

# The Developmental Social Psychology of Gender

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**Gender-Role Socialization in the Family:  
A Longitudinal Approach**

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Several researchers (e.g., Eccles, Jacobs, & Harold, 1990; Goodnow & Collins, 1990; Jacobs, 1987; Yee & Eccles, 1988) have suggested that parents' beliefs and stereotypes influence the expectations and goals parents develop for their children, parents' perceptions of their children's interests and talents, and the ways in which parents interact with their children. To the extent that these beliefs are influenced by gender-role-related stereotypes, they are likely to be a major influence on gender-role socialization. We explore this possibility in this chapter.

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 math and English have an impact on both children's subsequent performance in these subjects and their view of their own math and language arts abilities. By late elementary school this effect is stronger than the children's own current

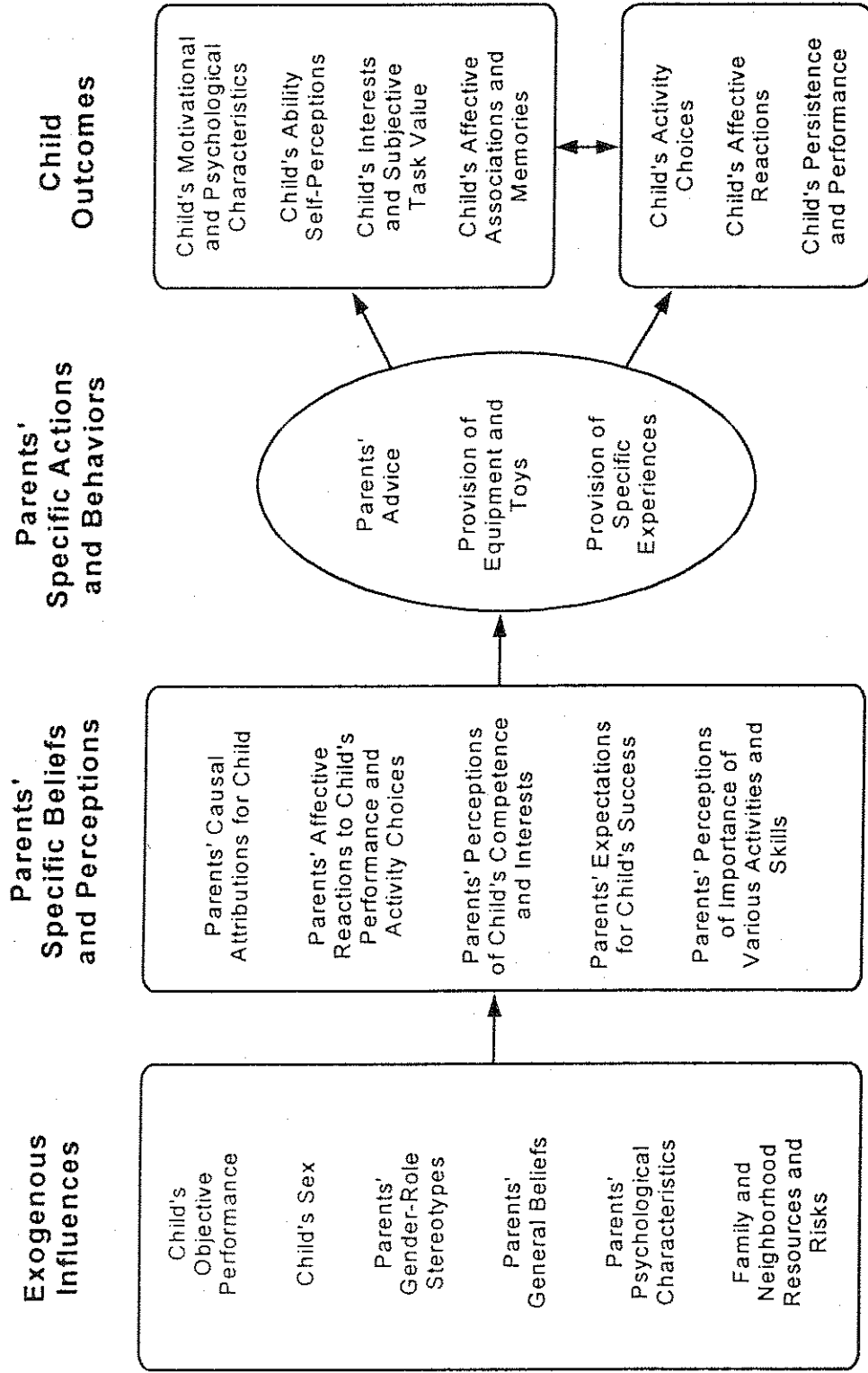


FIG. 11.1 Conceptual model of parental influences on children.

performance levels in these subject areas. But what factors are shaping parents' expectations for their children's performance potential in various activities? And how exactly are parents' beliefs actually affecting their children's self-perceptions, interests, and performance?

Using a theoretical framework first developed by Eccles and her colleagues (Eccles, 1993; Eccles et al., 1990; illustrated in Fig. 11.1), we discuss how gender is linked to parents' beliefs regarding their children's abilities, and then how these beliefs may affect both children's performance and involvement in various activities, and their perceptions of their own competence in these various activity domains. In this model, we assume that parents' views of their children's competencies across various activities are influenced by several factors. Primary among the social factors are both ascribed and achieved status characteristics of parents and children, and parents' interpretative belief systems. With regard to this chapter for example, we predict that parents' gender-role belief systems, in interaction with their child's gender, affect the inferences parents draw from their children's performance about their children's competence in various genderrole-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 various activity domains. Over the past 20 years, we have gathered extensive longitudinal information from children and their families in two different studies directly relevant to these hypotheses. In this chapter, we summarize the major relevant results from these two studies.

### **Background Findings and New Data Sources**

In her earlier work, Eccles 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] et al., 1982). We have replicated and extended this work in two new studies.

*The Michigan Study of Adolescent Life Transitions—MSALT* is a multiwave 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 the perceptions of their child's competency and talent, the expectations for their child's future performance, and the importance they attach to competence in

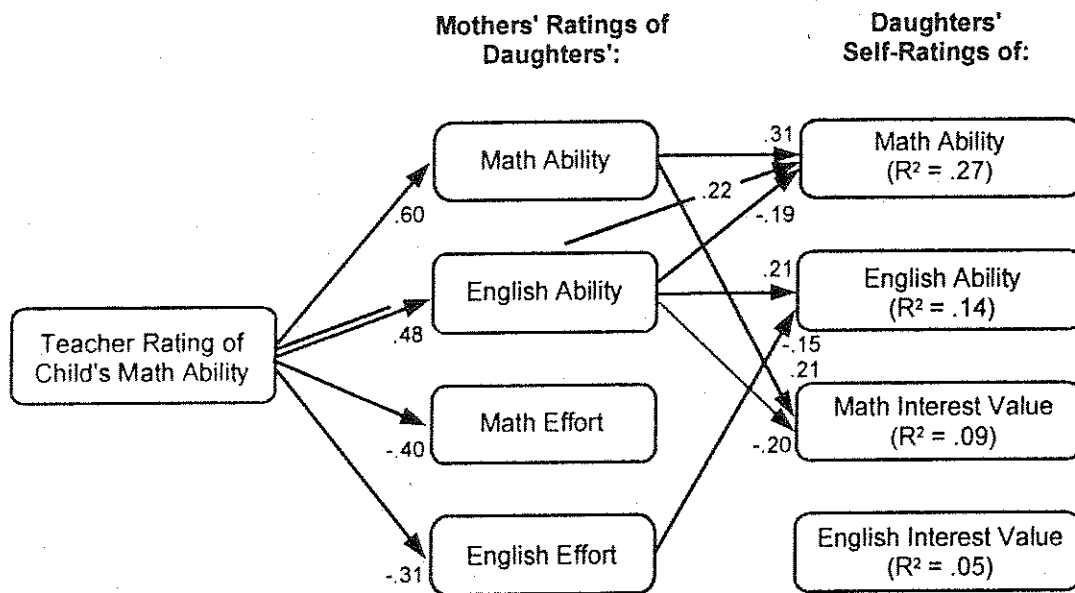


FIG. 11.2a Relation of mothers' view of daughters to daughters' self-perception.

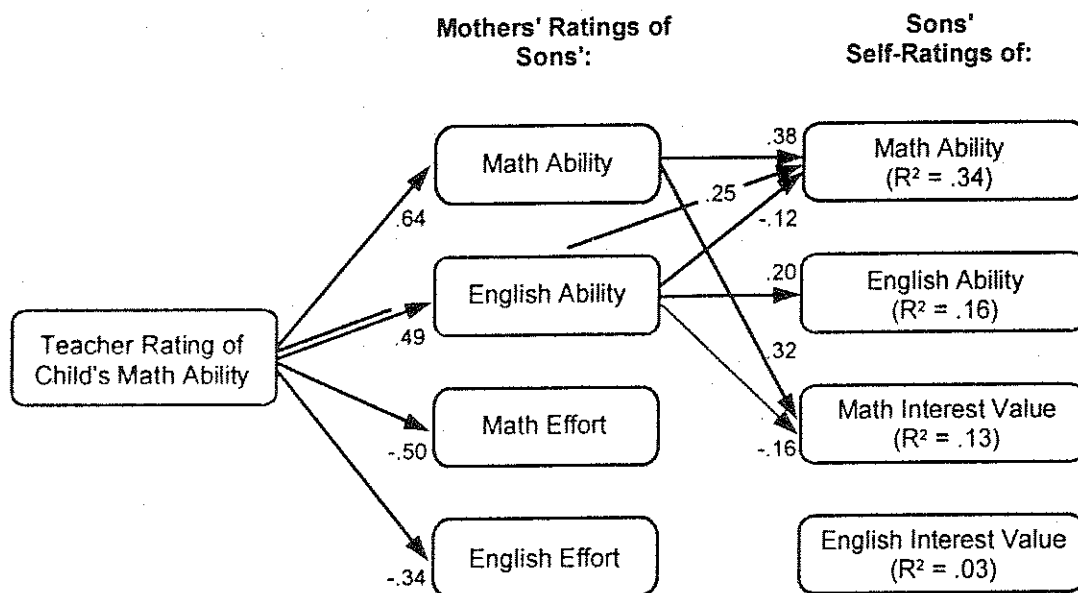


FIG. 11.2b Relation of mothers' view of sons to sons' self-perception.

each of three domains (math, reading/English, and sports), using 7-point Likert-type response scales.<sup>1</sup> Due to limited space only the data from the mothers is summarized in this chapter. The father data, however, yield a very similar story.

First, we assessed whether parents' beliefs have any influence on children's self-perceptions, using standard path analytic techniques. Relevant findings are shown in Figs. 11.2a and 11.2b. 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 only had the teachers rate 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' previous findings: Parents' views of their children's ability in both math and English have an important impact on the children's own self-perceptions (Eccles [Parsons] et al., 1982).

We next confirmed the causal order in this relation using cross-lagged, longitudinal structural equation modeling procedures as specified by Rogosa (1979). 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 for both math and sports (see Fig. 11.3 for sports example) are consistent with the hypothesized causal direction. As one would expect, mother and child perceptions are reciprocally related at synchronous time points. Over time, however, mother's perceptions of their children's ability were more strongly related to change over time in the children's self-perceptions than vice versa, even when an independent indicator of the children's competence was included as a control. The adjusted goodness-of-fit indexes (AGFI) for both models were greater than .94—indicating a very good fit of both models to the data.

The path analyses shown in Figs. 11.2a and 11.2b suggest two other important conclusions. First, there is a negative effect of mothers' perceptions of their children's English ability on their children's perceptions of their own math ability. Individuals use a variety of information in deciding how good they are in various domains. We have suggested, for example, that individuals compare their relative performance across domains and generate a hierarchy of ability perceptions from these internal self-comparisons (e.g., they decide they are very good at math because they do better, and find it easier to do better, at math than at other school subjects; Eccles, 1987; Eccles [Parsons] et al., 1983; see also Marsh, 1990). The results depicted in Figs. 11.2a and 11.2b suggest that a similar phenomenon may characterize the impact of mothers' perceptions of their children's

<sup>1</sup>These items have good psychometric properties and factor into highly reliable scales (see Eccles [Parsons] et al., 1982, and Eccles et al., 1993, for details).

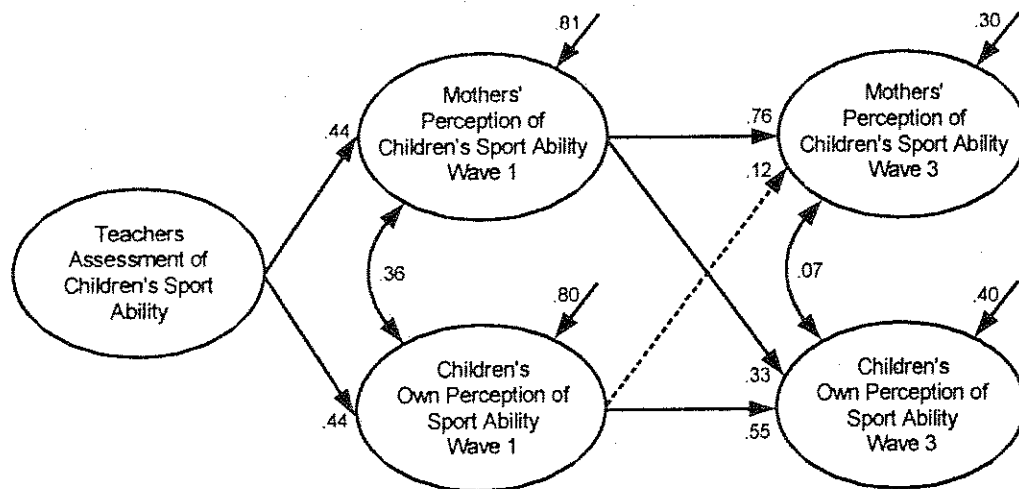


FIG. 11.3 Cross-lagged structural equation model of causal directions and mediating influences of mothers' perceptions.

abilities on the development of the children's self-perceptions. The children in this study have a lower estimate of their math ability than one would predict given their teachers' and their mothers' rating of their math ability if their mothers think they are very good in English. 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. Such a situation is particularly likely to occur for daughters given the fact that parents typically rate daughters' English abilities higher than sons' and vice versa for mathematics.

Further, Figs. 11.2a and 11.2b illustrate 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.

These findings suggest two conclusions: (a) Parents form, and communicate, a hierarchical view of their children's relative abilities, and (b) where math falls in this hierarchy has an impact on the children's conclusions regarding their own math ability independent of their parents' absolute assessment of their children's math ability.

Next we wanted to pin down the long-term relation of parents' views of their children's abilities to lagged indicators of children's own self-concepts and expectations for success. In Frome and Eccles (1998), we ran a series of four structural equation models using LISREL 8 (Jöreskog & Sörbom, 1993)

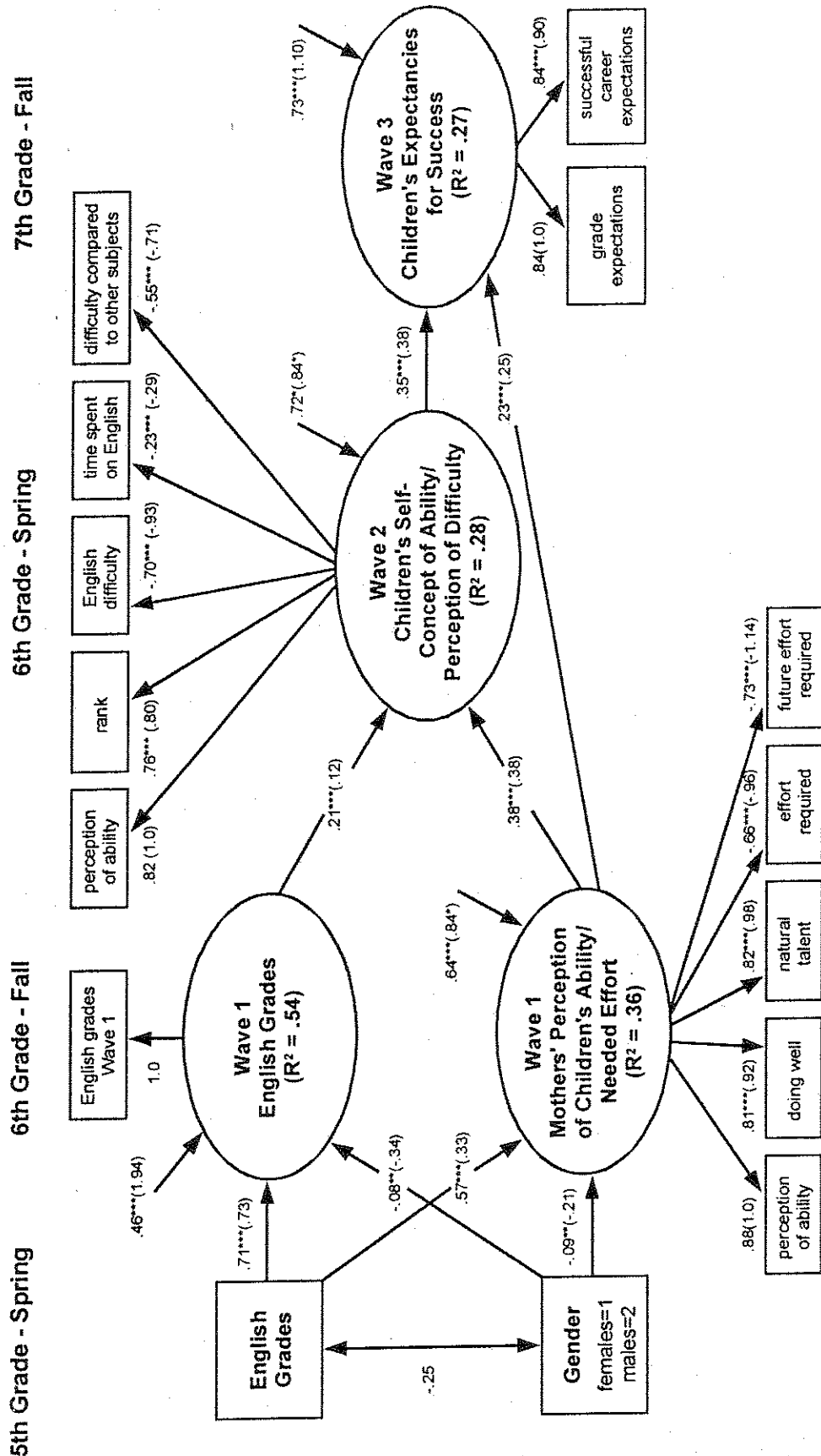


FIG. 11.4 Relation of children's gender to mothers' perceptions and to adolescents' self-perceptions in English. (\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .) Note. From "Parents' Influence on Children's Achievement-Related Perceptions," by P. M. Frome and J. S. Eccles, 1998, *Journal of Personality and Social Psychology*, 74, p. 444. Copyright 1998 by the American Psychological Association. Reprinted with permission.



like the one illustrated in Fig. 11.4 (analyses were run separately for mothers and fathers for both math and English). In all four analyses, parents' estimates of their children's ability and effort needed to succeed partially mediated the impact of grades on children's own ability self-concepts. In addition, parents' gender-biased views of their children's English ability mediated the independent association of gender (i.e., controlling for actual performance differences) with children's own ability self-concepts and expectations for success.

Based on these findings, 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

**TABLE 11.1**  
Sex-of-Child Effects on Parents' Perceptions  
(Adolescent Transition Study)

Scales	Domains		
	Math	English/ Reading	Sports
<i>Current Competence<sup>a</sup></i>			
Girls	5.45	5.65***	4.84***
Boys	5.40	4.99	5.22
<i>Task Difficulty<sup>b</sup></i>			
Girls	4.10***	3.73***	3.77***
Boys	3.80	4.24	3.47
<i>Natural Talent<sup>c</sup></i>			
Girls	4.76*	5.03***	4.22***
Boys	5.01	4.51	4.87
<i>Future Performance<sup>d</sup></i>			
Girls	5.36	5.59***	—
Boys	5.34	5.02	—
<i>Performance in Career<sup>d</sup></i>			
Girls	5.17***	5.41***	—
Boys	5.42	4.87	—
<i>Importance<sup>e</sup></i>			
Girls	6.38**	6.34	3.80***
Boys	6.50	6.34	4.10

Note. Ratings were made on 7-point scales: <sup>a</sup>1 = not at all good, 7 = very good. <sup>b</sup>1 = not at all difficult, 7 = very difficult. <sup>c</sup>1 = much less talent than other kids, 7 = much more talent than other kids. <sup>d</sup>1 = not at all well, 7 = very well. <sup>e</sup>1 = not at all important, 7 = very important.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$  (for sex differences within pairs).

their children's abilities. Gender is a very important organizing construct for addressing this question. We know in the academic domain, for example, that gender 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 students' marks (Eccles, 1987; Hyde, Fennema, & Lamon, 1990). Nonetheless, our previous research showed that some parents believe there are innate gender differences in math talent (Yee & Eccles, 1988). We have replicated this effect in MSALT and extended it to other activity domains: namely, English and sports. The results are summarized in Table 11.1.

We have also replicated the results with a much younger sample, referred to as *The Michigan Study of Childhood and Beyond—CAB*. This is a multiyear longitudinal study of the development of elementary-school-age children in the context of the family and the school. In 1986, approximately 600 children and their families were recruited into this study. The children were in either kindergarten, first, or third grade at the start of the study. These families have been participating annually in the study since that time. The data summarized in this chapter were collected in the spring and summer of the first and third years of this study. Similar scales and items as used in MSALT were used in CAB. The gender-of-child effects on parents' estimates of their children's ability and interest in math, English, sports, and instrumental music for both of these waves are summarized in Table 11.2.

The expected gender-role-stereotypic differences are evident for both English and sports. Parents of daughters rated their child as more competent and more interested in English than parents of sons and vice versa for sports. Parents also rated daughters as more talented in instrumental music than sons. This is particularly interesting since few of the children had been

**TABLE 11.2**  
Parents' Ratings of Daughters' and Sons' Ability and Interest  
(Childhood and Beyond Study-Grades 2, 3, and 5)

Scales	Math	Domains		
		English/ Reading	Sports	Instrumental Music
<i>Ability<sup>a</sup></i>				
Girls	5.52	6.01*	4.64*	5.05*
Boys	5.65	5.55	5.12	4.09
<i>Interest<sup>b</sup></i>				
Girls	4.65*	6.10*	4.83*	4.92*
Boys	5.09	5.37	5.78	3.79

Note. Ratings were made on 7-point scales: <sup>a</sup>1 = not at all good, 7 = very good. <sup>b</sup>1 = not at all fun/enjoyable, 7 = very fun/enjoyable.

\* $p < .05$  (for sex differences within pairs).

provided the opportunity to learn a musical instrument. Nonetheless, the parents, and the children themselves, were quite willing to rate children's potential for learning a new musical instrument. Interestingly, teachers were also willing to make these ratings and they agreed with parents in rating girls' potential higher than boys'.

Because we were surprised by this finding, we asked a subset of our parents why parents and teachers might think that girls have higher potential for, and interest in, learning musical instruments than boys. At the time, we were in the process of doing qualitative interviews with all families who had more than one child in the study. We added this question to those interviews. Interestingly, the parents were also initially surprised by the finding. But they quickly offered a simple explanation: Learning a musical instrument takes patience and the ability to sit still for prolonged periods of time. Girls are more likely to have both of these characteristics than boys. So here we have an example of how gender-role stereotypes about temperamental characteristics can influence parents' beliefs about their children's ability to learn particular skills, which, in turn, can influence the opportunities they provide for their children during the elementary school years.

The story for mathematics was a bit more complicated: On the one hand, there was no gender-of-child effect for the parents' perceptions of their children's mathematical competence. On the other hand, there was a gender difference in parents' perceptions of their children's interest in math: Sons were seen as more interested in math than daughters. Finally, parents thought sons were most competent in math and most interested in sports; in contrast, they thought daughters were most competent and interested in reading. Given the results reported earlier about the influence of these hierarchical ratings on children's views of their own relative competencies across areas, it should not come as a surprise that the girls think they are much better at reading than math even though their teachers do not share this perception.

Why do parents hold these gender-differentiated perceptions of their children's competencies and interests in these domains? This is the one of the two questions that guide this chapter. The second question is the impact of parents' gender-differentiated perceptions on their own behaviors. We know, for example, that males are more likely to enroll in advanced math courses and to major in math-related fields in college, whereas females are more likely to major in languages and literature in college (see Eccles, 1987). There are also quite large gender differences in children's and adolescents' participation in various sport activities, especially competitive team sports (Eccles & Harold, 1991). 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 explain 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 (see Lee, Jussim, & McCauley, 1995). This is a very difficult issue because there is no consensus on what criteria should be used to assess the accuracy of gender-role stereotypes. 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-stereotyped 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 not influenced 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 likely that girls and boys 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 the judgments are related, then one can begin 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).

In both our own work (see Eccles & Jacobs, 1986; Eccles [Parsons] et al., 1982; Frome & Eccles, 1998) and the work of Alexander and 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 gender-of-child effects on parents' ratings of older children's competence in mathematics in populations that do not evidence any significant differences in the 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) found that 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.

Similarly, as shown on Fig. 11.4, Frome and Eccles (1998) demonstrated that children's gender has an independent influence on mothers' (but not fathers') rating of their own children's math and English abilities, after actual performance indicators are controlled for.

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) true gender differences in the children's aptitude; (b) gender-biased attributions leading parents to make different inferences regarding their daughters' versus their sons' "talent"; and (c) generalizations by parents of their category-based, gender-role stereotypes to their target-based judgments of their own children's competence.

### *Real Gender Differences in Children's Aptitude*

The first influence—true gender differences—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 due to the fact that 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 know 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, don't emerge until adolescence, and depend on the particular performance measure used. Nonetheless, there may be real gender differences in aptitude, and girls may 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 marks. 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 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 (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 the boys and girls reported spending on their math home- and schoolwork. Finally, the teachers of the boys and girls in this sample did not report any gender differences in these children's talent for mathematics. Nonetheless, there was still a significant gender-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 are 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 for the English and sport domain. But, since comparable studies have not been done in the domains of English and sports, the validity of the compensation argument cannot be assessed at this point in these domains.

### *Gendered Attributional Patterns*

According to attribution theory (Weiner, 1974), perceptions of another's competence depends on the causal attributions made for the person's performance. If parents of boys make different attributions for their children's math performance than 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. In contrast, parents of girls rated effort as a more important reason for their child's math successes than did parents of boys. 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 MSALT 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 gender-of-child effects were obtained on attributions of success to natural talent in each domain, and the pattern of these differences reflect 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 that yielded a significant gender-of-child effect in each domain (see Table 11.1). According to Baron and Kenny (1986), support for a mediational hypothesis consists of demonstrating that the relation 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 Fig. 11.5. Consistent with the mediational hypothesis, the significant relation of child's gender to the relevant parent outcome variables (i.e., parents' perceptions of the child's natural math talent, the difficulty of math for their child, and their expectations regarding the child's likely future success in both math courses and a math-related career) disappeared once the relation between the child's gender and the parents' attributions for the child's math success to talent was controlled.

Comparable results for the talent attribution emerged in both the English and sport domains (see Fig. 11.6 for sports; Eccles et al., 1993). 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,

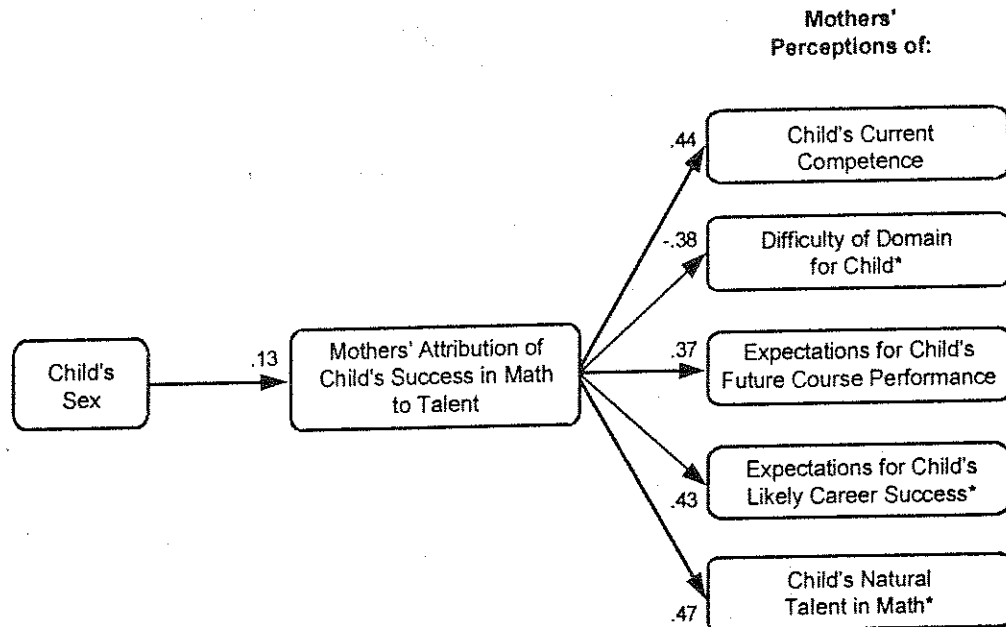


FIG. 11.5 Mediational role of mothers' attribution of child's success in mathematics. (Asterisks refer to mothers' perceptions that yielded significant child sex differences in the main effect analyses.) *Note.* From "Parents and Gender-Role Socialization During the Middle Childhood and Adolescent Years," by J. S. Eccles, J. E. Jacobs, R. D. Harold, K. S. Yoon, A. Arbretton, & C. Freedman-Doan, in *Gender issues in contemporary society* (p. 71), by S. Oskamp and M. Costanzo (Eds.), 1993, Newbury Park, CA: Sage. Copyright 1993 by Sage Publications. Reprinted with permission.

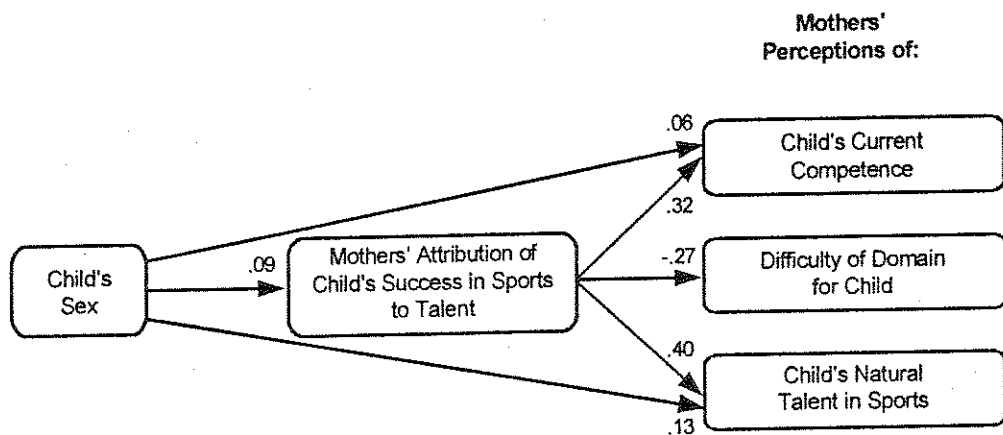


FIG. 11.6 Mediational role of mothers' attribution of child's success in sports.



however, was significantly reduced by including the parents' causal attribution in the path analysis; and thus, the results are consistent with our mediational hypothesis.<sup>2</sup>

These data provide good preliminary support for the hypothesized biasing effect of causal attributions on parents' perceptions of their children's competencies. However, it is important to note that these beliefs are all highly interrelated, and the data are correlational in nature. The consistency of the findings across domains indicates that the relations are reliable, but the actual causal direction of the relations 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 these figures: Causal attributions at Time 1 predict 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 et al., 1990; Jacobs & Eccles, 1985) 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 impact on 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 should depend, in part, 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.

As reported earlier, parents do hold gender-differentiated views of their children's academic and nonacademic abilities when children are still very young, 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 & Harold, 1991; Eccles et al., 1993; Jacobs & Eccles, 1985). These studies, however, did not look at the actual relation 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.

<sup>2</sup>More complete details of these and other analyses summarized in this chapter have been reported elsewhere and can be obtained from the first author.

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 MSALT and CAB support this hypothesis.

In CAB, mothers were asked at Time I who they thought was naturally better at mathematics, reading, and sports—boys, girls, or neither. They were also asked to rate 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 on a 7-point Likert scale. In each domain the significance of the interaction of the gender of one's child with the parents' gender-role stereotypes in predicting the parents' ratings of their own child's competency was tested. All nine interactions were significant (Eccles et al., 1993), 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, among those parents who believed that boys in general were more talented in the domain, parents of sons rated their child's ability higher than the parents of daughters.

The results for mathematics are particularly interesting. As shown on Table 11.2, the gender of one's child was not significantly related as a main effect to the mothers' perceptions of their child's math talent. But, in another analysis, the gender of the child did affect parents' ratings of their child's competence in math when it was looked at in interaction with their gender-role stereotype of mathematical competence ( $p < .05$ ). As predicted, mothers who believed that males were naturally more talented in mathematics evidenced a significant gender-of-child effect in their ratings of their children's math ability, and the direction of this effect was consistent with their stereotype; in contrast, the gender-of-child effect was not significant for the mothers who believed that neither males nor females were naturally more talented at mathematics.

Similar gender-role stereotypic effects characterize 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 than parents who did not endorse this stereotype to rate daughters' reading talent higher than sons'.

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 explored these effects in the domains of math and sports more fully with data from MSALT (Jacobs, 1987; Jacobs & Eccles, 1992). Using path analytic techniques, they tested the impact of the interaction of the gender of one's child and one's gender-role stereotypes on 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 stereotypic 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 Fig. 11.7. Once again the findings are consistent with our hypothesis. The interaction term was significant and the 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., 1993; Jacobs & Eccles, 1992).

In summary, evidence from these studies suggests that parents' causal attributions for their children's successes as well as parents' 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 various domains 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 are also influenced by their children's sex and by the parents' gender-role-stereotypic beliefs about which sex is naturally more talented in these domains. Furthermore, the evidence supports the conclusion that these influences are independent of any actual differences that might exist in the children's competencies. Thus,

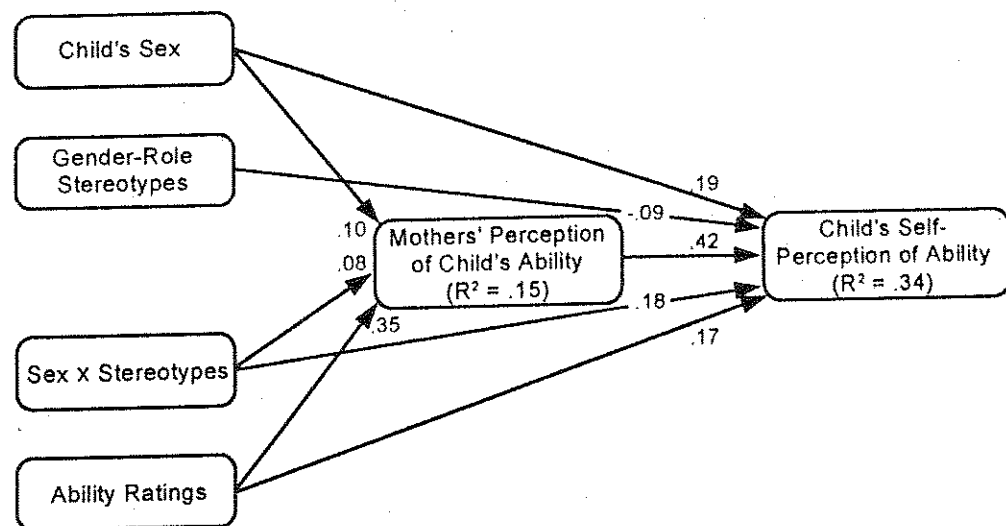


FIG. 11.7 Moderating role of mothers' gender-role stereotypes on their perceptions of children's sports ability.

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.

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 analyses (Jöreskog & Sörbom, 1993) for each of these two domains, math and sports. 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 influences her perception of her child's ability even after an independent indicator of the child's ability is entered as a control. It also tested whether the child's ability, as indicated by a teacher's rating of the child influences the mother's stereotype. The fit of the models to the data in both the math and sport domains was very good as indicated by the adjusted goodness-of-fit index (AGFIs > .96).

Let's consider the math domain first. In this domain, there was no significant relation between the teacher's rating of the child's ability and the mother's stereotype for math. In contrast, there was a very strong relation 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 small but significant positive relation between the mother's stereotype and her perception of her son's math ability and a marginally significant negative relation between the mother's stereotype and her perception of her daughter's math ability. Thus, as predicted, the more a mother stereotyped math as 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 negatively related to the mother's gender-role stereotypes: Mothers with more sports-able 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. 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 has a debilitating effect on their perceptions of daughters' sports ability. These LISREL analyses suggest that there was no enhancement effect for boys of mothers' holding the cultural stereotype in the sports domain.

These results provide support for the hypothesis that gender-role stereotypes bias parents' perceptions of their own children's competencies. Given the large amount of specific performance information parents get about their children as they 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.

### **Media Influences on Parents' Views**

Scholars interested in gender-role socialization have long speculated that exposure to gender stereotypic media should reinforce and exacerbate people's gender-stereotyped beliefs (see Eccles & Hoffman, 1984). Rarely does one have a naturalistic opportunity to evaluate this hypothesis. Such an opportunity occurred shortly after the release of an article by Benbow and Stanley (1980) in *Science* that reported a major sex difference in the mathematical reasoning ability among gifted seventh-grade students.

The popular media coverage of this research report was extensive, including headlines such as "Do Males Have a Math Gene?" (Williams & King in *Newsweek*, 1980), "Are Boys Better at Math?" (in *The New York Times*, 1980), and "The Gender Factor in Math: A New Study Says Males May Be Naturally Abler than Females" (in *Time*, 1980). The text of the articles often implied that the sex difference was due to inherited or other biological factors. For example, in "Sex + Math = ?" *Family Weekly* (1981) reported that the Benbow and Stanley (1980) study had shown that males are born with more math ability than females; similarly *Time* magazine (1980)

concluded that "males inherently have more mathematical ability than females" (p. 57).

Some publications included cartoons or other graphic representation of the implied gender difference. Typically these cartoons presented an extreme characterization of male superiority in mathematics and did not illustrate the fact that the Benbow and Stanley (1980) study contained only gifted children. These exaggerated depictions of the magnitude of sex differences in math ability are in stark contrast with the fact that gender rarely accounts for more than 4% of the variance in students' performance on standardized tests of math aptitude and virtually never accounts for any significant variance in mathematics course grades during the primary and secondary school years (Hyde et al., 1990).

Did exposure to this media campaign influence parents' views of their children's math ability? Did it influence their more general stereotypes about gender differences in math ability? Jacobs and Eccles (1985) were able to study these questions. We had assessed parents' general stereotypes as well as their views of their own children approximately 9 months before the media campaign in a sample of predominately middle-class parents living in southeastern Michigan. We reassessed those parents' beliefs approximately 3 months after the media campaign in the spring of 1981. In addition, the last page of the survey contained a question that described the media coverage of the research and asked if the parent had heard about it; approximately one quarter of the parents ( $N = 57$ ) had. Of these people, 68% had seen a magazine article about it, 18% had read about it in the newspaper, and smaller numbers had heard about it on the radio, television, or from a friend. Many people indicated that they had heard about the report from several sources.

The beliefs of those who had heard about the Benbow and Stanley (1980) report from the media were compared with those who had not. For the sake of clarity, we refer to those who heard about the report as the exposed group and those who did not as the unexposed group. Analyses of variance performed on all pretest variables and on indicators of socioeconomic class indicated that exposed and unexposed parents did not differ in their perceptions of their children's math abilities, in their level of education, or in their socioeconomic status prior to media exposure.

Compared to other mothers, exposed mothers of daughters thought that their daughters had less math ability, were less likely to succeed in math in the future, found math more difficult, and had to work harder to succeed in math in the spring of 1981. Furthermore, the exposed mothers' estimates of their daughters had declined over time more than exposed mothers of sons or unexposed mother of either daughters or sons. The change over time was particularly true for questions concerning the perceived difficulty of math for their child.

Father's responded differently. Generally, fathers of girls thought that their daughters had slightly less math ability compared to fathers of sons. However, exposed fathers of girls changed their beliefs in the direction of thinking their daughters had slightly more ability after hearing the media coverage, whereas unexposed fathers had become more gender stereotyped in their beliefs.

In contrast, we did find the predicted effect on fathers' more general gender-role stereotypes. Even though all fathers thought that math was more useful for males than females, fathers of sons endorsed this believe more than fathers of daughters. This difference was especially true for the exposed fathers: In the spring of 1981, exposed fathers endorsed the stereotype that males do better than females more strongly than unexposed fathers. In addition, exposed fathers of sons endorsed the stereotype that males do better than females in advanced math classes more strongly than any other group.

This study provides strong evidence that exposure to stereotyped media contributes to the acquisition and maintenance of gender stereotypic beliefs, even about one's own children. The study also provides support for a reactive effect. Fathers' came to the defense of their daughters even though the media had strengthened their own general stereotypic beliefs.

### **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' 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 in various activity domains would argue that these differences in parents' perceptions of their children's competencies set in motion a chain 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, parental influences on 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 [Parsons] et al., 1983; Eccles & Harold, 1991). 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; Updegraff, Eccles, Barber, & O'Brien, 1996). 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, 1991).

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 Fig. 11.1, we are testing the following sets of predictions: Parents' gender-role stereotypes, in interaction with their child's gender, affect the following parent beliefs and behaviors: the parents' emotional reaction to their children's performance in various activities, the importance parents attach to their child acquiring various skills, the advice parents provide their child regarding involvement in various skills, and the activities and toys parents provide for their children. In turn, these beliefs and behaviors influence the development of the following child outcomes across the various gender-role-stereotyped activity domains: children's confidence in their ability, children's interest in mastering various skills, children's affective reaction to participating in



various activities, and, as a consequence of these self- and task-perceptions, the amount of time, and type of effort, the 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 are just beginning to explore this link with information gathered in CAB. In addition to asking the parents for their perceptions of their children's abilities and interests in several activity domains, we asked the parents in CAB to give us detailed reports of the types of activities and experiences they provide for their children in the various activity domains, the types of skills and activities they are encouraging their children to develop, and what they do with their children. As a first step in this process, we tested whether parents provide different types of experiences for girls and boys. They clearly do in several of the activity domains we are studying. The Wave 3 results are summarized in Table 11.3. For example, parents reported watching sports more often with

**TABLE 11.3**  
**Parents' Provision of Experiences for Daughters and Sons**  
**(Childhood and Beyond Study—Grades 2, 3, and 5)**

<i>Activity</i>	<i>Girls</i>	<i>Boys</i>
Have child read to you	3.10	2.90
Play sports with child	2.63	3.36
Do active, outdoor activities with child	3.20	3.56
Take a child to a paid sporting event	1.71	1.91
Encourage child to do math or science-related activities at home	4.01	4.35
Encourage child to work on or play with a computer outside of school	3.70	4.04
Encourage child to read	6.04	5.69
Encourage child to play competitive sports	3.58	4.43
Encourage child to play noncompetitive sports	4.54	4.94
Encourage child to take dance lessons	3.56	2.15
Encourage child to take dancing for fun	3.85	2.53
Encourage child to watch sports on TV	2.61	3.07
Encourage child to take music lessons	4.26	3.52
Encourage child to play a musical instrument	4.32	3.67
Encourage child to build, make, or fix things	3.83	4.67
Encourage child to learn cooking and other homemaking	4.01	3.59

*Note.* Ratings were made on 7-point scales: 1 = *never*, 7 = *almost everyday*, or 1 *strongly discourage*, 7 = *strongly encourage*. All differences between girls' and boys' means are significant at  $p < .05$ .

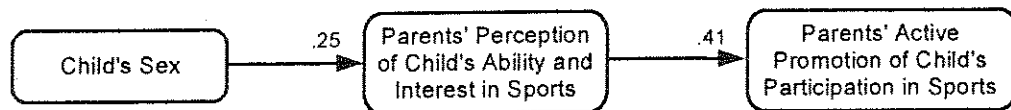


FIG. 11.8 Mediating role of parents' perceptions of their children in the relation between children's sex and parents' provision of opportunities to participate in sports.

sons, playing sports more often with sons, enrolling sons more often in sports programs, and encouraging sports participation more for sons than for daughters. Furthermore, these differences were already evident by the time the children were in kindergarten (Eccles et al., 1993).

But more importantly for the argument presented in this chapter, we used path analysis to determine whether the gender-of-child effects on the types of activities parents provide and encourage are mediated by the parents' perceptions of their children's ability and interests in each domain. The results are summarized in Fig. 11.8. Consistent with the mediational hypothesis, the gender-of-child effect on the types of experiences parents provide for their children became nonsignificant when the gender-of-child effect on parents' perceptions of their children's sport ability and interest was entered into the path analysis (Eccles et al., 1993). 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.

How might exposure to toys and activities affect children's preferences and activity choices? Through the processes associated with channelization (Hartley, 1964), familiarity (Zajonc, 1968), and both operant and classical conditioning, children should come to prefer the toys and activities to which they are exposed.

But at a more specific level, exposure to different toys and activities also provides children with the opportunity to develop different competencies and a differentiated set of task values. We know that exposure to reading materials predicts later reading achievement (see, e.g., Hess & Holloway, 1984). Similarly, exposure to manipulative toys and large-space play activities appears to affect the development of such basic cognitive skills as spatial facility (Connor, Schackman, & Serbin, 1978). Without the

opportunity to try a particular activity, children will never get a chance to find out if they are good at it or if they enjoy it.

### Conclusion

We have presented evidence of the influence of gender on parents' perceptions of their children's abilities in various activity domains. We have also presented evidence that parents' beliefs have an impact on children's developing self-concepts and on the experiences parents provide for their children in various activity domains. These relations 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.

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