

# Teacher Beliefs and Children's Achievement Self-Perceptions: A Developmental Perspective

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The literature on how teachers' expectancies influence students' achievement outcomes has flourished since the publication of Rosenthal and Jacobson's (1968) classic and controversial study of Pygmalion in the classroom. In that study elementary school teachers were given false information that some students in their classes would be "intellectual bloomers." Results showed that at some grades the children identified as bloomers performed much higher on a year-end intelligence test. Rosenthal and Jacobson concluded that teachers' expectancies about students, even those beliefs are based on arbitrary information about children's intellectual capabilities, can influence children's achievement. Thus, teacher expectancies act as self-fulfilling prophecies because children's achievement comes to reflect the teachers' expectancies. This conclusion has been the subject of a heated and ongoing debate (e.g., Elashoff & Snow, 1971; Rosenthal, 1985; Thorndike, 1968). Since 1968 a great deal of research has ensued that attempted to determine when and how teachers' expectancies influence students' achievement, and whether those expectancies act as self-fulfilling prophecies (see Braun, 1976; Brophy, 1983, 1985; Brophy & Good, 1974; Cooper, 1979; Cooper & Good, 1983; Dusek, 1975, 1985; Rosenthal, 1974; West & Anderson, 1976, for reviews of this work). So much has been written in this area that readers may wonder what more needs to be said!

Much of the work in this area has focused on how teachers commu-

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nicate their expectancies to children and treat them differentially, and how those processes influence children's achievement. In this chapter we approach this literature from a different perspective: How children may interpret teacher feedback, and how teachers' beliefs relate to children's developing self-perceptions. We use the term *teacher belief* rather than teacher expectancies in this chapter because beliefs other than teachers' expectancies for children's academic performance are discussed, including teachers' beliefs about children's effort, and the value children attach to different tasks. Most of the research discussed is with elementary school-aged children because that is the time in which children's achievement self-perceptions become established, and we highlight some of our own recent research on children's achievement self-perceptions. We begin by discussing prominent models of teacher expectancy effects.

### MODELS OF TEACHER EXPECTANCY EFFECTS

Brophy and Good (1970, 1974) provided a comprehensive model of how teacher expectations could influence children's achievement. Their model posits that teachers' expectations indirectly affect children's achievement: "teacher expectations could also affect student outcomes indirectly by leading to differential teacher treatment of students that would condition student attitudes, expectations, and behavior" (Brophy, 1983, p. 639). The model includes the following sequence. Teachers form differential expectations for students early in the school year. Based on these expectations, they behave differently toward different students, and as a result of these behaviors the students begin to understand what the teacher expects from them. If students accept the teachers' expectations and behavior toward them then they will be more likely to act in ways that confirm the teacher's initial expectations. This process will ultimately affect student achievement so that teachers' initial expectancies are confirmed.

In discussing work related to this model, Brophy (1983) made several important observations about teacher expectation effects. First and foremost, he argued that most of the beliefs teachers hold about student are accurate, and so their expectations usually reflect students' actual performance levels. As a result, Brophy contended that self-fulfilling prophecy effects have relatively weak effects on student achievement, changing achievement 5% to 10%, although he did note that such effects usually are negative expectation effects rather than positive effects. Second, he pointed out that various situational and individual difference factors influence the extent to which teacher

expectations will act as self-fulfilling prophecies. For instance, Brophy stated that expectancy effects may be larger in the early elementary grades, because teachers have more one-on-one interactions with students then, as they attempt to socialize children into the student role. In the upper elementary grades more whole-class teaching methods are used, which may minimize expectation effects. Some evidence supports this claim; expectancy effects in Rosenthal and Jacobson's (1968) study were strongest during the earlier grades. Raudenbush's (1984) meta-analysis of findings from different teacher expectancy studies in which expectancies were induced by giving teachers artificial information about children's intelligence showed that expectancy effects were stronger in Grades 1 and 2 than in Grades 3 through Grade 6, especially when the information was given to teachers during the first few weeks of school. These findings are particularly relevant to this chapter because they suggest that teacher beliefs about children may differentially affect children's achievement depending on the age of the child.

Most researchers (including Brophy and Good) have focused on the second part of the model, how teachers treat students differently based on their expectations for those students. In his model of how teacher expectancy effects operate, Rosenthal (1974) pointed to four main ways in which teachers differently treat students for whom they have high and low expectancies. Teachers may create warmer social-emotional relations with students for whom they have high expectancies (climate), give those students more information about their performance (feedback), and teach them more things (input). Finally, they may give those students more opportunities to interact in the classroom setting (output). Building on this model, Brophy and Good (1974) and Brophy (1983) listed a host of more specific ways in which teachers differentially treat high and low expectancy students. To name just a few, teachers may give lows less attention, give them less time to answer questions, and demand less of them. These differences in treatment (along with the others in Brophy's list) should be the basis by which students begin to understand what their teachers think of them.

In their model of expectancy effects, Cooper (1979) and Cooper and Good (1983) proposed that teachers' expectations lead them to attempt to control the timing, duration, and content of the interactions they have with students, especially students for whom they have low expectancies. Cooper (1979) posited that teachers try to maintain control over interactions with those students by limiting the frequencies of their public interactions, and instead interacting with them privately. He also suggested that teachers provide less emotional support for lows, and criticize lows more for lack of effort while

praising their successful efforts less. Cooper claimed that this pattern of criticism and praise reduces the contingency between effort and outcome for those students, leaving them less certain that their efforts will produce positive achievement outcomes.

Cooper and Good's (1983) research confirmed several aspects of this model, although they found that highs were praised more for academic successes, whereas lows were praised more for following rules. They also found that students' *perceptions* of teacher behavior were more closely related to the students' perceptions of efficacy in school than were the actual frequencies of teachers' *behaviors*. Cooper and Good revised Cooper's (1979) model by adding students' perceptions of how teachers treat them to the model; they argued that it is not just what teachers do but how students view teachers' behaviors that relate both to students' own sense of efficacy and their school performance (see also Braun, 1976; Cooper, 1985). We turn next to a consideration of how students interpret differential teacher behavior.

#### STUDENTS' INTERPRETATIONS OF TEACHERS' DIFFERENTIAL TREATMENT

The models of Brophy and Good (1970) and Cooper and Good (1983) both give students' interpretations of teacher behavior a prominent role in mediating expectancy effects. However, they did not discuss systematically how students interpret teachers' behavior. Weinstein and her colleagues have done several important studies addressing this issue (e.g., Brattesani, Weinstein, & Marshall, 1984; Marshall & Weinstein, 1986; Weinstein, Marshall, Brattesani, & Middlestadt, 1982; Weinstein, Marshall, Sharp, & Botkin, 1987; Weinstein & Middlestadt, 1979; see Weinstein, 1983, 1985, 1989 for thorough discussion). They have been especially interested in how children understand teachers' behaviors toward different students in the classroom. Weinstein (1989) took a student mediational view of student achievement: "It is the students' perception—cognition that is ultimately the influential element on achievement" (p. 192), and so she has been most interested in how students understand teacher treatment.

Weinstein and Middlestadt (1979) developed a measure called the Teacher Treatment Inventory (TTI) to assess children's understanding of teacher behavior toward different students. The inventory contains four scales (see Weinstein et al., 1982): children's perceptions of teachers' negative feedback and directiveness; the supportive help teachers provide; how much teachers emphasize following rules and getting work done; and perceptions of teachers' expectancies, the

opportunities they provide children, and choice allowed different students. One version of the scale has students rate teacher behavior toward hypothetical high and low achievers in their classroom, whereas another has students rate how teachers treat them on these dimensions.

In Weinstein and her colleagues' empirical work with the TTI children report that, compared to high achievers, low achievers receive more negative feedback and teacher directiveness, and more messages related to a work and rule orientation. By contrast, high achievers are seen as receiving more opportunities in the classroom, greater choice among alternative activities, and higher expectancies from the teachers. These differences are more pronounced in classrooms in which students see teachers treating high and low achievers quite differently (designated high differential classrooms) as compared to low differential classrooms in which teachers treat high and low achievers similarly (e.g., Weinstein et al., 1982; Weinstein et al., 1987; Weinstein & Middlestadt, 1979).

Differential teacher treatment also affects various student outcomes. In high differential classrooms, students' expectancies for themselves are more strongly associated with teachers' expectancies for them, and teacher expectancies for students' achievement explained more of the variance in students' year-end achievement than for students in low differential classes (Brattesani et al., 1984). Marshall, Weinstein, Sharp, and Brattesani (1982) reported that in high differential classrooms there are greater differences in orientation toward achievement tasks between high and low achievers than in low differential classrooms, with low achievers being less achievement oriented in the more differential classrooms.

One of the most striking findings emerging in these studies is that even children in the early elementary grades believe that teachers treat high and low achievers differently (e.g., Weinstein et al., 1987; Weinstein & Middlestadt, 1979). However, some interesting age differences have emerged in this work. Weinstein and Middlestadt (1979) found that although younger (Grade 1 through Grade 3) and older (Grade 4 through Grade 6) students believed teachers treat high and low achievers differently, their perceptions of these differences were not the same. The younger children believed teachers criticize high achievers more, whereas the older children thought low achievers receive more criticism. In the Weinstein et al. (1987) study, compared to older children, first graders were less accurate in their understanding of teachers' expectancies for themselves, and did not see as clearly how teachers' expectancies were tied to teachers' treatment of them. However, in high differential classrooms only, even first- and

third-grade children for whom teachers had low expectancies had lower expectancies for themselves, suggesting that teacher evaluations already are a powerful determinant of children's expectancies at these ages. By Grade 5, children for whom teachers had low expectancies in both high and low differential classrooms themselves had lower expectancies.

This work has made an important contribution to the literature on teacher expectancy effects, showing clearly that children (even Grade 1 children) do understand that teachers treat high and low achievers differently. The findings support the contention by Brophy and Good (1970) and Cooper and Good (1983) that student perceptions should be included in models of how teacher expectancies affect student achievement. However, two limitations of this work should be noted. First, much of Weinstein and her colleagues' empirical work with the TTI is based on children's ratings of hypothetical high and low achievers in their classrooms. In the vignettes used to describe the students, their achievement level is portrayed very clearly; it is unclear whether information about "real" students' achievement is quite this clear (see Blumenfeld, Pintrich, Meece, & Wessels, 1982). Second, Brophy and Good (1970) proposed that students' interpretations of teacher behavior could influence outcomes such as motivation, performance, and behavioral conduct. The major achievement outcomes Weinstein and her colleagues have examined are students' expectancies for their own success and their year-end achievement. These clearly are crucial outcome measures, but particularly with respect to students' achievement-related beliefs and motivation there are other outcome variables that need to be considered. We discuss these beliefs next.

#### STUDENT ACHIEVEMENT SELF-PERCEPTIONS

Work on the development of children's achievement self-perceptions has burgeoned since the 1970s, and has shown that these beliefs are related to children's academic performance, persistence, and choice of different tasks. A complete review of this work is beyond the scope of this chapter; for reviews of different aspects of this work see Dweck and Elliott (1983), Eccles and Wigfield (1985), Nicholls (1984), Schunk (1984, 1990), Stipek and Mac Iver (1989), and Wigfield and Eccles (1989, in press), along with the chapters by Meece and Courtney, Pintrich and Schrauben, and Schunk in this volume. Although there are many important achievement beliefs, our perspective is that two major sets of beliefs are central to achievement motivation: individuals' beliefs regarding their ability and expectancies for success (see

Schunk, 1984, 1990, this volume for discussion of the related construct of perceived efficacy), and their beliefs regarding how much they value different tasks and their motivational orientation (e.g., see Eccles et al., 1983; Wigfield & Eccles, in press). Eccles and Wigfield (1985) proposed that these beliefs can be conceptualized in terms of two general questions children ask themselves: "Can I succeed on this task?" and "Do I want to succeed on this task?" To provide a context for how teacher beliefs influence children's developing achievement perceptions, we briefly discuss work relevant to these questions, focusing on our recent study of the development and socialization of these beliefs.

#### Can I Succeed: Children's Perceptions of Ability and Expectancies for Success

Children's perceptions of ability refer to children's sense of how good they are at different tasks. These perceptions change in several important ways over the elementary school years. First, children's understanding of what ability is appears to change. Nicholls (1978, 1984, this volume) argued that most young children have a mastery or learning view of ability, believing that increased effort can improve their abilities. By the late elementary school years, however, children understand how effort and ability can be inversely related (see Nicholls, 1978), and that if success requires a great deal of effort it may mean the individual lacks ability. This change leads some children to define *ability* as relatively stable and to judge it in comparison to others, and so have the notion of "ability as capacity" (see Dweck & Bempechat, 1983, for similar definitions of ability).

Another way children's perceptions of ability change is that they decline across the school years, and relate more closely to children's actual performance in school (see Stipek & Mac Iver, 1989). For instance, Marsh (1989) found that children's perceptions of ability in several domains declined linearly during the elementary school years. Similarly, Nicholls (1979) found that in Grade 1 most children ranked themselves near the top of the class in their reading ability, and there was essentially no correlation between those ability ratings and children's performance. By age 12, children's ratings were more dispersed, and the correlations between ability ratings and school grades were in the .70 range.

Expectancies for success are closely related to students' perceptions of ability (see Eccles & Wigfield, 1991), and they also undergo change during the elementary school years. Most studies show that young (4-

and 5-year-old) children's expectancies for success are overly optimistic, so that they nearly always think they will do well on the next task. This optimism holds even if young children repeatedly fail at a task, and so it appears that young children's expectancies are not grounded in the reality of their performance, but may reflect what outcome they hope to achieve. As children proceed through elementary school, their expectancies begin to correspond more closely to their previous performance, so that following success their expectancies increase, whereas following failure they decrease (see Parsons & Ruble, 1977; Stipek, 1984). Thus, expectancies for success appear to become more accurate or realistic as children get older, in the sense of relating more closely to their actual performance on different tasks and being more responsive to success and failure experiences (see Eccles, Midgley, & Adler, 1984; Stipek, 1984, for reviews of this work).

### Do I Want to Succeed: Children's Achievement Values and Motivational Orientation

Children's achievement values refer to constructs such as their liking of different tasks, the importance of those tasks to them, and the potential usefulness of those tasks in the future (see Eccles et al., 1983; Wigfield & Eccles, in press, for theoretical views on the nature of children's achievement values). Like the literature on perceptions of ability, results of studies looking at changes in the mean level of children's values generally show that children value academic tasks less as they get older (see Eccles & Midgley, 1989; Eccles, Midgley, & Adler, 1984; Wigfield & Eccles, in press, for reviews). For instance, in studies of students' domain-specific achievement values, Eccles et al. (1983) and Wigfield (1984) examined how children's valuing of mathematics and English differed by age in a group of 5th- through 12th-grade students. Both studies showed that younger students valued math more highly than did older students. In contrast, students' valuing of English increased across age. Eccles et al. (1989) and Wigfield, Eccles, Mac Iver, Reuman, and Midgley (1991) looked at how the transition to junior high influenced children's valuing of different activities. They found that children's ratings of both the importance of math and English and their liking of these school subjects decreased across the transition from elementary to junior high school. In math, students' importance ratings continued to decline across Grade 7, whereas in their ratings of the importance of English the beliefs rebounded somewhat.

Studies of children's intrinsic versus extrinsic motivational orienta-



tion, which in this context is analagous to children's interest value, show that children become more extrinsically motivated as they get older; that is, they do tasks less because they like them and more because they are required. For example, in a cross-sectional study of children's intrinsic motivation Harter (1981) assessed different components of intrinsic motivation in third- through ninth-grade students. She found that older children's intrinsic motivation was much lower than younger children's on three of her intrinsic motivation subscales: preference for challenge, curiosity/interest, and independent mastery. Harter concluded that children's intrinsic motivation is stifled in important ways during the school years, an outcome she viewed as problematic.

#### A STUDY OF THE EARLY DEVELOPMENT OF CHILDREN'S ABILITY PERCEPTIONS AND VALUES ACROSS DIFFERENT ACTIVITY DOMAINS

##### A Brief Overview

Over the past several years, we have been examining the ontogeny of children's self and task beliefs that act as significant predictors of children's task choices and self-esteem. More specifically, we have studied the early development and socialization of children's ability perceptions and achievement values (and a host of other achievement-related beliefs and choices) across the elementary school years (see Eccles, Wigfield, Harold, & Blumenfeld, 1991; Harold et al., 1989; Wigfield et al., 1990, for reports on different aspects of this study). In this section, initial results from this project are presented that focus on the following broad questions: (a) how do children's achievement self-perceptions change over the elementary school years?; and (b) what do teachers perceive about children's abilities and interests in different activities, and how do those perceptions relate to children's beliefs?

The study has some unique features that differentiate it from other work in this area. First, we assessed the self-perceptions of children at least once each year over a 3-year period. Most studies of children's achievement self-perceptions reviewed earlier and studies of children's self-concepts (e.g., Harter, 1982, 1985; Marsh, 1989) have been cross-sectional. Second, we measured children's perceptions of ability and their achievement values in several different activity domains, including mathematics, reading, computers, music, sports, and social

activities. With the important exceptions of Harter's work (e.g., Harter, 1982) and Marsh's work (e.g., Marsh, 1989; Marsh, Barnes, Cairns, & Tidman, 1984), few studies have looked at how children's self-perceptions vary across different activity domains, and even fewer have examined both ability perceptions and achievement values. Third, we obtained information from parents and teachers about the children, including their perceptions of children's abilities, interests, and activities. Thus, we have information about children from multiple informants.

This study also differs in regard to the kind of information that was gathered from teachers. Most research on teachers' beliefs about students has been limited to their perceptions of students' general academic performance. In this study, teachers were asked to assess children's ability, effort, and valuing of academic and nonacademic activities. These data allowed us to examine several specific questions following from the second broader question posed earlier (see Harold et al., 1989 for discussion of additional results from these data), including: (a) are there gender and age differences in teachers' ratings of children's abilities?; (b) what are the relations between teacher ratings of ability in various domains and actual aptitude measures given to children?; and (c) what are the relations between teachers' beliefs about children and children's self-perceptions?

#### Research Procedures

When the study began in 1987, participating children were in kindergarten, first, and third grades, and at the completion of data collection in 1990, the children were in Grade 3, Grade 4, and Grade 6. Data collected from children the first year included various academic and physical skills aptitude measures. Children first completed questionnaires assessing their achievement self-perceptions in the second year of the project (Spring 1988), when they were in Grade 1, Grade 2, and Grade 4. Children completed questionnaires again in the Springs of 1989 and 1990. The data we report regarding children's achievement beliefs come from children's responses to the Year 2 questionnaire.

There were approximately 850 child participants during the second year with almost equal gender representation; 275 of the children were in Grade 1, 313 in Grade 2, and 262 in Grade 4. The vast majority of the children are White and are from lower middle-class to middle-class socioeconomic backgrounds. The children attended 10 different elementary schools in four school districts near a large midwestern city.

*Child Questionnaire.* The child questionnaire assessed children's perceptions of ability and achievement values about mathematics, reading, computer, music, sports, and social activities, and many other constructs, including children's general self-esteem, which was assessed using items from Harter's (1982) general self-worth scale. Questions tapping children's perceptions of their ability in each domain included items assessing perceived competence, expectancies for future success, ease of learning new things, and perceptions of the difficulty of the activity; for example, How good are you at math? How good are you at music compared to other subjects?. Questions tapping achievement values assessed children's interest in the activity, how useful it would be for them in the future, and how important it was to be good at the activity; for example, How much do you like doing reading? How important is it to you to be good at sports?. The questions were modified from earlier questionnaires developed by Eccles et al. (1983) and Parsons (1980) that were used by Eccles and her colleagues in several previous studies of late elementary through high school aged-children (e.g., Eccles, Adler, & Meece, 1984; Eccles et al., 1983; Eccles et al., 1989; Meece, Wigfield, & Eccles, 1990; Parsons, Kaczala, & Meece, 1982; Wigfield et al., 1991; Wigfield & Meece, 1988). These questionnaires are described more completely in Eccles et al. (1991) and Wigfield et al. (1990), as are the procedures for pilot testing the questions for use with the younger children in this study.

*Teacher Individual Assessment Questionnaire.* Teachers completed individual assessment questionnaires on each participating child during the spring of each year of the study. They were asked to rate their students in the following domains: math, reading, social, sports, music, and art. For each domain, they were asked about several constructs; we focus here on their perceptions of children's talent or ability, effort, and the importance of quality performance to the child; for example, How important is it to this child to do well in art? How hard does this child try in math? The data we discuss come from the Year 1 and Year 2 teacher individual assessment questionnaires; that is, the year before children first completed questionnaires and the year they first did so.

#### Research Findings: Children's Beliefs

*Structure of Children's Ability Perceptions and Values.* Do young children discriminate between domains, and between ability

and value? Factor analyses done for the whole sample and separately by grade on the items assessing children's beliefs about all the activities demonstrated that children's beliefs about each domain (math, reading, computers, music, sports, and social activities) formed separate factors. These six factors emerged in the analyses done at each grade level. Factor analyses done on the set of items within each domain showed that in most domains, children's perceptions of ability and valuing of the activity formed separate factors. These analyses indicate that children's self-perceptions are quite differentiated even at first grade, both for activities in different domains and for specific beliefs within an activity domain (see Eccles et al., 1991; Wigfield et al., 1990, for further discussion of these results, and their implications for theories of the development of children's achievement self-perceptions).

*Gender and Age Differences in Children's Beliefs.* Do children's beliefs differ by gender and/or age? Based on the results of the factor analyses, items were grouped into scales tapping children's perceptions of ability and valuing of each activity. The scales were analyzed for gender and grade effects. The means for all significant gender and grade effects are presented in Table 5.1. There were no interactions of gender and grade. Boys had higher ability perceptions for math, computers, and sports activities than did girls, whereas girls' ability perceptions were higher for music and social activities. Girls valued reading and music activities significantly more than boys did, whereas boys valued sports activities more than did girls.

Regarding the grade effects, for all activities but sports, younger children had more positive ability perceptions than did the older children, with the differences stronger between Grade 1 and Grade 4 children. Although there was no significant grade effect for sports ability perceptions, older children had slightly more positive ability perceptions in sports. Concerning values, the grade effects for achievement values were significant for reading, computers, music, and sports activities. For reading, computers, and music, younger children valued the activity more than Grade 4 did, whereas Grade 4 valued sports the most.

These results demonstrate further that children's achievement self-perceptions, particularly their perceptions of ability, decrease across the elementary school years. They extend that work by showing how children's achievement values differ by age and gender during the early elementary school years, and also how children's beliefs vary across several different activity domains that are common to childhood. From that perspective these results show that age-related de-

**Table 5.1**  
Means for the Significant Effects on Children's Perceptions of Ability and Valuing of the Different Activities

Activity	Gender		Grade		
	Girls	Boys	1	2	4
Math SCA	5.38	5.67	5.69	5.49	5.38
Reading SCA			6.04	5.85	5.38
Reading value	5.84	5.34	5.76	5.62	5.38
Computer SCA	5.76	6.02	6.03	5.83	5.75
Computer value			5.99	5.98	5.70
Music SCA	5.15	4.41	5.26	4.78	4.26
Misic value	5.61	4.62	5.51	5.16	4.68
Sports SCA	5.22	6.18			
Sports value	5.66	6.19	5.76	5.98	6.02
Social SCA	5.88	5.34	5.77	5.61	5.46

Note: SCA = Self-concept of ability.

clines in achievement beliefs are quite general, with the exception of beliefs about sports activities. These results paint a rather gloomy picture of how children's perceptions of ability and valuing of academic activities change across the school years. In the early school years children have quite positive perceptions of ability for different academic activities, and value them highly. As they get older they begin to value certain academic activities less, and generally their perceptions of ability are lower. How might teachers' beliefs about their students fit into this picture? We present results from our study relevant to that issue next.

#### Research Findings: Teachers' Beliefs

*Gender and Age Differences in Teachers' Ratings of Children's Abilities.* Do teacher's ratings differ by gender and/or age? There were no significant gender differences in teachers' ability ratings of their students in math, reading, or in making friends at either Year 1 or Year 2. However, boys were seen as being more talented in sports (at Year 2), whereas girls were seen as having more ability in art (at Year 2) and in music (both years). These findings are intriguing, given that during the elementary school years there is little evidence for the perceived differences in art and music, and the percent of variance accounted for by actual performance in sports is not as marked as the teachers' ratings might suggest. These differences in teachers' perceptions of sports and music ability for boys and girls parallel those observed in children's own beliefs discussed earlier.

There were no significant grade differences in teachers' perceptions of talent either at Year 1 when the students were in Kindergarten, Grade 1, and Grade 3 or at Year 2 when they were in Grade 1, Grade 2, and Grade 4. These results differ from children's own beliefs, which showed that children's perceptions of competence decreased across grade. It is interesting that teachers do not share young children's optimistic ability perceptions; perhaps teachers' beliefs reflect the reality of children's performance more, a reality that only gradually influences children's own beliefs.

*The Accuracy of Teachers' Perceptions of Their Students Across Domains.* Are teachers' ratings of their students' ability congruent with the students' performance on aptitude measures? As mentioned earlier, in Year 1 of the project each child completed a battery of cognitive measures, a shortened form of the Bruininks-Oseretsky test of physical skills (Bruininks, 1977), and the Slosson IQ test. Correlations of teachers' ratings with these measures showed that teachers' perceptions of their students' abilities in math and reading were related moderately ( $r$ 's about .40) to the children's IQ scores (i.e., students rated as doing well in math and reading scored highly on the Slosson test). Similarly, children's scores on the spatial skills measure correlated with teachers' ratings of their math ability ( $r = .30$ ). Teachers' ratings of children's ability in sports were significantly related to the total Bruininks score and to the the large motor subtest scores such as running and broad jump, with the  $r$ s around .30. Teachers reported to us that they were much more confident of their ratings of their students' abilities in the two areas in which they had the most contact with the children, math and reading. They were hesitant to rate the children in the other domains. However, these data show that the teacher's ratings of the children's abilities are related to the children's actual performance on aptitude measures tapping math, reading, and sports.

*Relations Between Teachers' Ratings and Children's Self-Perceptions.* How closely related are teacher and student ratings of abilities and interests? Correlations were performed on teachers' ratings of children in the math, reading, sports, and social domains with children's achievement beliefs in those domains. These analyses were performed separately at each grade level. In general, (especially for the older children), the significant correlations that emerged are between teachers' domain-specific beliefs about children and children's beliefs in that domain. However, these significant correlations (which are all positive) are relatively modest, ranging from .11 to .36.

In the analyses within each grade, for Grade 1, the two domains in which most of the significant relations occurred were reading and sports, and the significant correlations ranged from .11 to .30. For Grade 2, significant relations between children's beliefs and teachers' beliefs occurred in the math, reading, sports, and social domains (significant  $r$ 's range from .11 to .30). Finally, for Grade 4, significant relations occurred in all domains but the social domain. The relations in the fourth-grade group (significant  $r$ 's range from .11 to .36) between teachers' beliefs about children's academic abilities and children's academic self-perceptions are stronger than many relations in the Grade 1 group, but not markedly stronger than the relations at Grade 2.

### Summary and Conclusions

Several conclusions can be drawn from these findings. Teachers appear to be reasonably accurate in judging children's ability in different domains, although the relations are moderate. Teachers' perceptions of children's talents did not differ for different-aged children, which contrasts rather sharply with the observed decline in children's own self-perceptions. However, teachers' beliefs about boys and girls did differ, as did boys' and girls' self-reports. The areas in which both children and teachers see boys and girls differing in ability were music and sports. As mentioned earlier, there likely is little or no performance difference between boys and girls in these areas at these ages and so the perceptions of differences in ability have little grounding in reality. Perhaps children and teachers infer ability differences in these areas because of children's expressed liking for these activities; from other questions on the child questionnaire that children answered we know that at all grades girls like music more than boys do, and boys like sports more than girls do (see Eccles et al., 1991). Each group may do the activity they like with more enthusiasm. The gender differences in teachers' beliefs about children and children's own beliefs also may reflect society's stereotypes about appropriate activities for boys and girls.

Regarding relations between teachers' and children's beliefs, there are domain differences in the pattern of relationships. In general, relations between teacher beliefs and children's beliefs are stronger in the math, reading, and sports domains (especially at Grade 2 and Grade 4) than in the social and music domains. If we assume that teachers are influencing children's beliefs by providing them feedback about their performance, these patterns suggest that teachers influ-

ence children's beliefs more in some areas than in others, with (as one would expect) the academic areas and sports being the ones in which teachers have the most impact. Further, the differences teachers see in boys' and girls' ability in sports may make that domain a particularly likely candidate for self-fulfilling prophecy effects to occur.

Although it seems plausible to assume that teachers are influencing children's beliefs, the analyses presented here are correlational and so, of course, causal direction cannot be inferred. It is very likely that children's performance and behavior influences teachers about them too; the models of teacher expectancy effects reviewed earlier suggest children's performance is an important determinant of teachers' beliefs. This may be particularly true in the early elementary grades when teachers have relatively little information about children. Alexander and Entwisle (1988) have shown that parents' expectancies for their young children change in response to children's performance; this also may occur for teachers. As children go through school accumulating grades and test scores in their folders teachers may use that information to form impressions of children even before they interact with the children. Thus, it is important to acknowledge that relations between teachers' beliefs and children's beliefs likely are reciprocal. We plan to examine longitudinal relations between children's and teachers' beliefs to obtain a clearer understanding of the causal direction in these beliefs.

Although generally the relations between teachers' and children's beliefs are stronger in certain domains, there are some grade differences in the patterns of relations, with the Grade 4 beliefs in math and reading more closely related to teachers' beliefs in those areas than at the other two grades. This pattern likely occurred because Grade 4 students have received much more evaluative feedback from teachers in school, and would be predicted based on Nicholls' (1979) findings that children's perceptions of their reading attainment become increasingly highly correlated with their school grades as they get older. Our findings for Grade 4 are similar in magnitude to those Nicholls (1979) reported for the 10-year-olds in his study; for Grade 1 somewhat higher correlations in reading were obtained than Nicholls reported for the 6-year-olds in his study. Thus, our findings show that the magnitude of the relations between teachers' beliefs and children's beliefs increases somewhat across grade, and also that by Grade 4, children's ability perceptions in math and reading are more consistently related to teachers' perceptions of children's ability in those areas.

Children's general self-esteem did not strongly relate to teachers' beliefs about children; when significant relations emerged they only occurred in the first Grade 1 grade group. The age differences in



relations of self-esteem to teachers' perceptions may mean that younger children rely more on teacher evaluations in judging their overall self-worth, whereas older children do not. Although this possibility is intriguing, the relations between self-esteem and teachers' perceptions Grade 1 are modest, and so we make this point cautiously. As mentioned earlier, Brophy (1983) suggested that teacher expectancy effects may have a stronger influence on younger children than on older children, and Raudenbush (1984) found some support for this claim in his meta-analysis of studies of induced teacher expectancy effects. Our findings regarding teacher beliefs and children's self-esteem provide some support for this claim; however, as just discussed, relations between children's beliefs and teachers' beliefs are somewhat stronger and more consistent across academic domains in the older than the younger children, which may suggest expectancy effects operate more at that time (see discussion later). If it is true, however, Grade 1 self-esteem relates more to teachers' ratings, then the Grade 1 year could be considered a pivotal one in the development of children's sense of worth in school.

How might teachers' beliefs contribute to the decline in children's achievement self-perceptions? As noted earlier, teachers' domain specific-evaluations of children did not differ for children of different ages. Because by Grade 3 or Grade 4 children's academic beliefs begin to relate more to teachers' beliefs about them, perhaps teachers at all grades provide relatively consistent and realistic messages to children about their performance that take some time to be incorporated into children's self-perceptions. Another reason teacher beliefs could have more of an impact at this time is the shift in children's beliefs from viewing ability is modifiable to believing it is more stable (see Nicholls, 1978, 1984). For many children, perceptions of stable ability could deflate their estimates of ability in some areas, especially in areas in which they are not excelling. As children's ability perceptions for different activities decline, they also may begin to de-value those activities they do less well. This strategy may allow them to maintain their general self-esteem (see Harter, 1985, 1986).

Recall that Brophy (1983) claimed that teacher expectancy effects may be most likely to occur in the early elementary grades because of the kinds of teacher-student interactions that occur then. Raudenbush's (1984) meta-analysis suggested that effects of induced expectancies are strongest in Grades 1 and 2. In contrast, we would suggest that expectancy effects may be more likely to occur in the middle to later elementary grades, in part because of the changes in children's understanding of ability just discussed. Brophy (1983, 1985) argued that most teacher expectancy effects tend to be debilitating (Gollum)

effects rather than enhancing (Galatea) effects. Children viewing ability as stable should be more likely to be affected by these Gollum effects; messages from teachers that they are not doing well should be more debilitating for these children. Changes in the school and classroom environment that occur during the later elementary school years also may make expectancy effects more likely to happen then. As children move through school, formal evaluation practices increase (see Blumenfeld et al., 1982; Hill & Wigfield, 1984), and often there is a greater emphasis on social comparison and competition between students. Also, there is increased use of between-classroom ability grouping practices and whole-classroom instruction, and greater focus on discipline and control (see Eccles, Midgley, & Adler, 1984; Eccles & Midgley, 1989; Marshall & Weinstein, 1984; Stipek & Mac Iver, 1989).

Eccles, Midgley, and Adler (1984) and Eccles and Midgley (1989) argued persuasively that these systematic changes in school environments may be responsible for the negative changes in many children's ability perceptions, achievement values, and intrinsic motivation. Moreover, these changes in classroom environments can interact with changes in children's processing of evaluative information to influence their achievement beliefs (see Marshall & Weinstein, 1984). For instance, teachers who emphasize normative comparisons between students and use competitive grading practices will heighten the salience of social comparison between children, especially as children learn to use that information to evaluate their competence. Although many high-achieving children may maintain positive achievement beliefs when these practices are used, as their usage increases other children will become more pessimistic about their prospects for school success.

The combination of changes in the nature of children's perceptions of ability, the stronger relations between children's ability perceptions and actual performance, and the increased focus on competitive performance in school may make it most likely for teacher expectancy effects to occur in the middle to late elementary school years. Raudenbush's (1984) findings that expectancy effects were strongest in the early elementary grades could be explained by his inclusion only of studies in which expectancies were *induced* by experimenters giving false information to teachers; that information may have more of an impact when teachers have had less experience with children. Brophy (1983) noted that studies of induced expectancies show less consistent results than studies of teachers' "real" expectancies.

Having made this claim, we should address why many of the relations between teachers' beliefs and student self-perceptions in our study were relatively modest. Blumenfeld et al. (1982) discussed that in classroom settings the information children receive about their perfor-

mance often is not very clear. Teachers give many different messages to children about their conduct, effort, and ability, and students must interpret that information. Sometimes these messages may conflict with one another, and often they are not very clear. The ambiguity and lack of clarity in teachers' messages, coupled with the developmental differences in children's understanding of ability and processing of feedback discussed earlier, are probable reasons why teachers' perceptions of children and children's own achievement self-perceptions relate only modestly. Another important reason is that teachers' beliefs are only one source of information for children; their own previous performance, the performance of their peers, and messages from their parents also will influence their developing achievement self-perceptions.

#### Issues for Future Research

Our data show how teachers view students in different areas and how teachers' and children's beliefs relate to each other. These data provide support for the models of teacher expectancy effects that include students' interpretations of teacher beliefs and behavior as one important part of the self-fulfilling prophecy process (Brophy & Good, 1970, 1974; Cooper & Good, 1983). What is needed next is research on the processes by which teachers' and students' beliefs become related. Social psychologists have been interested in how individuals interpret each others' behavior in social interaction sequences, such as teacher-student interactions. For instance, Darley and Fazio (1980) discussed how individuals (called "perceivers" by Darley and Fazio) actively construct and create their own perceptions of other (called "targets") based on the processes ongoing in the sequence as well as on other information individuals have about each other. They proposed that the target tries to determine why the perceiver acted as he or she did, which usually involves making a personal or situational attribution about the target's behavior. Using a classroom example to illustrate, was the teacher nice because he or she is a friendly person (a personal attribution), or because the situation called for friendly actions? In addition, Darley and Fazio proposed that the target will make similar personal or situational inferences about him or herself; did the perceiver treat me that way because of something about me (e.g., the teacher criticized me because I am a low achiever), or because of the situation we are in (e.g., my group was acting inappropriately)? The target's response then will be based on these different interpretations of the perceiver's action. If targets accept perceivers' beliefs, they often

adjust their behavior to reflect perceivers' beliefs. Thus, the target would be acting in accord with the perceiver's beliefs, and so may help fulfill the perceiver's prophecy.

This work offers some important insights into how students (perceivers) interpret the behavior of teachers (targets). From a developmental perspective, however, an important question for future work is at what point do children begin to make the inferences about the reasons for teachers' behaviors and reasons for their own behavior that Darley and Fazio discuss, such as deciding that teachers' behavior occurs because of teacher's characteristics, or because of aspects of the particular situation. Our work and Weinstein and her colleagues' work (see Weinstein, 1985, 1989) suggest that relations between teacher beliefs and student self-perceptions exist quite early on in elementary school, but to date we know less about how students actually interpret the messages they receive from teachers.

Based on the brief review of the development of achievement perceptions presented earlier, we would argue that early in elementary school children are not very sophisticated in interpreting teachers' evaluations; for instance, in deciding whether the teachers' messages are due to personal or situational aspects of behavior. Also, teachers' messages may be interpreted broadly so that children's general self-esteem is influenced more than their specific self-perceptions. Children may not accurately judge messages from teachers as indications of success or failure, or relate those messages to previous messages or to their own previous interpretations of their performance (see Blumenfeld et al., 1982). As children experience more evaluative feedback teachers' beliefs about their performance in a given domain will begin to relate more closely to their own self-evaluations. By the middle elementary school years teachers' specific beliefs (e.g., about students' ability) in a given domain will begin to relate more strongly to children's beliefs about their ability in that domain. Additionally, if students interpret teachers' feedback as reflecting something about themselves (I am a high/low achiever) rather than something about the situation, these relations may be stronger. This proposed developmental sequence should be assessed.

#### EDUCATIONAL IMPLICATIONS

Because of the publicity Rosenthal and Jacobson's (1968) study has received and the subsequent debate concerning its results, many teachers are aware of how their beliefs may influence children's achievement. Most educational psychology textbooks have sections

on teacher expectancy effects, and so teacher trainees learn how their beliefs about students can influence their treatment of those students. Other researchers in this area, notably Brophy (1983, 1985) and Brophy and Good (1974), made important recommendations for teachers about how to minimize Gollum expectancy effects. These suggestions include being aware of one's expectancies, keeping them current, and focusing on students' progress and mastery.

Although teachers may be aware that their expectancies can affect children's learning, it may be difficult for them to know exactly how they treat different students, primarily because teachers' interactions with students occur so frequently and quickly (see Jackson, 1968). Teachers may not be able to "process" those interactions and so may not realize the kinds of messages they provide to different students or how they treat students differently. Brophy (1983, 1985) has argued that teachers should not try to treat all students alike or have the same expectations for all students, since there are individual differences among students. Although we generally concur with this view, some differential treatment that could arise from teachers' beliefs is not appropriate. For instance, different studies show that boys often get more response opportunities in math classes than do girls, because boys tend to be more active but also because some teachers think boys do better in math (see Brophy & Good, 1974; Eccles et al., 1983). Having fewer response opportunities can inhibit girls' subsequent motivation to take further math courses (see Midgley, & Adler, Jacobs & Wigfield, 1989), which could be thought of as a Gollum expectancy effect if the differential treatment was based on teachers' beliefs that girls cannot do math.

Other teachers may not even realize that they give differential response opportunities to different groups, such as boys and girls. Wheaton (1991) interviewed a group of teachers and found that most believed that they treated boys and girls similarly. She observed the teachers in their classrooms and found that the response opportunities they allowed and feedback they provided differed for boys and girls. When told of these results the teachers were quite shocked! Thus, along with being aware of the possibility of expectancy effects, perhaps teachers should observe one another teaching in order to gauge the kinds of differential treatment going in classrooms, and discuss it among themselves. Such observations and discussions may provide some important insights to teachers about their behaviors and how those behaviors may reflect their beliefs about students.

Second, we would suggest that teachers need to be much more aware of the work on how children's achievement self-perceptions develop over the school years, and the kind of impact they can have on

those beliefs. In discussing the results of our project with teachers they often have a general sense of which students are motivated or not in their classrooms, but little sense of children's beliefs about specific subjects. When given the results they find them fascinating, and generate many interesting explanations for them. The two aspects of the changes in children's self-perceptions that seem most useful for teachers to understand are the decline in children's achievement beliefs, and the change toward believing ability is more stable. Teachers' sensitivity to these changes may help some children maintain more positive ability perceptions.

However, from our earlier discussion of how classroom environments change across elementary school, it is apparent that children get evaluated more frequently on the basis of their abilities and in general more emphasis is placed on ability. This focus on ability may make teacher expectancy effects more likely to occur, and also make it more difficult for many children to maintain positive ability perceptions. To counter this trend, like Brophy (1983, 1985) we would suggest that student progress and mastery be the focus of evaluation, rather than competitive ability assessments. Ames (1990, this volume) and Brophy (1987) have developed interesting classroom-based programs to promote children's mastery orientation. Ames' program provides teachers with strategies for presenting tasks in more novel ways, involving students in decisions making, evaluating students privately rather than publicly, and evaluating students on mastery and improvement rather than on ability. A major goal of the program is to tie students' self-worth to effort and thus promote a mastery orientation. Because of this focus, this program should reduce the likelihood of Gollum expectancy effects occurring.

Teachers' own beliefs about ability influence how they treat different students. Work on teachers' understanding of the nature of ability (e.g., Swann & Snyder, 1980) and on teachers' sense of teaching efficacy, or their beliefs about how much they can influence each student's performance, are the critical constructs here. Teachers who believe they can effectively teach all students have been shown to have important positive influences on children's achievement outcomes and achievement self-perceptions, with the effects often stronger for low achievers (see Ashton, 1985; Ashton & Webb, 1986; Midgley, Feldlaufer, & Eccles, 1989; Woolfolk & Hoy, 1990). In our discussions with teachers, we have found that many believe children's abilities are rather stable, and that some children lack this stable ability; hence teachers' expectations for these students are not very high. Teachers holding such beliefs may be most prone to letting their beliefs act as self-fulfilling prophecies (see Brophy, 1983). Changing these views on the nature of

ability and helping teachers promote a mastery orientation may be the best ways to improve teachers' own sense of efficacy, thus allowing them to reach more students.

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5. *Teachers' and Children's Achievement Beliefs*

121

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