender differences in either talent or competence? This question is difficult to answer because females and males are treated differently by many people from infancy on. Consequently, it is impossible to get a good indicator of natural talent that is uninfluenced by the processes associated with gender-role socialization.

For example, can it be concluded that parents' gender-role stereotyped perceptions of their 6-year-old children's talent in sports are "accurate" if male children perform better than the female children on a standardized test of athletic skill at this age? Not really, because it is quite likely that the female and male children have already had different opportunities to develop their athletic skills. The best that can be done at this point is to use the strategy proposed by Jussim (1989). This strategy involves assessing the extent to which the perceiver's judgments are related to the variables of interest (in this case the child's gender) even after controlling for the possible association between the perceiver's judgment and more objective indicators of the children's actual performance level. If they are, then one can begin to try to identify the mediating cognitive processes that account for the biased portion of these perceptions (i.e., the portion not due to actual differences in the performance levels of girls and boys).

Due to the extensive amount of research that has been done on gender differences in mathematics, the mathematics domain provides the most fully developed example of this logic at present. In both our own work (see Eccles-Parsons et al., 1982, and Eccles & Jacobs, 1986) and the work of Entwisle and her colleagues (see Alexander & Entwisle, 1988), it is clear that parents' perceptions of their children's competence in mathematics are influenced by the children's gender, independent of the children's actual performance in mathematics. As noted earlier, it is also clear that there are sex-of-child effects on parents' ratings of their children's competence in mathematics in populations that do not display any significant differences in the math performance of the female and male children on either grades or standardized test scores. Comparable patterns of results are now being reported in the domains of English and sports. For example, Jacobs and Eccles (1990) have found that the child's gender has an independent influence on parents' ratings of their sixth grade child's athletic talent after controlling for the teachers' ratings of the children's athletic talent.

Thus it appears that something other than overt performance is influencing the formation of parents' perceptions of their children's

competence in both math and sports. What might these factors be? The following three influences seem especially important to study: (a) there may be a true sex difference in the children's aptitude; (b) aptitude differences may be minor or nonexistent but parents may attribute their children's performance to different causes, leading them to different conclusions regarding their female versus their male children's "talent"; and (c) parents may generalize their category-based, gender-role stereotypes to their target-based judgments of their own children's competence. Each of these influences is discussed below.

### Real Gender Differences in Children's Aptitude

This explanation comes in two forms. First, in the domains of English and sports there are measurable gender differences in children's performance by the time they enter school. Are these differences due to real gender differences in aptitude? As noted earlier, this is difficult to assess because boys and girls are treated so differently from the time of birth. But even if there is a kernel of truth to the parents' perceptions in these domains, we present evidence later that the gender-of-child differences in parents' perceptions of their children in these domains continue to be significant even after independent indicators of the children's ability are included in the analyses as controls.

Second, in the domain of math the differences in performance are very small, do not emerge until adolescence, and depend on the particular performance measure used. Nonetheless, it is possible that there are "real" gender differences in aptitude and girls compensate by working harder than boys in order to do so well. How does one evaluate the validity of this suggestion? One way is to compare the performance of females and males on a specific task that is considered more closely related to aptitude, and less closely related to effort, than school grades. If gender differences appear on this task in a population in which there are no gender differences in math course grades, then one might conclude that there is a true aptitudinal difference that is being overcome by a gender difference in effort. Evidence reported by Benbow and Stanley (1980) is consistent with this interpretation. They found that gifted boys score higher than gifted girls on standardized test scores, and they concluded that the boys have more natural aptitude for math than the girls. Unfortunately, they did not measure either effort or prior

exposure to mathematics; thus they cannot rule out the possibility that the gender differences on these "aptitude" tests are due to gender differences in either experience or test taking strategies (see Eccles & Jacobs, 1986). In addition, although there is a reliable gender difference on standardized tests of math "aptitude" among the gifted, the evidence of such differences among more normally distributed samples is much less reliable, and the differences are much smaller whenever they are obtained (Eccles, 1984; Hyde et al., 1990).

Furthermore, several findings from the Eccles-Parsons et al. (1982) study cast doubt on the notion that girls compensate for lower levels of aptitude with hard work. First and foremost, there were no gender differences on either standardized tests of math aptitude or on school math grades. Second, there was not a significant gender difference in the amount of time that boys and girls reported spending on their math homework and school work. Finally, the teachers of the boys and girls in this sample did not report any gender differences in these children's talent for mathematics (Eccles-Parsons et al., 1983). Nonetheless, there was still a significant sex-of-child effect on the parents' ratings of how difficult math was for their child. This pattern of findings makes it unlikely that the gender-of-child effects found for the parents' confidence in their children's competence in this study were due primarily to either a "real" gender difference in math talent or to "real" gender differences in the amount of work the children had invested in mastering mathematics. Although these explanations may be true in some populations, the Eccles-Parsons et al. (1982) study suggests that a child's gender can affect parents' confidence in their child's math competence even when effort and ability are controlled. Similar processes could be going on in the English and sport domains. But, because comparable studies have not been done in the domains of English and sports, the validity of the effort-compensation argument cannot be assessed at this point.

### Gendered Attributional Patterns

According to attribution theory (Weiner, 1974), perceptions of another's competence depend on the causal attributions made for the person's performance. If parents of boys make different attributions for their children's math performance than do parents of girls, it would

follow that these parents should develop different perceptions of their children's math competence. In a test of this hypothesis, Yee and Eccles (1988) found that parents of boys rated natural talent as a more important reason for their child's math successes than did parents of girls (boys'  $\bar{X} = 5.00$ ; girls'  $\bar{X} = 5.75$ ). In contrast, parents of girls rated effort as a more important reason for their child's math success ( $\bar{X} = 5.75$ ) than did parents of boys ( $\bar{X} = 4.96$ ). In addition, to the extent that the parents attributed their child's success in mathematics to effort, they also rated their child as less talented in mathematics. Conversely, to the extent that they attributed their child's success in mathematics to talent, they also rated their child as more talented in mathematics. Thus it appears that the gender-role stereotyped attributions parents make for their children's performance may be important mediators of the parents' gender-role stereotyped perceptions of their children's math competence.

The data from Study 1 provide a direct test of this conclusion. These mothers were asked to imagine a time when their child did very well in mathematics, reading, and sports and then to rate, on 7-point Likert scales, the importance of the following six possible causes in determining this success experience: natural talent, effort, task ease, teacher help, parent help, and current skill level. Significant sex-of-child effects were obtained on attributions of success to natural talent in each domain, and the pattern of these differences reflects the gender-role stereotyping of the domains. That is, parents were more likely to attribute their child's success to natural talent in math and sports if their child was a boy ( $r = .13$  and  $r = .09$ , respectively,  $p < .05$  in each case) and were more likely to attribute their child's success to natural talent in English if their child was a girl ( $r = -.11$ ,  $p < .05$ ).

To evaluate the mediation hypothesis we tested a series of path models using regression analyses on those mothers' perceptions. This analysis yielded a significant sex-of-child effect in each domain (see Table 4.1). According to Baron and Kenny (1986), support for a mediational hypothesis consists of demonstrating that the relationship between variables A and C is reduced or eliminated when the hypothesized mediating variable B is entered into the regression equation. The results for math are illustrated in Figure 4.3. Consistent with the mediational hypothesis, the significant relationship of child's gender to the relevant parent outcome variables (i.e., parents' perceptions of the child's current competence in math, the difficulty of math for their child, their expectations regarding the child's likely future success in both math

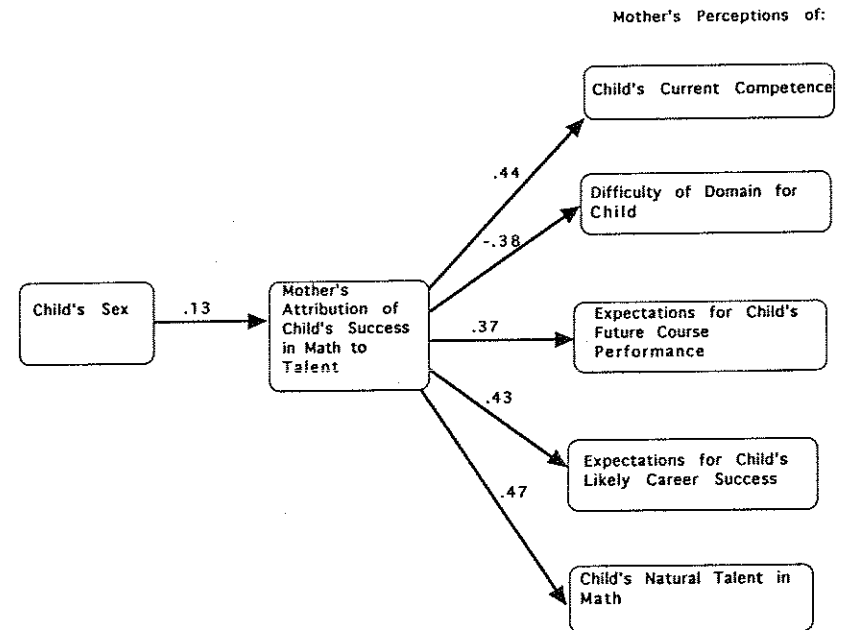


Figure 4.3. Mediating Role of Mother's Causal Attribution for Child's Success in Mathematics to Natural Talent

NOTE: All paths significant at  $p < .01$  or better. Path coefficients are standardized.

courses and a math-related career, and the child's natural math talent) disappear once the relationship between the child's gender and the parents' attributions for the child's math success to talent is controlled.

Comparable results for the talent attribution emerged in both the English and sport domains (Eccles et al., 1991). In each case, as predicted, children's gender influenced their mothers' causal attributions, which, in turn, influenced the mothers' perceptions of, and expectations for, their children. But in each of these domains, the direct effect of child's gender on parents' perceptions was still significant. The size of this effect, however, was significantly reduced by including the parents' causal attribution in the path analysis, and thus the results are consistent with our mediational hypothesis. More complete details of these and other analyses summarized in this chapter have been reported elsewhere and can be obtained from the first author.

These data provide good preliminary support for the hypothesized biasing effect of causal attributions on parents' perceptions of their children's competencies. It is important to note, however, that these beliefs are all highly interrelated and the data are correlational in nature. The consistency of the findings across domains indicates that the relationships are reliable, but the actual causal direction of the relationships is still at issue. We are just beginning the longitudinal analyses necessary to pin down the predominant causal directions of influence among these various beliefs. Preliminary analyses support the causal direction illustrated in Figure 4.3. That is, causal attributions at Time 1 do appear to affect parents' perceptions of their children's ability at Time 2 (1 year later) even after controlling for the parents' Time-1 perceptions of their children's abilities.

#### **Biasing Influence of Gender-Role-Stereotypic Beliefs**

Both Eccles and Jacobs (see Eccles, 1984; Eccles et al., 1990; Jacobs & Eccles, 1985) have hypothesized that parents' gender-role stereotypes regarding the extent to which males or females, in general, are likely to be more talented or more interested in a particular domain will affect their perceptions of their own child's ability in this domain, leading to a distortion in the parents' perceptions of their children's ability in the gender-role stereotyped direction. In other words, the impact of the child's gender on parents' perceptions of their child's ability in any particular domain will depend on the parents' gender-role stereotypes regarding ability in that domain. Furthermore, this effect should be significant even after entering an independent indicator of the children's actual level of competence in the domain as a control.

Before presenting evidence to support this hypotheses, it is important to put it in the broader context of research on the link between category-based beliefs and target-based beliefs. Although there has been very little study of this link in families, or as a developmental phenomenon, there has been quite a bit of relevant research in social psychology. Two basic views have emerged. The work in the field of stereotyping and expectancy effects has repeatedly documented the impact of the perceiver's category-based beliefs (stereotypes) on the

perceiver's perceptions of specific members of the social category (e.g., Darley & Gross, 1983). In contrast, work in the area of social judgment has pointed to the power of individuating information to override the impact of stereotypical beliefs on perceptions of specific individuals (e.g., Locksley, Hepburn, & Ortiz, 1982). The latter researchers suggest that when specific individuating information about a particular person is available, such as past or present behavior, stereotypes will exert little, if any, effect on the judgments made about the person. Numerous studies have attempted to resolve the discrepancies in these two perspectives and the results are equivocal (e.g., Higgins & Bargh, 1987; Hilton & Fein, 1989). As Hilton and Fein (1989) conclude:

Social judgment is not uniformly dominated by either categorical information or by individuating information. Perceivers do not always ignore individuating information nor do they always suspend their stereotypes when individuating information is available. Instead, the results indicate that social judgment involves a dynamic interplay between the category-based expectations of the perceiver and the information that is available from the target. (p. 208)

What do these conclusions tell us about the probability that parents' gender-role stereotypes will affect their perceptions of their own child's ability? This is a complicated question. On the one hand, parents have ample opportunity to obtain a great deal of individuating information about their child's ability in specific subject areas. And evidence suggests that when individuating information about an individual is both readily available and clearly diagnostic about the characteristic being evaluated, perceivers are likely to attend primarily to this individuating information and ignore their stereotypic beliefs (Hilton & Fein, 1989). This would suggest that parents' gender-role stereotypes will have little or no impact on their perceptions of their children's abilities.

On the other hand, the strongest support for expectancy effects typically occurs in naturalistic settings with naturally occurring beliefs and perceptions (Jussim, 1989). In addition, categorical beliefs or stereotypes may have their largest effect "when categorical information can disambiguate the diagnostic meaning of individuating information" (Hilton & Fein, 1989, p. 210). Families are clearly naturalistic settings, and both parents' gender-role beliefs and their perceptions of their children's abilities are naturally occurring social cognitions. In addition, work in attribution theory (e.g., Weiner, 1974) documents the fact



that achievement-related outcomes are ambiguous as to their cause. And we have already documented the fact that parents' causal attributions for their children's competencies in gender-role-stereotyped domains are affected by their children's gender. This suggests that parents' category-based, gender-role stereotypes might affect their perceptions of their own child's competencies.

We know of no studies that have tested this hypothesis. As reported earlier, parents do hold gender-differentiated views of their children's academic and nonacademic abilities at a very early age and these beliefs are more gender-differentiated than are objective indicators of the children's actual performance in these domains (e.g., Alexander & Entwisle, 1988; Eccles et al., 1991; Eccles & Harold, 1990; Jacobs & Eccles, 1985). These studies, however, did not look at the actual relationship between parents' gender-role stereotypes and their perceptions of their own child's ability. The critical issue is not whether parents, on the average, give gender-differentiated estimates of their children's abilities. Instead, the issue is whether or not parents who endorse the culturally dominant gender-role stereotype regarding the distribution of talent and interest between males and females distort their perception of their own child's abilities in a direction that is consistent with the gender-role stereotype to a greater extent than parents who do not endorse the stereotype. Evidence from both Studies 1 and 2 supports this hypothesis.

In Study 2, mothers were asked at Time 1 who they thought was naturally better at mathematics, reading, and sports—boys, girls, or neither. They were also asked, in a separate questionnaire, to rate on a 7-point Likert scale how much natural talent their child had in each of these three domains, how difficult (or easy) each of these domains was for their child, and how important they thought it was to their child to be good in each domain. In each domain the significance of the interaction of the gender of their child with the parents' category-based gender-role stereotypes in predicting the parents' ratings of their own child's competency was tested. All nine interactions were significant (Eccles et al., 1991; Eccles, Jacobs et al., 1989), indicating that the parents who endorsed the cultural gender-role stereotype regarding which gender is "naturally" better in each domain were more likely to rate sons and daughters differently than parents who did not endorse the cultural stereotype. Furthermore, in each domain the gender-of-child effect for the parents who endorsed the cultural stereotype was in the stereotypic direction; that is, if they believed that boys in general

are more talented in the domain, then the parents of sons rated their child's ability higher than the parents of daughters.

The results for mathematics were particularly interesting. As shown in Table 4.1, the gender of one's child was not significantly related as a main effect to the mothers' perceptions of either their child's math talent or the difficulty of math for their child. But the gender of their child did affect their ratings of the child's competence in math when looked at in interaction with their category-based gender-role stereotype of mathematical competence ( $p < .01$ ). As predicted, mothers who believed that males were naturally more talented in mathematics showed a significant sex-of-child effect in ratings of their own child's math ability and the direction of this effect was consistent with their category-based stereotype. In contrast, the effect was not significant for mothers who believed that neither males nor females were naturally more talented at mathematics.

Rather similar gender-role stereotypic effects characterized the mothers' reports on their children in sports and English. For example, in comparison to parents who did not endorse this cultural stereotype, parents who endorsed the stereotype that males are generally better at sports than females were more likely to rate sons' talent higher than daughters' talent. Similarly, parents who endorsed the cultural stereotype that females are naturally better at language arts than males were more likely to rate daughters' reading talent higher than sons' than parents who did not endorse this stereotype. Although it is possible that these effects are due to the impact of target-based information on the mothers' category-based gender-role stereotypes, the extreme stability of gender-role stereotypes across time in a variety of populations makes this an unlikely alternative interpretation (Rothbart, 1989).

Jacobs and Eccles have explored these effects in the domains of math and sports more fully using data from Study 1 (Jacobs, 1987; Jacobs & Eccles, 1990). Using path-analytic techniques, they tested the impact of the interaction of the gender of one's child and one's category-based gender-role stereotypes on the mother's perceptions of their child's ability, controlling for the effect of an independent indicator of the child's actual ability level (the teacher's rating of the child's ability). The interaction term was created so that a positive coefficient indicated that the mother was distorting her impression of her child in the gender-role appropriate direction. That is, if she was talking about a boy child in a male activity domain like sports or mathematics, her perception of her child's ability was higher than what would have been

predicted using only the teacher's rating; in contrast, if she was talking about a girl child, her perception was lower than what would have been predicted using only the teacher's rating.

The results for the sport domain are illustrated in Figure 4.4. Once again the findings were consistent with our hypothesis. The interaction term was significant and its coefficient was positive. Thus, to the extent that these mothers endorsed the traditional gender-role stereotypic belief that males are naturally better in sports than are girls, they distorted their perception of their child's competence in these domains in the gender-role-stereotypic direction. In addition, consistent with the findings of Eccles-Parsons et al. (1982), the mothers' perceptions of their children's competence in each domain had a significant impact on the children's own self-perceptions even after the children's actual performance in each domain was controlled. Similar findings characterized the math and reading domains (Eccles et al., 1991; Jacobs & Eccles, 1990).

These findings provide strong evidence of the processes associated with expectancy effects. But they do not indicate how well the data fit the model we are proposing. To evaluate this fit, we tested a simplified model using LISREL for each of these two domains. Because the interaction of child gender and mother's gender-role stereotype was significant, we tested a two-group hierarchical LISREL model. The specified model assumed that a mother's stereotype influenced her perception of her child's ability even after an independent indicator of the child's ability was entered as a control. It also tested whether the child's ability, as indicated by a teacher's rating of the child, influenced the mother's stereotype. The fit of the models to the data in both the math (goodness of fit index = .99) and sport domains (goodness of fit index = .97) was very good as indicated by the Joreskog's goodness-of-fit index.

In the math domain there was no significant relationship between the teacher's rating of the child's ability and the mother's stereotype for math. In contrast, there was a strong relationship (girls  $\beta = .61$ ; boys  $\beta = .70$ ) between the teacher's rating of the child's ability and the mother's rating of the child's ability. But most importantly for the present discussion, there was a significant positive relationship between the mother's stereotype and her perception of her son's math ability ( $\beta = .09$ ) and a marginally significant negative relationship between the mother's stereotype and her perception of her daughter's math ability ( $\beta = -.07$ ). Thus, as predicted, the more a mother stereotyped math as

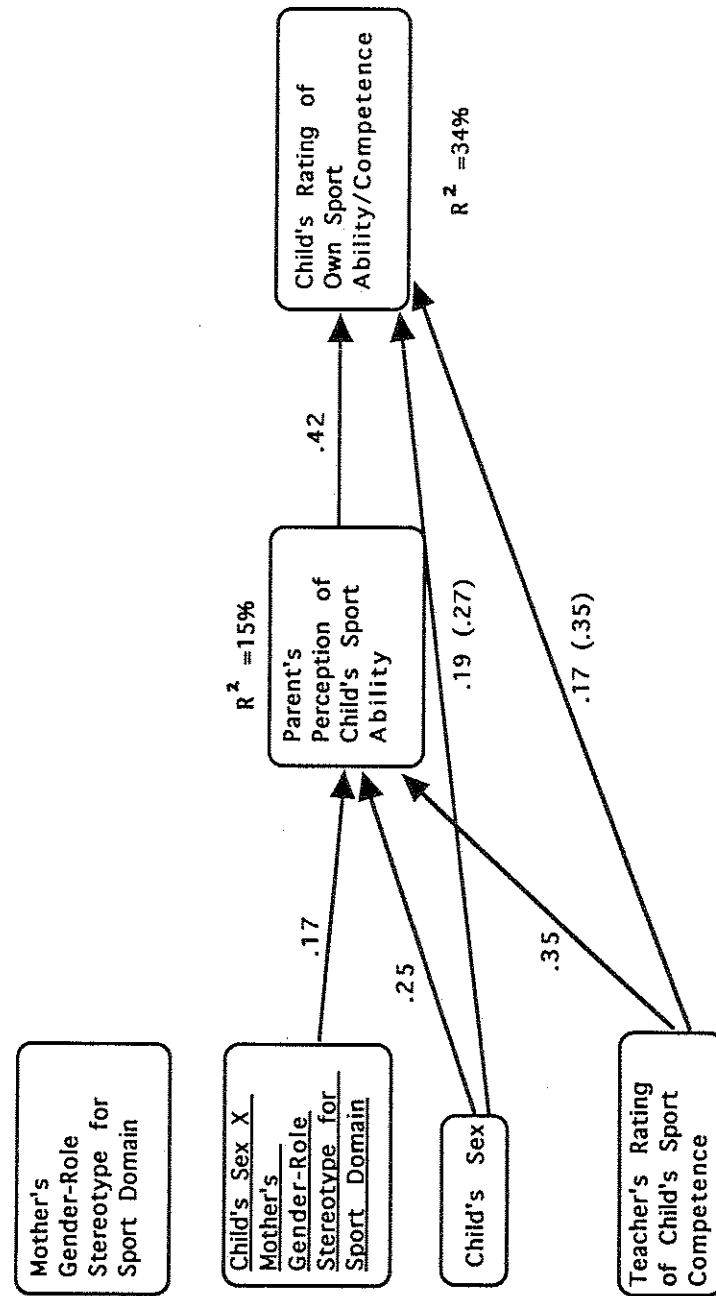


Figure 4.4. Moderating Effect of Mother's Gender-Role Stereotype for the Sport Domain on the Impact of Child's Sex and Mother's Perceptions of Child's Ability in Sports

NOTE: All paths significant at  $p < .01$  or better. Path coefficients are standardized. Zero-order correlations in parentheses.

a male domain, the more she overestimated her son's math ability and underestimated her daughter's math ability relative to the level of ability indicated by the teacher's rating.

Similar results emerged in the sport domain. But in this domain, the daughter's sport ability, as rated by the teacher, was related to the mother's gender-role stereotypes ( $\beta = -.20$ ): Mothers with more athletic daughters were less likely to stereotype sports as a male domain than other mothers. In addition, however, to the extent that the mothers stereotyped sport as a male domain, they also rated their daughters' sport ability lower than one would predict given the teacher's estimate of the girl's ability ( $\beta = -.23$ ). This latter effect did not hold for sons. Apparently, mothers' endorsement of the cultural stereotype that males are naturally better at sports than girls only had a debilitating effect on their perceptions of daughters' sports ability. The LISREL analyses suggest that there was no enhancement effect for boys of mothers who hold the cultural stereotype in the sports domain.

These results provide support for the hypothesis that category-based beliefs do bias parents' perceptions of their own children's competencies. Given the power of individuating information and the large amount of such information that parents are exposed to as their children grow up, we did not expect the biasing effects to be large, and they are not. Nevertheless, although the effects are not large, they are both reliable and consistent across two activity domains, and they do appear to influence the development of the children's own self-perceptions in a manner consistent with the self-fulfilling prophecy hypothesis.

### *Behavioral Consequences of Parents' Beliefs*

We have argued thus far that gender differentiation in parents' perceptions of their children's abilities in various domains results, in part, from processes associated with expectancy effects. In particular, we have presented evidence that both parents' causal attributions for their children's successes, and parents' category-based gender-role stereotypes, lead to perceptual bias in their impressions of their children's competencies in gender-role-stereotyped activity domains. Although parents' perceptions of their children's competencies in math, English, and sports are strongly related to independent indicators of

their children's actual competence in these domains, the evidence clearly indicates that parents' perceptions of their children's competencies in math, English, and sports are also influenced by their children's gender and by the parents' gender-role-stereotypic beliefs about which gender is naturally more talented and interested in these domains. Furthermore, the evidence is consistent with the conclusion that these influences are independent of any actual differences that might exist in the children's competencies. Thus our findings suggest that perceptual bias is operating in the formation of parents' impressions of their children's competencies in gender-role-stereotyped activity domains.

Proponents of a self-fulfilling prophecy view of the socialization of gender differences in children's competencies would argue that differences in parents' perceptions of their children's competencies set in motion a train of events that ultimately create the very differences that the parents originally believed to exist. We have already pointed to one mechanism through which such a process might be mediated—namely, the children's self-perceptions. We have argued elsewhere that children's self- and task perceptions influence the choices children make about their involvement in various activities (see Eccles & Harold, 1990; Eccles-Parsons et al., 1983). In particular, we have documented that children spend more time engaged in activities that they think they are good at and that they value and enjoy, and that gender differences in activity choice are mediated by gender differences in self-perceptions and subjective task value. For example, in math, we have demonstrated that decisions regarding course enrollment in high school are influenced by adolescents' confidence in their math ability and by the value they attach to math (Eccles-Parsons et al., 1983). Similarly, in sports, we have demonstrated that the gender difference in the amount of free time sixth graders spend engaged in athletic activities is mediated by gender differences in both the adolescents' confidence in their athletic ability and the value they attach to athletic activities (Eccles & Harold, 1990).

Thus far in this chapter we have summarized evidence that gender differences in adolescents' self-perceptions are mediated, in part, by the gender-role-stereotyped bias in their parents' perceptions of their competencies in various activities. Together these results support the conclusion that processes associated with the self-fulfilling prophecy phenomenon contribute to the socialization of gender differences in the domains of mathematics and sports. But exactly how do parents' gender-role-stereotyped perceptions of their children's competencies

influence the children's self- and task perceptions? We are just beginning to study this issue. Guided by the theoretical perspective summarized in Figure 4.1 we are testing the following sets of predictions:

1. Parents' gender-role stereotypes, in interaction with their child's gender, affect the following parent beliefs and behaviors: (a) parents' causal attributions for the child's performance, (b) the parents' emotional reaction to their child's performance in various activities, (c) the importance parents attach to their child acquiring various skills, (d) the advice parents provide their child regarding involvement in various skills, and (e) the activities and toys parents provide for their child.
2. In turn, these beliefs and behaviors influence the development of the following child outcomes across the various gender-role-stereotyped activity domains: (a) children's confidence in their ability, (b) children's interest in mastering various skills, (c) children's affective reaction to participating in various activities—and, as a consequence of these self- and task perceptions, (d) the amount of time and the type of effort that children end up devoting to mastering and demonstrating various skills.

Empirical work assessing these various causal links is now under way. Preliminary evidence looks very promising. For example, consider the link between the parents' perceptions of their children and the types of experiences they provide for their children. We tested whether parents provide different types of experiences for girls and boys in the sport domain. They clearly do: Parents reported watching sports more often with sons, playing sports more often with sons, enrolling sons more often in sports programs, and encouraging sports participation more for sons than for daughters (Eccles et al., 1991). These differences were already evident by the time the children were in kindergarten. But more importantly for the argument presented in this chapter, we used path analysis to determine whether the sex-of-child effects on the types of activities parents provide and encourage were mediated by the parents' perceptions of their children's ability and interests in each domain. Consistent with the mediational hypothesis, the sex-of-child effect on the types of experiences parents provide for their children became nonsignificant when the sex-of-child effect on parents' perceptions of their children's sport ability and interest was entered into the path analysis (Eccles et al., 1991). These results suggest the following conclusions: (a) parents form an impression of their children's ability and interest in sports at a very young age, (b) this impression depends on

the gender of their child to a greater extent than justified by objective evidence of gender differences in sport performance, and (c) this impression influences the types of experiences the parents provide for their children in the sport domain. If the processes associated with expectancy effects operate, this differential provision of experience should result over time in a pattern of gender differences in actual skills that is consistent with the cultural stereotypes.

### Conclusion

In conclusion, we have presented evidence of the influence of social factors on parents' perceptions of their children's abilities in various activity domains. We have focused on the child's gender as one potentially critical social factor and have presented data showing how a child's gender might influence parents' perceptions of their child's ability independent of the child's actual performance in the domain. We have also presented evidence that parents' beliefs do have an impact on children's developing self-concepts, and on the experiences parents provide for their children in various activity domains. These relationships are all likely to contribute to gender-role socialization. They also suggest possible routes to intervention. Because parents' beliefs appear to play a pivotal role in this system, interventions should be directed toward changing parents' beliefs and perceptions. We know in the math domain, for example, that teachers can convince parents that their daughters are talented in mathematics and can then enlist parents' help in encouraging young women to consider advanced math courses and occupations in math-related fields. Similar intervention efforts could be designed in other activity domains.

### References

- Alexander, K. L., & Entwisle, D. R. (1988). Achievement in the first two years of school: Patterns and processes. *Monograph of the Society of Research in Child Development*, 53(2).
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.

- Benbow, C. P., & Stanley, J. C. (1980). Sex differences in mathematical ability: Fact or artifact. *Science*, *210*, 1262-1264.
- Darley, J. M., & Gross, P. H. (1983). A hypothesis-confirming bias in labeling effects. *Journal of Personality and Social Psychology*, *44*, 20-33.
- Eccles, J. S. (1984). Sex differences in math participation. In M. L. Maehr & M. W. Steinkamp (Eds.), *Women in science* (pp. 93-138). Greenwich, CT: JAI Press.
- Eccles, J. S. (1987). Gender roles and women's achievement-related decisions. *Psychology of Women Quarterly*, *11*, 135-172.
- Eccles, J. S. (1989). Bringing young women to math and science. In M. Crawford & M. Gentry (Eds.), *Gender and thought: Psychological perspectives* (pp. 36-58). New York: Springer.
- Eccles, J. S., & Harold, R. (1990). Gender differences in participation in sports. *Journal of Applied Sport Psychology*, *3*, 7-35.
- Eccles, J. S., & Jacobs, J. E. (1986). Social forces shape math attitudes and performance. *Signs: Journal of Women in Culture and Society*, *11*, 367-380.
- Eccles, J. S., Jacobs, J. E., & Harold, R. (1990). Gender role stereotypes, expectancy effects, and parents' socialization of gender differences. *Journal of Social Issues*, *46*, 183-201.
- Eccles, J. S., Jacobs, J., Harold, R., Yoon, K. S., Arbreton, A., & Freedman-Doan, C. (1991, August). *Expectancy effects are alive and well on the home front: Influences on, and consequences of, parents' beliefs regarding their daughters' and sons' abilities and interests*. Invited address at the Annual Meeting of the American Psychological Association, San Francisco.
- Eccles, J. S., Jacobs, J. E., Harold-Goldsmith, R., Jayaratne, T., & Yee, D. (1989, April). *The relations between parents' category-based and target-based beliefs: Gender roles and biological influences*. Symposium paper presented at the Annual Meeting of the Society for Research on Child Development, Kansas City, MO.
- Eccles-Parsons, J., Adler, T., Futterman, R., Goff, S., Kaczala, C., Meece, J., & Midgley, C. (1983). Expectations, values and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75-146). New York: Freeman.
- Eccles-Parsons, J., Adler, T., & Kaczala, C. (1982). Socialization of achievement attitudes and beliefs: Parental influences. *Child Development*, *53*, 310-321.
- Goodnow, J. J., & Collins, W. A. (1990). *Development according to parents: The nature, sources, and consequences of parents' ideas*. Hillsdale, NJ: Lawrence Erlbaum.
- Higgins, E. T., & Bargh, J. A. (1987). Social cognition and social perception. *Annual Review of Psychology*, *38*, 369-425.
- Hilton, J. L., & Fein, S. (1989). The role of typical diagnosticity in stereotype-based judgments. *Journal of Personality and Social Psychology*, *57*, 201-211.
- Hyde, J. S., Fennema, E., & Lamon, S. J. (1990). Gender differences in mathematics performance: A meta-analysis. *Psychological Bulletin*, *107*, 139-155.
- Jacobs, J. E. (1987). *Parents' gender role stereotypes and perceptions of their child's ability: Influences on the child*. Unpublished doctoral dissertation, University of Michigan, Ann Arbor.
- Jacobs, J. E., & Eccles, J. S. (1985). Gender differences in math ability: The impact of media reports on parents. *Educational Researcher*, *14*, 20-25.
- Jacobs, J. E., & Eccles, J. S. (1990). *The influence of parent stereotypes on parent and child ability beliefs in three domains*. Unpublished manuscript, Institute for Social Research, University of Michigan, Ann Arbor.
- Jussim, L. (1989). Teacher expectations: Self-fulfilling prophecies, perceptual biases, and accuracy. *Journal of Personality and Social Psychology*, *57*, 469-480.
- Locksley, A., Hepburn, C., & Ortiz, V. (1982). Social stereotypes and judgments of individuals: An instance of the base-rate fallacy. *Journal of Experimental Social Psychology*, *18*, 23-42.
- Rothbart, M. (1989). *The stability of gender and ethnic stereotypes*. Colloquium talk given during fall semester at the University of Colorado, Boulder.
- Weiner, B. (1974). *Achievement motivation and attribution theory*. Morristown, NJ: General Learning Press.
- Yee, D., & Eccles, J. S. (1988). Parent perceptions and attributions for children's math achievement. *Sex Roles*, *19*, 317-333.