INTRODUCTION

Children's conceptions of ability play a pivotal role in their achievement motivation. During grade school and middle school, critical changes take place in these conceptions and their influence on achievement motivation. It is during this time that children come to fully understand the idea of ability as a potentially stable trait of the self; to reason fluently about the relations among intellectual ability, effort, and performance; and, perhaps most important, to show a coherent relation both among their achievement beliefs and between their ability beliefs and their motivation.

As these conceptions develop, children become more concerned about their ability and more sensitive to evaluation, especially negative evaluation. Moreover, once they have developed a clear and coherent understanding of ability, the particular conception of ability they adopt will determine a great deal about their motivational patterns. It will influence such things as whether they seek and enjoy challenges and how resilient they are in the face of setbacks.

To understand these changes, I will review research on developmental changes in children's ability conceptions—their definitions of ability, self-perceptions of ability, and reasoning about ability—and research on how these
developmental changes in ability conceptions alter children's achievement motivation.¹

I will show that there are notable changes between kindergartners and 7–8 year olds, and between 7–8 and 10–12 year olds—that during each period, qualitative changes take place in children's thinking about ability and in their motivation.

Ability Conceptions in Perspective

Although I will devote most of the chapter to understanding the important and often dramatic changes that take as children develop their conceptions of ability, I will argue that a focus on these changes has misled researchers in some major respects:

1. It has led us to underestimate young children's motivational vulnerability by suggesting, erroneously, that until children understood intelligence as a stable capacity (that could be measured by their performance), they would not be vulnerable to motivational deficits in the face of failure. I will review research showing clear vulnerability on the part of a sizable number of children as young as preschool age. Moreover, their motivational systems (beliefs about self, goals, attributions, expectancies following failure, and behavior following failure) are in some ways remarkably similar to those of older children who are vulnerable.

I will show that early on there are already two types of motivational system in place: one built around traits of the self (characterized by a concern with qualities of the self and judgments about those qualities) and one built around process (characterized by a focus on effort and strategies that bring about success and that surmount failure). Moreover, these two systems are already associated with vulnerability and hardiness, respectively. However, the issue for these young children seems to be the goodness and badness of the self, rather than anything about ability.

Indeed, years pass between the time that this early system seems to be in place and the time that a similarly coherent trait vs. process system arises with respect to intellectual ability. Why is this? What happens in the meantime? For me, this is one of the mysteries (and challenges) of the development of ability conceptions, and one that I will grapple with in this chapter.

2. A focus on the development of conceptions of ability has also led us to overestimate the degree to which viewing abilities (and traits in general) as stable internal capacities that are unaffected by effort is the mature and correct view. I will review research showing that there are large individual differences

¹Although there are meaningful differences between the terms "intelligence" and "ability," I will use them more or less interchangeably here because the phenomena I am examining most typically apply to both.
in the way mature individuals view intelligence and ability—in how they define it (e.g., as solely capacity based or as including effort and knowledge), in how malleable they view it to be (e.g., as largely fixed or as subject to growth), in how they view the relation between effort and ability (e.g., as an inverse relation vs. a more positive, synergistic one), and in how they judge ability.

Ironically, many of the beliefs held by the hardiest individuals look like the "immature" beliefs of the younger children—for example, the belief that effort is part of intelligence, that effort increases intelligence, and that the person who tries harder is the smarter one. I will argue, with others, that because intelligence is in many ways a social construction, there is more than one mature and correct view. Although development leads children to understand the alternative views, it does not lead them all to adopt the same one. Moreover, as I have noted, the one they adopt has important implications for their motivation.

In summary, I will focus on the changes that take place in children's conceptions of ability as they move through grade school and middle school. But I will place these changes in the context of younger children's motivational patterns (before clear conceptions of ability are established) and older students' motivational patterns (that can be based on varying conceptions of ability, after an understanding of ability is in place).

A Preliminary Note on the Nature of Development

Before I begin, it is critical to emphasize one more thing: The age at which abilities seem to appear often depends on the task. For example, Butler (1998) has shown that with a simplified task, even 4- and 5-year-olds can use social comparison information to assess their performance. Yet they do not show much spontaneous social comparison in natural settings for purposes of performance assessment for several more years. Similarly, with simpler tasks second and third graders show more sophisticated reasoning about effort and ability than they are usually thought to be capable of (Schuster, Ruble, & Weinert, 1999). Yet it is several more years before they can reason fluently and consistently about these variables. The age at which something appears also depends on the setting. For example, Stipek & Daniels (1988) have shown that even kindergartners can have an accurate view of their class standing when the classroom emphasizes evaluation and comparisons. Yet it is several years before these assessments start having real meaning for children, in the sense that they begin to have impact on their view of their general ability and their predictions of their future performance.

It is interesting to note that with complex tasks even adults' reasoning breaks down (Surber, 1980).
Thus, to understand the development of ability conceptions, it is important to understand (1) when children are first capable of doing things, (2) when they typically start to do these things spontaneously and across a wide variety of tasks and settings, and (3) when these things begin to have impact on their motivation. In depicting age changes and patterns of development, I have tried, where possible, to take all three into account. However, my bolder generalizations typically refer not to when children first become capable of something, but to when they do it easily, spontaneously, and often, and to when it begins to have impact on their motivation.

“BEFORE” CONCEPTIONS OF ABILITY

Young children (preschoolers and kindergartners) do not seem to have a clear conception of ability as an internal quality that failure can call into question. Because of this, it was widely believed that they were immune to any harmful effects of failure (Dweck & Elliott, 1983; Nicholls, 1984; Stipek & Daniels, 1988). After all, if failure doesn’t reflect on ability, then it should not be experienced as undermining. However, recent research with preschool and kindergarten children has shown that a sizable proportion of these young children show clear signs of impairment when they encounter a series of salient, visible failures (such as jigsaw puzzles they cannot complete) or when they meet with criticism for their performance (Hebert & Dweck, 1985; Heyman, Dweck, & Cain, 1992; Lewis, Allessandri, & Sullivan, 1992; Smiley & Dweck, 1994; cf. Kamins & Dweck, 1999). As I noted above, in reaction to these failures, they show many of the same reactions that we see when older vulnerable children encounter failure: negative affect, negative self-evaluations, plummeting expectations, lowered persistence, and impaired deployment of problem-solving strategies.

Stipek, Recchia, and McClintic (1992) have shown that even children as young as 2-1/2 years old show clear negative affect and gaze avoidance after a failure. Although they understand little about ability as yet, obviously something is going on. There is good evidence that this early motivational system is built around children’s concerns about goodness and badness and their conceptions of goodness and badness. First, there is ample evidence that young children are highly concerned with issues of goodness and badness (Frey & Ruble, 1985; Paley, 1988; Smetana, 1985; Stipek & Daniels, 1990; Stipek & Tannatt, 1984; see also Ruble & Dweck, 1995). For example, Frey and Ruble (1985) found that when kindergarten children engage in social comparison, they often do so to examine other children’s social conduct and to learn about classroom rules.

When young children describe people, it is often in terms of goodness and badness, and this is in striking contrast to the absence of other types of trait.
descriptions (Smetana, 1985). Even when young children are asked to explain how they know that someone is smart, they often make reference to a child's niceness or exemplary conduct (Stipek & Daniels, 1990; Stipek & Tannatt, 1984).

Next, in several studies (Hebert & Dweck, 1985; Heyman, Dweck, & Cain, 1992), preschool or kindergarten children were asked to role-play parents' and teachers' reactions to their incomplete or flawed work. Vulnerable children (those who displayed plummeting self-evaluations, expectations, affect, and persistence) role-played personal criticism relating to goodness and badness. Remarkably, virtually none ever mentioned anything about ability (see also Smiley & Dweck, 1994). The hardy, resilient children, too, revealed a heightened concern with issues of goodness. In their role playing, they enacted their parents waxing enthusiastic about what good children they are (while also in many cases suggesting the effort and strategies that the children might wish to deploy to remedy their performance). Virtually none of these children mentioned ability either.3

Finally, young children's conceptions of goodness predict their vulnerability to impairment in the face of failure. As will be seen later, work with older students has shown that holding the conception that ability is a fixed trait predicts impairment in the face of failure (see Dweck, 1999; Pomerantz & Ruble, 1997; Stipek & Gralinski, 1996). Interestingly, in young children, the belief that goodness–badness is a stable trait predicts vulnerability to impairment when they encounter failure or criticism (Heyman, Dweck, & Cain, 1992; see also Heyman & Dweck, 1998).

Children's interest in goodness and badness in the early years should come as no surprise, since adults use these years to socialize children into the rules and habits—the rights and wrongs—of civilized life. The early school years continue this socialization process, with conduct and rule-following still receiving ample instructional attention.

Although young children's self-concerns seem to revolve around issues of goodness and badness, not ability, they show two distinct motivational patterns that are highly reminiscent of the patterns shown by considerably older students vis-à-vis ability. One, the vulnerable one, we can call a "trait-oriented system" because it revolves around judging traits of the self (or the self in its entirety). Thus the vulnerable children believe in the stable trait of goodness–badness, they judge themselves to be deficient on this trait when they fail, and fall into negative affect and impaired behavior (Hebert & Dweck, 1985; Heyman, Dweck, & Cain, 1992; see also Kamins & Dweck, 1999). The other system, the more hardy one, can be called a "process-oriented system" because it revolves around effort and strategies. Thus the hardy children

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3This greater emphasis on goodness–badness than on ability fits nicely with Stipek and Maclver's (1989) observation that young children seem to be more responsive to social reinforcement than to success–failure feedback.
believe that children can improve themselves, they role-play effort and strategy suggestions for improving performance, and in general talk extensively about the importance of practice and effort (Hebert & Dweck, 1985; Heyman, Dweck, & Cain, 1992; see also, Heyman & Dweck, 1998). Moreover, they practice what they preach and that they remain persistent and effective.

Even though these two rather coherent motivational systems seem to be present, and, even though clear vulnerability is evident in a number of children, these young children still may be less vulnerable than older children. For example, it looks as though young children need a pretty powerful or obvious failure experience (cf. Butler, 1998) or one that involves criticism from an adult (see Stipek & Maclver, 1989) to reveal their vulnerability. Otherwise they seem quite mastery oriented. In addition, it may be that young children’s vulnerability is a reaction to a salient failure, but unlike older vulnerable children, they may not behave in a pessimistic, risk-avoidant, or defensive way before a failure occurs (e.g., Benenson & Dweck, 1986). Finally, it is possible that these young children, even the vulnerable ones, are more resilient than older children in that they may more quickly and easily regain their optimism after a failure.

DEVELOPING ABILITY CONCEPTIONS

After these early years, in which ability concerns seem relatively mild, two rather dramatic sets of changes appear to take place in children’s conceptions of ability—one at about 7–8 years old, when children begin to look very different from kindergartners, and one at about 10–12 years olds. Table 1 presents an overview of these changes. Let’s look at each age in turn.

The Early Phase of Ability Conceptions
(7- and 8-Year-Olds)

Interest in Ability

Although some evidence of ability awareness can be found in younger children (see Butler, 1998; Marsh, Craven, & Debus, 1991; Stipek & Daniels, 1988), it is at 7–8 years old that children suddenly become far more interested in ability—their social comparison changes sharply to reflect their growing concern with relative performance and relative ability. Frey and Ruble (1985) report that most of kindergarten children’s classroom social comparisons are related to social concerns (friendship formation) or behavioral concerns (classroom norms). However, 7–8 year olds show enhanced interest in every type of peer behavior that is relevant to achievement comparisons and academic self-evaluation.
<table>
<thead>
<tr>
<th>TABLE 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Changes in Ability Conceptions</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Definitions and nature of ability</strong></td>
</tr>
<tr>
<td>Mixed domains →</td>
</tr>
<tr>
<td>Skills and knowledge, mastery standard</td>
</tr>
<tr>
<td>Not seen as predicting future performance</td>
</tr>
<tr>
<td>More internal quality, more normative standard</td>
</tr>
<tr>
<td>More stable, predictive</td>
</tr>
<tr>
<td><strong>Impact of academic outcomes</strong></td>
</tr>
<tr>
<td>Do not affect ability estimates</td>
</tr>
<tr>
<td>Affect ability estimates but not motivation</td>
</tr>
<tr>
<td>Affect ability estimates and motivation</td>
</tr>
<tr>
<td><strong>Social comparison</strong></td>
</tr>
<tr>
<td>Low interest and impact</td>
</tr>
<tr>
<td>High interest, some impact on ability evaluation</td>
</tr>
<tr>
<td>Strong impact on self-evaluation and motivation</td>
</tr>
<tr>
<td><strong>Self-evaluations of ability</strong></td>
</tr>
<tr>
<td>High and inaccurate</td>
</tr>
<tr>
<td>Lower and more accurate, begin to affect expectations</td>
</tr>
<tr>
<td>Accurate, but some underestimation, and more impact on motivation</td>
</tr>
<tr>
<td><strong>Relation to other beliefs and to motivation</strong></td>
</tr>
<tr>
<td>Not related to other motivational beliefs and low impact on motivation</td>
</tr>
<tr>
<td>Coalesce with other motivational beliefs to have high impact on motivation</td>
</tr>
</tbody>
</table>

**Definitions of Ability: Differentiation of Academic Ability**

At 7–8 years of age, there are also important changes in children's definitions of ability. First, ability becomes clearly demarcated as its own domain. Younger children are often found to mix domains, mixing smartness with conduct, social behavior/likability, or other skill domains (Heyman, Dweck, & Cain, 1992; Stipek & Daniels 1990; Stipek & Tannatt 1984; Yussen & Kane, 1985). For example, Stipek and Daniels (1990) found that many kindergartners predicted that good readers would share more and would be able to jump more hurdles. This is not entirely surprising, since in the first school years much of the school day is still devoted to socializing children and to playing games, and the different domains may not be clearly demarcated by teachers.

By 7–8 years of age, different domains seem to be fairly well understood. Not only is ability more clearly distinguished from social–moral qualities (Bempechat, London, & Dweck, 1991; Droege & Stipek, 1993; Frey & Ruble, 1985; Heyman, Dweck, & Cain, 1992; Stipek & Daniels, 1990), but different skill
domains also become differentiated. For example, as Wigfield et al. (1997) have shown, children now demonstrate clear distinctions between math, reading, and physical skills in their self-perceptions of competence and in the value they attach to each of these domains.

**Normative Definitions of Ability**

Even when conceptions of ability are “purified” to contain only intellectual ability, what is the nature of this ability? For younger children, ability seems to be more related to concrete, observable things they know and can do (Cain & Dweck, 1989; Nicholls, Patashnick, & Mettetal, 1986; Yussen & Kane, 1985), and they have more individual, mastery standards for judging this kind of ability (Blumenfeld, Pintrich, & Hamilton, 1986). In contrast, at about 7–8 years of age, children are developing an awareness of ability as a more internal, less observable quality that is defined more normatively (i.e., being smart can mean outperforming others) (Butler, 1998 1999; Ruble, Boggiano, Feldman, & Loebl, 1980). For example, Ruble et al. (1980) found that unlike first graders, second graders now explain their level of smartness in normative, social comparison terms.

Not only do children at this time display a marked upsurge in social comparison with peers to determine relative ability, but this social comparison starts having an impact on children's self-evaluation of their general ability (Ruble, 1987; Ruble, Boggiano, Feldman, & Loebl, 1980).

**Ability and Other Traits as More Stable Qualities**

Indeed, about 7–8 years old is also the time that children are beginning to understand ability as a potentially stable personal quality. In younger children, there seems to be less sense of ability as having potentially long-term stability—and no consistent tendency to use ability information (or information about other traits) to make predictions about future behavior (e.g., Droege & Stipek, 1993; Rholes & Ruble, 1984; Stipek & Daniels, 1990). By 7–8 years of age, however, there is some increase in the belief that people will tend to have the same ability/traits over time and in the use of ability/trait information for making predictions about future performance/behavior (Rholes & Ruble, 1984; see also, Rotenberg, 1982). Even when younger children seem able to make appropriate trait inferences from past behavior, unlike those who are 7–8 years old, they still do not expect stability in future performance or behavior (Rholes & Ruble, 1984; see also Ferguson, Van Roosendale, & Rule, 1986). [In a similar vein, even when young children have accurate (rather than overly positive) perceptions of their ability—as they seem to when kindergartens make clear public normative evaluations—they are still more optimistic about the future than are older kids with similarly realistic perceptions of their present ability (Stipek & Dainels, 1988).] Thus although young chil-
Children may draw ability inferences, they do not see future outcomes as being constrained by them, whereas at 7–8 years, they begin to do so.

As a side note, there is suggestive evidence that young children may find certain kinds of traits easier to grasp. For example, Yuill and Pearson (1998) show that even children 4–5 years old understand traits based on preferences or desires and can use them to make predictions (see also Heyman & Gelman, 1998). This raises the important question of whether effort is more like a motive trait and whether this is why effort inferences seem easier for children than ability inferences. Karabenick and Heller (1976), Kun (1977), and Surber (1980, 1984) all found that children have a far easier time making effort inferences than ability inferences. As these researchers have pointed out, effort (like motives and preferences) is more directly accessible to children from their experiences than are traits like ability (see also Stipek & Maclver, 1989).

Accuracy of Self-Perceptions

To return to the topic at hand, children 7–8 years old also seem to become more accurate in their self-perceptions of ability, and this typically means perceptions that are less positive and optimistic (e.g., Benenson & Dweck, 1986; Nicholls, 1978, 1979; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Wigfield & Eccles, 2000; Wigfield, Eccles, & Pintrich, 1996; see Stipek & Maclver, 1989). A striking feature of most younger children is that they are highly optimistic about their class standing and future performance despite any actual deficiencies (although see Stipek & Daniels, 1988). Indeed the great majority place themselves at the top of their class (e.g., Benenson & Dweck, 1986). At about 7–8 years old, children's self-perceptions start moving into line with teachers' ratings of ability (Benenson & Dweck, 1996; Wigfield et al., 1997; Nicholls, 1978 1979; see Stipek & Maclver, 1989). And, their spontaneous self-evaluations, once largely self-praise, start to reveal more self-criticism (Frey & Ruble, 1987).

Not surprisingly, these changes are ones that have prompted concern. Why does this happen? What is responsible for the change from unrealistic optimism in younger children to a more realistic view? There are several, interrelated factors that are likely to play a role.

1. **General responsiveness to performance feedback.** First, it is important to note that this change is part of a more general change in children's tendency to tune into feedback and to use it to judge themselves. Before 7–8 years of age, success and failure feedback and normative information often have little impact. Now we see children starting to use success–failure feedback—both absolute and comparative—to judge their ability (Frey & Ruble, 1985; Ruble, 1987) and to predict their future performance (Entwistle & Hayduk, 1978; Parson & Ruble, 1977; Stipek & Hoffman, 1980). Thus this emergence from the happy haze of optimism represents a general trend for children to be more in touch with the performance feedback they receive.
2. Definitions of ability. I have already alluded to the change in definition of ability from more personal, mastery definitions to more normative definitions. This too may play a role in deflating children's optimism, for everyone can be smart when they focus only on their own task mastery, but, as many have pointed out, only some can be smart in a normative context (Butler, 1999; Nicholls, 1984).

3. Beliefs about the stability of ability. I have also mentioned the beginning belief in the stability of ability. When traits are believed to be unstable, one's present behaviors and outcomes (e.g., failures) do not have implications for future ones. Older children, who are starting to believe in more stable traits that have predictive value (Droege & Stipek, 1993; Rholes & Ruble, 1984), may no longer be as able to cast off unfavorable feedback as irrelevant to the self and to future performance.

4. Reasoning skills. During the period that children become more interested in ability and more likely to see it as more normatively defined and stable, we see a change in their reasoning skills, that is, their ability to use information to make inferences about ability. This change may be reciprocal: Greater reasoning skills may allow them to isolate ability more clearly and understand it better, but greater understanding of ability may enhance their ability to reason about it in relation to other variables.

What is the change in reasoning skills? Whereas younger children show highly limited ability to use covariation information (say, information about effort, the task, or other people's performance) in making inferences about ability, by 7–8 years old there is a clear increase in the ability to use this information (e.g., Schuster, Ruble, & Weinert, 1999). Moreover, Schuster et al. have shown precisely how young children's failure to use covariation information can lead directly to their unrealistic ability inferences.

5. Changes in wishful thinking. Young children seem happy to give rein to their self-interest—both on experimental tasks and in estimating their class standing—even when this conflicts with the facts (Schuster, Ruble, & Weinert, 1999; Stipek & Tannatt, 1984). For example, when they are given a judgment or reasoning task in which either they or another child are to be judged, they judge themselves significantly more favorably than they judge other children even though the information they are given is identical in both cases (e.g., Schuster, Ruble, & Weinert, 1999). Indeed, a tendency to indulge self-interest in the face of the facts (even when they are aware of these facts and able to use them when instructed to) has been found in young children across a variety of tasks (see, e.g., Nelson & Dweck, 1977). Older children no longer allow themselves this indulgence. By 7–8 years of age, children may feel compelled to give greater weight to data than to personal desire.

6. Changes in educational contexts. As children go on in school, academic work occupies a larger share of the day, grades and normative evaluation increase in frequency, and negative evaluations from teachers increase as well (Blumenfeld, Hamilton, Bossert, Wessels, & Meece, 1983; Stipek & Maclver, 1989;
Wigfield, Eccles, & Pintrich, 1996; Eccles, Wigfield, & Schiefele, 1998). All such changes can have impact on children's sense of their ability, and are detailed in Chapters 12 and 13 of this book. As an example here, Maclver (1987) has shown that frequency of evaluation can have a clear impact on students' self-perceptions of ability: In fifth grade math classrooms with lower levels of evaluation (and more differentiated task structures) even the poorer students could maintain relatively high perceptions of their ability. Thus although the typical finding is that perceptions of ability decline over the grade school years, there are environments that make this decline less likely.

Although this is quite a hefty list of changes that take place between kindergarten and second or third grade, more changes are yet to come. And although the earlier changes most certainly set the stage for these later ones, the later changes (that take place at about 10–12 years old) seem to have even more striking consequences for children's motivation. I will argue that not only do particular conceptions continue to develop, but, perhaps more important, these conceptions appear to come together into a "meaning system" to affect motivation and achievement.

### Ability Conceptions Coalesce and Gain Impact (10–12 Year-Olds)

#### Reasoning About Ability and Effort

As children reach 10–12 years of age, some of the earlier trends continue. For example, reasoning skills continue to burgeon, and children become fluent in reasoning about the relations between ability, effort, and performance—especially in making inferences about ability from effort and performance information (Karabenick & Heller, 1976; Kun, 1977; Schuster, Ruble, & Weinert, 1999; Surber, 1980; see also Skinner, 1990). For example, they are more likely than younger children to say that given equal performance, the student who tries harder is the less able one (Nicholls & Miller, 1984).

It is at this time that "ability" as a factor that is potentially separable from effort comes into sharp focus. (Nicholls & Miller, 1984) Indeed, Skinner, in a study of children's causal beliefs, reports that it is only at 11–12 years old that effort and ability fall into clearly separate factors. Before then they both fall into a single "internal causes" factor. Although, as we will see, many students do not choose to view ability as something that is in fact separate from effort, they can now understand this view (Miller, 1985; Nicholls & Miller, 1984; Rholes, Blackwell, Jordan, & Walters, 1980; Rholes, Jones, & Wade, 1988). Similarly, although many will not choose to see high effort as readily implying low ability, they can now better understand this kind of inference (Surber, 1980, 1984).

Finally, at this time, more students begin to view ability/intelligence as a capacity rather than as a set of skills and knowledge (see Cain & Dweck, 1989;
Nicholls & Miller, 1984) and to view ability as a more fixed or stable trait (Droege & Stipek, 1993; Ruble & Flett, 1988; Stipek & Daniels, 1990)—although, as will be seen, there are still many students who appreciate this view but do not adopt it as their own.

New Definition of Ability: Consequences

As this view of ability begins to loom large, several things begin to happen. Self-ratings of ability become even lower (Marsh, 1989; Nicholls, 1979; Pintrich & Blumenfeld, 1985), and although the ratings tend to become more accurate (e.g., Blumenfeld, Pintrich, & Hamilton, 1986; Nicholls, 1979; Nicholls, Patashnick, & Mettetal, 1986), some children begin to underestimate their ability and class standing (Benenson & Dweck, 1986).

Not only do students' self-ratings become even more sensitive to academic outcomes (e.g., Butler, 1990, 1999), but many begin to equate smartness with their grades (Blumenfeld, Pintrich, & Hamilton, 1986) and to spontaneously use ability traits (like smartness) as an explanation for grades (Benenson & Dweck, 1986; Ruble, Boggiano, Feldman, & Loebl, 1980). For children who now view their intelligence as a stable capacity that predicts their future performance, such conclusions can be disheartening (cf. Butler, 1990 1999).

Moreover, as students come to believe more in the fixedness of ability, they seem to believe less in the effectiveness of effort to increase ability, to compensate for ability, or to aid performance (Butler, 1999; Chapman & Skinner, 1990; Droege & Stipek, 1993; Xiang, 1996; see also Dweck & Sorich, 1999).

It is soon after this time that students start interpreting praise and blame in new ways. For younger children, praise and blame are taken pretty much at face value, with praise being seen as indicating high ability and blame or anger as indicating low ability (Barker & Graham, 1987; Meyer et al., 1979). Now that ability can easily be isolated from effort and viewed in relation to task difficulty, praise for success can be taken as a sign of low ability if the task is easy (Barker & Graham, 1987; Meyer et al., 1979), and an angry response to failure can be taken as a sign of high ability (Barker & Graham, 1987).

Perhaps most interesting is the evidence that at this age children’s ability conceptions and other achievement beliefs gain greater coherence, that is, they start to hang together as a “meaning system,” as opposed to being a series of more isolated beliefs. And they also begin to have a more pronounced effect on children’s motivation and performance.

Beliefs Gain Greater Coherence

Many studies find that for the first time at ages 10–12, perceptions of ability start forming a network with other beliefs, as well as with values and goals. For example, younger children might say they are poor at something, but this
does not mean they will devalue that activity or skill. Now competence perceptions in a domain start forming a tighter link with how much a child values that domain (Wigfield et al., 1997; see also Butler, 1990, 1999, for a demonstration of how competence perceptions and interest now go hand and hand, particularly under competitive conditions).

(Low) perceptions of ability now predict a desire to avoid that domain. Stipek and Gralinski (1991) questioned third graders and junior high school students who thought they did poorly on their math test: “Do you wish you could stop taking math? If you had a choice, would you try to get out of taking the next math test?” Only for the older students did perception of poor performance predict a desire to avoid math in the future (as well as their expected grade on the next math test).

Further, perceptions of ability now predict students’ attributions for their success and failure. For example, Nicholls (1979) found that, by age 12, the more students perceived themselves as having high ability, the more they were attributing their successes to high ability (rather than to luck or effort), and the more they were attributing their failures to luck (rather than to ability). Clearly this relation could well be reciprocal, with students’ perceptions of ability influencing their attributions, but their attributions also influencing their perceptions of their ability.

Beliefs in stable or fixed ability also begin predicting a network of other beliefs. Our studies with late grade school and junior high school children show that a belief in the non malleability of intelligence now predicts a valuing of performance goals (which will validate intelligence) over learning goals (that can increase intelligence) when the two are pitted against each other (Dweck & Leggett, 1988; Dweck & Sorich, 1999; Stone, 1998). It also predicts a more negative view of effort—specifically, the beliefs that effort implies low ability and that effort is ineffective given low ability, as well as a greater desire to avoid effort (i.e., greater endorsement of effort—avoidance goals) (Dweck & Sorich, 1999). Finally, it predicts a greater emphasis on ability vs. effort attributions for failure (Henderson & Dweck, 1990; Dweck & Sorich, 1999; see also Hong, Chiu, Dweck, Lin, & Wan, 1999), and it is not just the low achieving students who report that setbacks would tell them that they had low ability.

Another of our studies (Bempechat, London, & Dweck, 1991, Study 1) revealed a striking instance of beliefs suddenly coalescing at fifth grade. In this study, students in each grade from kindergarten to fifth grade were asked to think of someone they know who is smart in schoolwork, and to tell why they think he or she is smart. Their answers were coded as outcome oriented (“because she gets As”) or action oriented (“because he does all his homework”). Students’ beliefs about intelligence as a fixed vs. malleable quality were also assessed. In kindergarten through fourth grade, children with fixed and malleable views of intelligence did not differ at all in their tendency to generate outcome or action answers. However, at fifth grade there was, for the first time, a significant relation, with those favoring a fixed view also favoring
outcome answers, and those favoring a malleable view giving more action answers. Interestingly, a nearly identical pattern was obtained for physical skills (being "good at games and sports"), with fifth graders who endorsed a fixed view of physical skills citing almost exclusively outcomes, and fifth graders endorsing a malleable view citing predominantly actions.

Thus, students who believe in fixed ability seem to develop a trait-focused belief system, seeking to validate their ability, devaluing effort relative to ability, and interpreting outcomes as reflecting on ability. Later, I will compare this trait-focused meaning system to the process-focused system of students who understand the idea of stable ability but continue to believe in intelligence as a personal quality that can be developed.

In short, students are developing more coherent systems of beliefs and values that revolve around their perceptions of their ability and their beliefs about the nature of ability.

**Beliefs Affect Intrinsic Motivation and Performance**

As beliefs about ability crystallize, there is a clear increase in the power of failure to sap students' intrinsic motivation and impair their performance; however this appears to occur mainly among students who view ability as a stable capacity (Miller, 1985; Pomerantz & Ruble, 1997; Rholes, Blackwell, Jordan, & Walters, 1980; Rholes, Jones, & Wade, 1988; see also, Henderson & Dweck, 1990; Dweck & Sorich, 1999). Butler (1999) provides a beautiful demonstration of how, earlier children can be wildly competitive, but losing does not seem to dampen their enthusiasm for continued social comparison, and losing does not seem to undermine either their interest or their performance. Now it can.

While it has not always been clear from the literature whether this increasing sensitivity to failure is a cognitive achievement or the adoption of a belief about ability, it seems to be some of both. Although younger children may endorse a view of intelligence as a fixed trait, such a view does not seem to predict impairment in the face of failure until about 10–12 years of age (Cain & Dweck, 1995; Henderlong & Lepper, 1997). Thus, some fuller understanding of what "ability as a fixed trait" means must be achieved. However, it cannot be all a matter of cognitive advancement, for this would mean that at some age, everyone would start being noticeably impaired after failure, and this is not the case. It would appear, then, that for older students, impairment in the face of failure might require both an understanding of ability or intelligence as a potentially stable trait and the adoption of the view of ability as unmalleable. This is exactly what Pomerantz and Ruble (1997) have found: Failure is disruptive to performance chiefly for these older children who both understand that ability can be a stable capacity and believe that it is a trait that cannot be developed through their efforts.
Although achievement motivation researchers often refer to the view of intellectual ability as a stable capacity that is separate from effort as the "mature conception of ability," there is abundant evidence, as I have noted, that mature reasoners may understand that this is one perspective on intelligence or ability, but they need not adopt it. Many modern theorists of intelligence acknowledge that intelligence is a personal and social construction that can vary from person to person and from culture to culture (Carugati, 1990; Cornelius, Kenny, & Caspi, 1989; Rosenholz & Simpson, 1984; Wagner & Sternberg, 1994).

It can vary in its definition, and there are many adult definitions of intelligence that include personality and motivational components as an inherent part of intelligence (see, e.g., Yang & Sternberg, 1984). This begins to sound very much like the young children who fail to differentiate between effort and ability or between intellectual skills and personality or social characteristics. Yet even researchers now note the strong overlap between intelligence, personality, and interests (Ackerman & Heggestad, 1997).

People and cultures can also vary in whether they think intelligence can be influenced by effort and learning, with many experts—including Alfred Binet (1909, 1973), the inventor of the IQ test—strongly believing that children's basic capacities can be transformed through learning (see also Perkins & Grotzer, 1997). A number of creativity experts (e.g., Howe, 1990) even argue that creative genius arises from lengthy periods of dedication and not simply from large amounts of inherent ability.

Much of my own work has revolved around individual differences in the belief that intelligence can or cannot be developed through one's efforts (see Dweck, 1999). Interestingly, the view that intelligence can be developed (an "incremental" theory of intelligence) is often associated with many of the beliefs we saw in young children, along with with optimism and hardiness in the face of setbacks. In contrast, the view that intelligence cannot be developed (an "entity" theory) is associated with many of the beliefs that are said to characterize the more mature view of ability, and it is often associated with greater loss of confidence and with helplessness in the face of setbacks.4

As I suggested earlier, both views are available to the mature reasoner. Let us look more closely at the consequences of these different conceptions of ability. It is important to note that in most cases the association in question

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4 An entity theory refers to the belief that intelligence cannot be developed and is not under personal control. I will sometimes refer to it as a belief in "fixed" intelligence, but this is simply a convenient shorthand.
has been found not only when students' theories of intelligence have been measured, but also when they have been manipulated, thus supporting the idea that students' intelligence beliefs play a causal role in their goals, attributions, and effort beliefs, as well as their affect, intrinsic motivation, self-regulation, and performance in the face of difficulty. The fact that theories of intelligence can be manipulated also means that these beliefs are themselves sensitive to context and experience.⁵

I should also note that I will bring in studies with older (college) students where they are relevant, particularly since work with these older students rules out the possibility that differences stem from immature reasoning skills on the part of some of the participants. This work also can show that the patterns that emerge at 10–12 years of age are not simply a temporary result of coming to understand ability. That is, they are not a reflection of a temporary ability-mania, like the gender-mania children show when they first come to understand gender.

Finally, I would like to emphasize that there is an important distinction to be made between beliefs that can be motivating under favorable circumstances and beliefs that create hardiness in the face of failure. The belief that one's intelligence is on the line in an achievement situation can certainly light a fire under someone, but that same belief may be highly debilitating in the face of failure, particularly prolonged failure. I will take up this important point again later.

**Entity vs. Incremental Theories of Intelligence**

**Definitions of Intelligence**

What does intelligence consist of? Here I will simply mention a study with college students (Mueller & Dweck, reported in Dweck, 1999) showing that students holding an incremental theory were significantly more likely than those holding an entity theory to include knowledge and motivation in their definitions of intelligence (like young children). In contrast, students with an entity theory were significantly more likely to include references to broad abilities or capacity. Also when asked to complete the equation, Intelligence = % ability + % effort.

⁵When we measure theories of intelligence as an individual difference, 80–85% of students (later grade school through college) tend to agree consistently with an entity theory or with an incremental theory on our questionnaire, and they tend to be pretty evenly split among the two theories. Thus, most older students hold a clear theory, and both theories are quite popular. It should also be mentioned that it is possible to have an entity theory in one domain and an incremental theory in another. These domains could be different intellectual areas (reading vs. math), or they could be athletic ability vs. intellectual ability vs. musical ability, etc. In these cases, students would show different motivational patterns in the different domains.
incremental students (like young children) gave more weight to effort than ability, whereas entity students gave more weight to ability than effort.

**Goal Choice**

What is more important, looking smart or learning something new? When performance goals (a chance to prove an ability or avoid an invalidation of ability) are pitted against learning/mastery goals (a chance to increase ability), students with different conceptions of intelligence show different preferences. Those holding an entity theory of their intelligence tend to choose the performance goals compared to students holding an incremental theory, who tend to choose the learning goal to pursue (Aylor, 2000; Dweck & Sorich, 1999; Dweck & Leggett, 1988; Stone, 1998; see also Elliot & McGregor, 2000; Robins & Pals, 1998; Rhodewalt, 1994; Roedel & Schraw, 1995, for studies with older students). This is true both in American and Korean cultures (Kim, Grant, & Dweck, 2000). This means that students who believe in fixed intelligence will sacrifice learning in favor of a chance to look smart or avoid looking dumb.  

**Attributions**

What does failure mean? In line with their focus on ability and concerns about ability, students with an entity theory are more likely than those with an incremental theory to attribute their failures to a lack of ability rather than to effort, while incremental students key on effort (Dweck & Sorich, 1999; Henderson & Dweck, 1990; see also Hong, Chiu, Dweck, Lin, & Wan, 1999; Robins & Pals, 1998). This, too, is true for students in both the United States and Korea (Kim, Grant, & Dweck, 2000).

What are ability ascriptions based on? Butler (2000), in studies that both measured theories of intelligence and manipulated them, has shown that entity and incremental students use different bases for ascribing ability. First, for students with an entity theory, self-appraisals of ability were affected more by normative performance information than by temporal performance information. The opposite was true for students with an incremental theory. Thus, for one group of students, relative standing is what counts, while for the other, changes in skills and knowledge over time are what count.

Second, when asked to judge ability from improving or declining performance, students with an entity theory weighed the initial outcome most heavily, and judged the declining performance as indicating higher ability than...
the improving performance (both for themselves and others). In contrast, students with an incremental theory, in keeping with their focus on learning, weighed the last outcome most heavily, ascribing more ability to a student who had improved than to one who had deteriorated. Thus, one conception of intelligence puts the emphasis on mastery over time, whereas the other seems to put the emphasis on diagnosing underlying ability via normative information or initial performance.

**Effort Beliefs**

Does effort signify the presence or absence of ability? In many studies, a hallmark of younger children’s thinking is their belief that the student who works harder is the smarter one. Of course, this is the wrong answer to a simultaneous equation in which two students work on the same task, exert different amounts of effort, and attain the same level of performance. But in many circumstances in real life, effort need not imply low ability and indeed effort in the incremental view can bring about higher ability (Stipek & Gralinski, 1996; see also Jagacinski & Nicholls, 1984).

In a study by Dweck and Sorich (1999), junior high school students holding to an incremental theory saw effort as enhancing ability, as an effective way to achieve even when ability was not high, and as a way to overcome obstacles (see also Stipek & Gralinski, 1996). Given a hypothetical failure, they said they would study harder the next time (whereas entity theorists more than incremental theorists said they would probably put in less effort the next time—and would consider cheating instead!).

In contrast, students holding an entity theory were more likely than those with an incremental theory to believe that high effort in school indeed implies low ability and that effort is ineffective anyway when ability is low (cf. Stipek & Gralinski, 1996). Not surprisingly, they were also more likely to have strong effort-avoidance goals. Thus for entity students, effort is more dangerous (it can show you’re dumb), less effective, and more aversive.

**Intrinsic Motivation**

Several studies have suggested that holding an incremental theory of intelligence can foster intrinsic motivation (Aylor, 2000, Linehan, 1999; for studies with older students, see Aronson, Fried, & Good [in press]; Jourden, Bandura, & Banfield, 1991 [physical skills]; Robins & Pals, 1998) and also can foster its maintenance in the face of failure (Dweck, 1999; Columbia, 1990; Kim, Grant, & Dweck, 2000; Kasimatis, Miller, & Marcussen, 1996 [college]). Aronson, Fried, & Good (in press), for example, showed that African-American college students who were taught an incremental theory of intelligence showed higher enjoyment and valuing of academics (and earned higher grade point averages).
Self-Efficacy

Several studies with college students suggest that when students are given an incremental vs. entity theory, they are better able to maintain their level of self-efficacy in the face of challenge (Jourden, Bandura, & Banfield, 1991; Kasimatis, Miller, & Marcussen, 1996 (physical skills); Rohrback, 1993; Robins & Pals, 1998) or increase their self-efficacy over time as learning proceeds (Jourden, Bandura, & Banfield, 1991; Martocchio, 1994; Taberner & Wood, 1999). The impact of students' theories, however, appears to go beyond the impact of self-efficacy (Braten & Olaussen, 1998; Tabernero & Wood, 1989; Wood & Bandura, 1989; see also Henderson & Dweck, 1990).

Defensive or Self-Defeating Behavior

In line with the greater focus on validating their ability and not invalidating it, a few studies have found that students with an entity theory engage in more defensive behavior that may be designed to protect perceived ability but is also self-defeating. Rhodewalt (1994), in a study of college students, found greater self-handicapping among entity theorists, that is, greater use of low effort, illness, or procrastination as advance excuses for potentially poor performance in the future. Hong et al. (1999), also in studies with college students, showed that entity theorists who had deficiencies that could strongly hinder their future performance (such as a language deficiency in the language in which their classes were conducted) rejected opportunities for remedial action, presumably because remedial action requires both effort and admission of deficiency. (This was true whether theories of intelligence were measured or manipulated.) Indeed, as noted above under “Effort Beliefs,” students with entity views were more likely to say that if they did poorly in an area they would expend less effort on it in the future. (Dweck & Sorich, 1999; Kim, Grant, & Dweck, 2000) which is clearly self-defeating, especially if the area is an important one.

Performance

Several studies suggest that an incremental theory can aid performance both on challenging laboratory tasks (Pomerantz & Ruble, 1997; for studies with older students, see Jourden, Bandura, & Banfield, 1991; Tabernero & Wood, 1999; Wood & Bandura, 1989) and in school (Stipek & Gralinski, 1996), especially during a difficult school transition (Henderson & Dweck, 1990; Dweck & Sorich, 1999; for older students see Aronson, Fried, & Good, in press; Robins & Pals, 1998).

In these studies, prior ability and performance were equated across theory of intelligence groups (either because no prior difference existed, because any prior differences were controlled for statistically, or because participants
were randomly assigned to experimental condition), so the effects of the­ories of intelligence were not a result of differences in prior performance. There is, however, some evidence that performance in school can sometimes influ­ence the adoption of a theory of intelligence. For example, both Pomerantz & Saxon (2000) and Faria (1996) found that poorer performance in school could predict the adoption of an entity theory later on. This suggests that poor performance in evaluative contexts may lead some students to decide they have permanently inferior abilities.

Is an entity theory ever motivating? Just as it has been found that perfor­mance goals can be predictive of high grades when students are not facing challenge or failure (Grant, 2000), so too can an entity theory sometimes be predictive of high grades under these circumstances (Arshavsky, 1999; Eaton & Dembo, 1996). As noted earlier, perhaps by making students feel that their outcomes reflect on their permanent ability (Stone, 1998) an entity theory raises the stakes and stokes motivation, provided major setbacks are not encountered.

**INFLUENCES ON CHILDREN’S CONCEPTIONS OF INTELLIGENCE**

What practices might promote these different conceptions of intelligence in students? First, as experiments that manipulate students’ theories about their intelligence show, these beliefs can be directly taught (see Aronson & Fried, & Good, in press; Dweck & Leggett, 1988; Hong, Chiu, Dweck, Lin, & Wan, 1999). Second, several experimental studies in which adults’ feedback (criti­cism or praise) put the emphasis on trait judgment vs. process evaluation showed that trait judgment fosters an entity theory relative to process eval­uation, which fosters a more incremental theory (Kamins & Dweck, 1999; Mueller & Dweck, 1998). For example, in studies by Mueller and Dweck, stu­dents received praise for their intelligence or praise for their effort after a suc­cessful first trial on a task. In two of these studies, it was found that students who were praises for their intelligence favored an entity theory compared to students who were praised for their effort. This was true not only when their theories were assessed after the success (when students might well buy into the idea that their high ability is fixed), but also when they were assessed after a subsequent failure.

In a preliminary field analog of these studies (Dweck & Lennon, 2001), we have assessed students’ perceptions of their parents’ practices, finding that students who perceived their parents to be conveying a process (learning, effort, strategies) message through their feedback were more likely to have incremental theories about their intelligence than were students who saw
their parents as sending a trait (e.g., smart–dumb) message through their feedback.

Clearly much remains to be learned about how children’s ability beliefs are shaped through their experiences at home and in school (and with their peers), but there are a number of avenues of research that look promising. In the next section, I look at studies on the how adults with different theories of intelligence think about and act toward children, and these too can provide clues about how children’s ability beliefs might be shaped.

TEACHERS’, PARENTS’, AND EVALUATORS’ CONCEPTIONS OF ABILITY

A variety of recent work suggests that adults who hold different theories of intelligence judge and treat children differently. For example, teachers or other adults with an entity theory appear to render judgments of students more quickly, often on the basis of initial performance (Butler, 2000) or preliminary information (Plaks, Stroessner, Dweck, & Sherman, 2001). Moreover, the judgments they make appear to be more rigid, that is, less open to revision. In fact, Plaks, et al. found that the more a student’s performance went counter to initial expectations, the less attention entity theorists who were evaluating the student paid to it. Lee (1996), too, found that teachers with entity theories were more influenced by their initial expectations when they later evaluated and made placement decisions for a target child. Indeed Graziano, Jensen-Campbell, and Sullivan-Logan (1998) have shown how a great deal of the stability that might exist in children’s temperament or personality can stem from adults’ expectations of stability—and there is ample evidence that adults with an entity theory, in line with their theory of nonmalleability, have much higher expectations for stability in ability and other traits (see Chiu, Hong, & Dweck, 1997) and lower belief in their ability to influence their child’s learning (Wentzel, 1998).

Moreover, Smiley, Coulson, and Van Ocker (2000) have recently shown in a study of 4-year-olds and their parents that parents’ theories of intelligence already predict the achievement tasks they prefer for their children, with incremental parents much more strongly than entity parents preferring challenging tasks for their children even if it means the child might not succeed. Next, incremental parents are already emphasizing effort in that they think effort is the reason children succeed, whereas entity parents are already emphasizing ability, in that they attribute children’s success to talent. Reminiscent of Butler’s (2000) findings that teachers with entity theories give more weight to normative information in judging ability, entity mothers in the study of Smiley et al. are more interested in comparative feedback from teachers. And, finally,
fathers' implicit theories are already predicting children's task persistence, with incremental fathers having more persistent children.

**GENDER, RACE, AND CULTURE**

I have delineated two ability-related meaning systems, one organized around the trait of ability and one organized around processes like effort that use and feed ability. Do groups differ in the system they tend to adopt?

**Gender**

There is some suggestion that girls, especially bright girls, may more often than boys operate in the trait-focused system. They have been shown in some studies to hold more of an entity theory of intelligence (Xiang, 1996; see also Dweck, 1999) and to attribute failures more to lack of ability (Licht & Dweck, 1984; Stipek & Gralinski, 1991). Along with this, they have also been widely shown to have lower estimates of their ability and lower expectations of success in many areas (e.g., Stipek & Gralinski, 1991). Most interestingly, much of this starts in grade school considerably before girls show any lag in achievement and when, in fact, girls are still earning higher grades than boys. Thus although the late grade school years are sometimes depicted as idyllic ones for girls before the upheaval of adolescence, these findings suggest that some of the roots of girls' later problems with achievement (especially math achievement) and depression may already be in place. It may be only with the greater challenges and conflicts of adolescence (as well as the more impersonal instruction and more stringent grading of junior high school) that these existing vulnerabilities express themselves.

**Race**

Although African-American students are often shown to earn lower grades than their European-American peers, several studies with college students have shown that they actually endorse a more incremental theory than do European-American students (Aronson, Fried, & Good, in press; Lewis, 1999). Nonetheless, Aronson, Fried, and Good have demonstrated that an intervention that emphasizes an incremental theory was successful in increasing school engagement and grade point averages for African-American students.

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7It must be mentioned, however, that girls' ability perceptions in English/reading and in music have been found to be appreciably higher than boys' (Wigfield et al. 1997). It is an interesting question whether, given their high ability perceptions, their confidence in these areas is more hardy and resilient in the face of challenge.
(as well as further increasing their endorsement of an incremental theory). It is possible that with the obstacles that African-American students face, an even greater belief in the utility of effort in increasing ability is needed. For example, it is possible that although they hold an incremental theory, situations that create "stereotype threat" (Steele & Aronson, 1997) can catapult students into a framework in which they feel their fixed intelligence is being tested. This is an area in which future research would be highly interesting.

Culture

There is abundant evidence that Asian cultures tend to be more effort oriented than American culture in that they see effort the key to achievement (Stevenson et al., 1990), but this does not mean that they adopt all of the process-focused system I have described. For example, they may not have more of an incremental of intelligence than Westerners and they may sometimes be less oriented toward learning goals and more toward performance goals than Westerners (e.g., Kim, Grant, & Dweck, 2000; see also Chiu, Hong, & Dweck, 1997). It may simply be that whatever theory or goal they adopt, they believe more in the efficacy of effort for reaching that goal. For example, in the study by Kim et al. Korean students were more likely than American students to say that a failure would make them doubt their ability, but they still said, more than the Americans, that they would apply more effort in the future. This, too, would be fascinating to pursue.

SOME BROAD QUESTIONS FOR FUTURE RESEARCH

A picture of development has emerged, with a network of beliefs about goodness and badness dominating young children's motivation, and a network of beliefs about ability dominating achievement motivation from preadolescence on. What, however, rules motivation in the period between early childhood, when issues of goodness and badness rule, and preadolescence, when a coherent framework of ability beliefs emerges? We have seen that in these years, ability beliefs are forming and seem to control social comparison behavior, but do not yet have a consistent influence on children's attitudes, values, or coping. Do beliefs about goodness and badness continue to affect motivation until the ability system is in place? Or is this a period during which children tend to have no coherent system and so are in a way protected from setbacks and discouragement?

Some hint of what may be controlling motivation in this in-between period comes from new work by Butler and Baumer (2001). They found, first, that in the early school years, before social comparison has set in, most children tended to
treat tasks as mastery/learning tasks rather than as performance (competence assessment) tasks, regardless of how the tasks were presented. Later, but before students had mature conceptions of ability, their achievement orientations seemed to reflect the orientation of the educational setting that they typically tended to be in. If they were typically in cooperative, nonevaluative settings, they tended to treat tasks as mastery/learning tasks, whereas if they were typically in competitive, evaluative educational settings, they tended to treat all tasks as competence assessments, again regardless of what the task instructions stressed. (Only later, when children understood ability, could they more flexibly respond to whether the task instructions portrayed the task as a mastery/learning one or as a competence evaluation task.) This interesting study, then, suggests that perhaps in the in-between period children are guided most by what they find in their everyday learning environment.

Another question relates to how the early good–bad belief system may affect the emerging ability belief system. Do children tend to adopt the same meaning system for ability that they held for goodness, or is this a new domain affected by different experiences in different settings?

What happens to the early good–bad system once the ability system is in place? New research by Kamins and Dweck (2000) suggests that the early good–bad system is related to children's sense of contingent self-worth. Specifically, young children who believe that goodness–badness is a stable trait and show vulnerability to setbacks and criticism also believe that they are worthy only when they are behaving well, not when they are behaving poorly. In a related study with college students, a similar relation was found: Students who endorsed a belief in fixed intelligence also reported that their sense of worth rested on their academic success. Is this sense of contingent self-worth a very basic sense that is carried from early childhood into the later years? Or again, are these things that are constructed anew for different domains? (See Lawrence & Crocker, 1999, for a discussion of domain-specific contingencies of self-esteem.)

LESSONS FROM THE LITERATURE
(AND MORE QUESTIONS FOR THE FUTURE)

Reviewing this thriving literature has brought home a number of important points, and I would like to conclude by underscoring them.

- The importance of understanding when ability beliefs coalesce and come to have motivational value. As motivational psychologists and educators, we are interested not only in what children think but also in how this thinking affects...
their actions—their important choices in school, their engagement with academic tasks, their ability to persist effectively in the face of setbacks. Thus it is important for us to understand when children's beliefs begin to affect important aspects of their motivation.

For example, in the early grade school years, children's beliefs about their class standing start becoming more realistic (instead of overly optimistic). Is this good or bad? The answer depends on what motivational impact this has. In the early grade school years it does not seem to predict much of anything, but later on it begins to, and apparently leads some children to become discouraged and to devalue their studies.

In a related vein, some children hold an entity theory of ability long before it hooks up with its network of other motivationally relevant beliefs (such as effort beliefs and attributions) and with persistence and performance. Many fascinating questions emerge. What are these earlier nonmotivational versions of the beliefs doing? Are they stable? If so, are they sitting there “attracting” compatible beliefs over time that then coalesce to affect motivation? And, as I asked earlier, what is ruling motivation during the period in which the more inert, isolated beliefs do not seem to be doing so?

- The importance of understanding when a given belief might create vulnerability and when it might not. Some beliefs and goals can be highly motivating when things are going well, but may predict discouragement and poor performance when they are not, thus accounting for discrepant findings across studies. Here I stress the importance of studying how children deal with challenge or cope with failure as a way of understanding the full motivational value of ability beliefs.

Much lively research now surrounds the question of the adaptiveness of performance goals. In a recent study, Grant (2000) tracked students as they entered college and pursued a challenging pre-med curriculum. She found that several kinds of performance goals (including a desire to validate one's ability and a desire to validate it relative to others) look very motivating when students are not encountering difficulty. However, these same goals predict a strong loss of intrinsic motivation, as well as a failure to recover performance, after disappointing exam grades.

In the example of girls, given above, the same analysis can be applied: Bright girls' ability-focused belief systems may not pose a problem, and in fact could be motivating, until the adolescent environment creates the challenges and setbacks that reveal the vulnerability.

In summary, the adaptive value of ability beliefs (and goals) must be assessed under conditions of success and failure to understand their motivational value.

- The importance of individual differences as a tool for illuminating development. Developmental research that looks at change over age has revealed important overall trends in motivational variables and their relations. It has also shown how these trends might differ for certain gender or ethnic groups.
However, attention to individual differences has revealed other important things. For example, it has shown that motivational vulnerability can appear far younger than was thought. It has shown that similar trait vs. process meaning systems—that distinguish vulnerable from less vulnerable children—appear in younger children (around issues of goodness and badness) and in older children (around issues of ability). And it has revealed how process-oriented older students look in many ways like developmentally younger children in such things as their ability and effort beliefs.

Thus although there may be overall age differences in ability beliefs, looking only at age-wide differences may obscure within-age differences that have important implications for understanding motivation and development.

- The importance of *multiple methods* in the understanding of ability beliefs and their impact on achievement motivation. In the above example of girls’ vulnerability, longitudinal correlational studies might show the emergence of such things as girls’ greater depression or math-avoidant course choices after grade school, but experimental studies that expose girls to challenging tasks can reveal the earlier vulnerability before it expresses itself in their lives. Similarly, correlational studies can reveal environmental correlates of differences in ability conceptions (e.g., teacher or parent practices), but experimental studies can more precisely tease apart the components of these practices and their separate effects.

- The importance of distinguishing between *knowledge* and *beliefs*. A typical developmental question asks about the acquisition of knowledge: When do children come to understand something or build a more accurate picture of reality? This assumes that development inevitably leads children toward truth. But some of the most interesting motivational variables are constructions that may map poorly onto a known reality, yet may have enormous effects on behavior. For example, the students who retain confidence in their ability in the face of failure are not necessarily those who have the most ability (see Dweck, 1999). Moreover, when we think about conceptions of intelligence, even the experts aren’t quite sure what intelligence is—so students’ constructions of intelligence may differ in their impact but may not differ in their accuracy. Thus an important task for us is to understand more about how children construct their motivation-related “meaning systems,” about the nature of these meaning systems, and about the motivational cost and benefits of different meaning systems.

Perhaps, as I noted earlier, we might best think of developmental changes in reasoning and knowledge as leading children to be able to understand and adopt frameworks of beliefs, but, as I have noted, they do not tell us which they will adopt.

In conclusion, ability conceptions lie at the heart of achievement motivation, and the literature on how these conceptions develop is a thriving one. Although important questions have been answered, there are enough fascinating ones left to keep us busy for a long time to come.
Chapter 3. The Development of Ability Conceptions

References


Chapter 3. The Development of Ability Conceptions


Chapter 3. The Development of Ability Conceptions 87


 CHAPTER 4

The Development of Competence Beliefs, Expectancies for Success, and Achievement Values from Childhood through Adolescence

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In this chapter we review research on the development of children's competence—expectancy beliefs and achievement values. The research is based on an expectancy–value model of achievement motivation and behavior developed by Eccles and her colleagues (e.g., Eccles, 1993; Eccles et al., 1983; Wigfield, 1994; Wigfield & Eccles, 1992, 2000). Expectancy–value theory has been one of the most important views on the nature of achievement motivation, beginning with Atkinson's (1957) seminal work and continuing through the work of Battle (1965, 1966), the Crandalls (e.g., V. C. Crandall, 1969; V. I. Crandall, Dewey, Katkovsky, & Preston, 1964), and more recently Feather (1982, 1988, 1992) and Eccles, Wigfield, and their colleagues (e.g., Eccles, 1993; Eccles et al., 1983; Eccles, Adler, & Meece, 1984; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Wigfield, 1994; Wigfield & Eccles, 1992, 2000; Wigfield et al., 1997). To characterize the theory very broadly, theorists adopting this perspective posit that individuals' expectancies for success and the value they have for succeeding are important determinants of their motivation to perform different achievement tasks, and their choices of which tasks to pursue.
Atkinson (1957), who originally defined expectancies as individuals' anticipations that their performance will be followed by either success or failure, defined value as the relative attractiveness of succeeding or failing on a task.

In previous theoretical and review articles on this work, we have presented an expectancy–value model of achievement choice and behavior that expands Atkinson's (1957) original definitions of expectancy for success and task value (Eccles, 1993; Eccles et al., 1983), discussed the nature of achievement values (Parsons & Goff, 1980; Wigfield & Eccles, 1992), focused on how expectancies and values develop during childhood (Wigfield, 1994), and compared the expectancy and value constructs to related constructs in the motivation literature (Wigfield & Eccles, 2000). In this chapter, we review recent work on the development of children's expectancy beliefs and values, with a special focus on gender and ethnic differences in expectancies and values. We present information on how competence–expectancy beliefs and values relate to each other over time. We also discuss relations of competence beliefs, achievement values, and achievement goals. Finally, we discuss how children's expectancies and values relate to their achievement behaviors and activity choices. In this discussion we relate our work to recent work on the self-regulation of behavior and action control, discussing the roles that expectancies and values may play in the regulation of behavior.

**ECCLES, WIGFIELD, AND COLLEAGUES' EXPECTANCY–VALUE MODEL**

Eccles et al. (1983) developed an expectancy–value model of achievement choice as a framework for understanding early adolescents' and adolescents' performance and choice in the mathematics achievement domain. Figure 1 presents a recent version of the model. Eccles et al. (1983) proposed that children's achievement performance, persistence, and choice of achievement tasks are most directly predicted by their expectancies for success on those tasks and the subjective value they attach to success on those tasks. Children's expectancies and values themselves are most directly determined by other achievement-related beliefs, including children's achievement goals and self-schemata, and their task-specific beliefs (defined as beliefs about ability or competence and task difficulty beliefs). Children's interpretations of their past performance, and their perceptions of socializers' attitudes and expectations,

**FIGURE 1 (RIGHT)**

influence their goals and task-specific beliefs. Other influences are children's previous performance on different tasks, important socializers' beliefs, values, and behaviors, and various contextual and cultural influences.

For theoretical clarity it is crucial to define the expectancy and value constructs in the model (see also Wigfield & Eccles, 2000). Expectancies for success are defined as children's beliefs about how well they will do on an upcoming task. Beliefs about ability refer to children's evaluations of their competence in different areas. Related constructs also are prominent in other motivation models, in particular Bandura's (1997) self-efficacy theory, Covington's (1992) self-worth approach, Dweck and her colleagues' work on perceptions of intelligence (Dweck & Leggett, 1988), Ryan and Deci's (2000) self-determination perspective, and Weiner's (1979, 1985) attribution theory; these related constructs are discussed in Chapters 1, 2, 3, and 6 in this volume.

Wigfield and Eccles (2000) discussed how the definitions of the expectancy and ability belief constructs in our expectancy–value model differ from these other constructs (see also Pajares, 1996). Crucial differences include the level of specificity at which the constructs are defined and measured, and whether the focus primarily is on individuals' sense of their own competence, or their competence in comparison to others. For instance, Bandura and Schunk's construct of self-efficacy usually is measured quite specifically, and emphasizes the individual's own sense of whether they can accomplish a task. Theorists such as Covington, Dweck, and Ryan and Deci tend to take a more general approach to the definition and measurement of these constructs. We tend to measure these constructs at the domain-specific level, and to include individuals' comparative sense of competence along with their beliefs about their own ability. These are important differences, but a crucial similarity is that the individual's sense of competence is a key part of many models of motivation.

Values have both broad and more specific definitions. Rokeach (1973, 1979) broadly construed values as beliefs about desired end states. He identified a set of values that he believed were fundamental to human experience; some of these values concerned achievement. Schwartz (1992) also theorized about broad human values, listing 10 such values with achievement included as one of these values (see Rohan, 2000, for review of these theories). In the achievement motivation literature, subjective task values have been defined more specifically as how a task meets different needs of individuals (Eccles et al., 1983; Wigfield & Eccles, 1992). As discussed in more detail later, task values are a crucial part of the model because they impact individuals' choice. Individuals who feel competent at a given activity may not engage in it because it has no value for them.

Eccles et al. (1983) proposed four major components of subjective values: attainment value or importance, intrinsic value, utility value or usefulness of the task, and cost (see Eccles et al., 1983, and Wigfield & Eccles, 1992, for
more detailed discussion of these components). Building on Battle's (1965, 1966) work, Eccles et al. defined attainment value as the importance of doing well on a given task. More broadly, attainment value also deals with identity issues; tasks are important when individuals view them as central to their own sense of themselves. Intrinsic value is the enjoyment one gains from doing the task; this component is similar in certain respects to notions of intrinsic motivation (see Ryan & Deci, 2000; Harter, 1981). Utility value or usefulness refers to how a task fits into an individual's future plans, for instance, taking a math class to fulfill a requirement for a science degree. Cost refers to what the individual has to give up to do a task (e.g., do I do my math homework or call my friend?), as well as the anticipated effort one will need to put into task completion. Sample items measuring these constructs can be found in Wigfield and Eccles (2000).

**DEVELOPMENT OF CHILDREN’S COMPETENCE BELIEFS, EXPECTANCIES FOR SUCCESS, AND ACHIEVEMENT TASK VALUES**

We and others have done extensive work on the development of children's competence beliefs, expectancies for success, and achievement values. Because this work has been reviewed in detail elsewhere (e.g., Eccles, Wigfield, & Schiefele, 1998; Wigfield, 1994; Wigfield & Eccles, 1992), we present just a brief summary here. One kind of change addressed is the extent to which children's beliefs and values are differentiated or distinct. A second kind of change considered is mean level change.

**The Structure of Children’s Competence Beliefs and Values**

Various researchers have examined the structure of children's beliefs about competence, and some have examined children's subjective task values, to assess how the structure of these constructs becomes differentiated (e.g., Eccles & Wigfield, 1995; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Harter, 1982; Harter & Pike, 1984; Marsh, Barnes, Cairns, & Tidman, 1984; Marsh, Craven, & Debus, 1991, 1998). These researchers have factor-analyzed children's responses to various questionnaire measures of these constructs, and have found that even during the early elementary school years children dis-

1A third kind of change in children's beliefs and values concerns change in the meaning of these constructs across development. Children of different ages appear to have different conceptions of what ability is, with consequent influences on their motivation. Nicholls (1990) and Wigfield (1994) discuss these changes in depth.
tistinguish different domains of competence, including math, reading, general school, physical ability, physical appearance, peer relations, parent relations, and general self-concept.

Eccles and Wigfield (1995) and Eccles et al. (1993) looked at whether children's competence beliefs and expectancies for success are distinct constructs, as is proposed in the model of Eccles et al. (1983). Children in their studies ranged in age from first through twelfth grade. Results of confirmatory factor analyses showed that children's competence beliefs and expectancies for success load on the same factor; hence these components are not empirically distinct. Therefore, two of the constructs proposed as separate in the model (competence beliefs, expectancies for success) are not empirically distinguishable.

By contrast, both children and adolescents do distinguish between their competence beliefs and subjective values. This finding is crucial for the expectancy-value model. Even during the very early elementary grades children appear to have distinct beliefs about what they are good at and what they value in different domains. The different components of task value are less differentiated during the elementary school years, becoming differentiated during early adolescence (Eccles & Wigfield, 1995; Eccles et al., 1993).

In summary, even young children's competence beliefs are differentiated clearly across various activities, although their competence beliefs and expectancies for success are less clearly differentiated. Different components of subjective values also have been identified, especially in children in fifth grade and above. These results generally are consistent with the notion that children's beliefs become more differentiated as they get older (Harter, 1998), although some of this differentiation occurs very early on, earlier than once thought.

**Changes in the Mean Level of Children's Achievement Beliefs and Values**

Several researchers have found that children's competence beliefs and expectancies for success for different tasks decline across the elementary school years and into the middle school years (see Dweck & Elliott, 1983; Eccles et al., 1998; Stipek & Maclver, 1989). To illustrate, in the findings of Nicholls (1979a) most first graders ranked themselves near the top of the class in reading ability, and there was no correlation between their ability ratings and their performance level. In contrast, the 12-year-olds' ratings were more dispersed and correlated highly with school grades (0.70 or higher).

Similar results have emerged in cross-sectional and longitudinal studies of children's competence beliefs in a variety of academic and nonacademic domains by Eccles and her colleagues (e.g., Eccles et al. 1993; Wigfield et al. 1997) and Marsh (1989). These declines, particularly for math, often continue into and through secondary school (Eccles et al., 1983, Eccles, et al., 1989; Wigfield, Eccles, Maclver, Reuman, & Midgley, 1991). Across the elementary school
years, children's expectancies for success become more sensitive to both success and failure experiences and more accurate or realistic in terms of their relation to actual performance history (see Assor & Connell, 1992; Eccles et al., 1998; Parsons & Ruble, 1977; Stipek, 1984).

In contrast to these early studies using self-report measures, researchers using different methodologies (either asking different kinds of question or observing young children's reactions to their performance on different tasks) have shown that not all young children are optimistic about their abilities. Heyman, Dweck, and Cain (1993) observed that some preschool children already reacted negatively to failure, reporting that their failures mean they are not good people. Similarly, Stipek, Recchia, & McClintic (1992) reported that preschool children as young as 2 reacted both behaviorally and emotionally to failure experiences.

As with competence beliefs and expectancies for success, studies looking at changes in the mean level of children's values generally show that children value certain academic tasks less as they get older (see Eccles et al., 1998; Wigfield & Eccles, 1992, for complete reviews). The negative changes in children's competence-related beliefs and achievement values have been explained in two ways:

1. Because children become much better at understanding, interpreting, and integrating the evaluative feedback they receive, and engage in more social comparison with their peers, children become more accurate or realistic in their self-assessments, leading some to become relatively more negative (see Dweck & Elliott, 1983; Nicholls, 1984; Parsons & Ruble, 1977; Ruble, 1983; Shaklee & Tucker, 1979; Stipek & Maclver, 1989).

2. Because school environments change in ways that make evaluation more salient and competition between students more likely, some children's self-assessments will decline as they get older (e.g., see Blumenfeld, Pintrich, Meece, & Wessels, 1982; Eccles & Midgley, 1989; Wigfield, Eccles, & Pintrich, 1996).

**GENDER AND ETHNIC DIFFERENCES IN COMPETENCE-RELATED BELIEFS AND EXPECTANCIES FOR SUCCESS**

Before discussing gender and ethnic differences, some words of caution are in order. As other authors have pointed out, drawing conclusions about sex, racial, and ethnic differences must be done carefully (see Eisenberg, Martin, & Fabes, 1996; Graham, 1994; Ruble & Martin, 1998). Although such differences often are observed, in general they tend to be relatively small in terms of the amount of variance explained (e.g., Marsh, 1989). Thus there often is substantial overlap between different groups in the many different
variables measured in studies of sex and ethnic differences. Individual differences within groups typically are stronger than mean differences between groups; indeed, researchers have called for more study of these within-group variations rather than between-group comparisons, particularly in the case of ethnic differences (Graham, 1994). A major concern in interpreting racial and ethnic differences is that many researchers fail to consider the socioeconomic effects that often are confounded with racial and ethnic differences (see Graham, 1994). Even with these cautions in mind, there are reliable differences between various groups, and these differences are discussed in this section.

**Gender Differences in Beliefs About Competence**

Gender differences in competence-related beliefs during childhood and adolescence often are reported, particularly in gender-role stereotyped domains and on novel tasks (see Wigfield, Battle, Solomon, & Eccles, in press). For example, boys hold higher competence beliefs than girls for math and sports, even after all relevant skill-level differences are controlled. By contrast, girls have higher competence beliefs than boys for reading, English, and social activities (Eccles et al., 1989; Huston, 1983; Marsh, 1989; Marsh, et al., 1998; Wigfield, et al., 1991; Wigfield et al., 1997). These differences emerge remarkably early. Wigfield et al. (1997) conducted a longitudinal study of children's competence beliefs and valuing of different activities, including math, reading, and sports. They began when the children were in first, second, and fourth grade, and followed them for three years. The results showed that boys had higher competence beliefs for math and sports, and girls for English, even among the first graders. The age differences in beliefs did not change over time. Marsh, Craven, and Dubus' (1998) study of self-concepts included kindergarteners, and results were similar to those of Wigfield et al.

Few studies have looked at long-term change in children's competence beliefs. Jacobs, Lanza, Osgood, Eccles, & Wigfield (in press) followed the children in the study by Wigfield et al. (1997) through the end of high school, found that gender differences in math competence beliefs narrow by the end of high school. Gender differences in English competence beliefs favoring girls remain at the end of high school, but also are smaller than during the earlier school years.

The extent to which children endorse the cultural stereotypes regarding which sex is likely to be more talented in each domain predicts the extent to which girls and boys distort their ability self-concepts and expectations in the gender stereotypic direction (Early, Belansky, & Eccles, 1992; Eccles & Harold, 1991). That is, boys who believe that in general boys are better in math are more likely to have more positive competence beliefs in math. However, these sex differences are not always found (e.g., Dauber & Benbow, 1990; Schunk &
In summary, reliable sex differences in beliefs about competence for different activities have been found. One reason these differences are important is that competence-related beliefs are strong predictors of performance and task choice (Bandura, 1997; Eccles et al., 1983; Meece, Wigfield, & Eccles, 1990). Researchers looking at relations of competence beliefs to performance do not find sex differences in these relations; the links are as strong for girls as for boys (Meece, et al., 1990). But given that the sexes differ in their level of competence beliefs for different activities, performance differences may in part reflect these beliefs. For instance, on average girls doubt their competence in math more than boys do, and this likely influences their performance in math as well as their decisions about whether to continue doing math activities. Boys doubt their competence more in reading, again likely influencing their performance and choice.

**Gender Differences in Achievement Task Values**

Eccles, Wigfield and their colleagues have found gender-role stereotypic differences in both children’s and adolescents’ valuing of mathematics, music, sports, social activities, and English/reading (e.g. Eccles et al., 1989; Eccles, et al., 1993; Wigfield, et al., 1991, Wigfield et al., 1997). Across these studies, boys value sports activities more than girls do, although girls also value them highly. Relative to boys, girls value reading, English, and instrumental music more. Interestingly, recent work indicates that boys and girls value math equally (Eccles et al., 1993; Wigfield et al., 1997); in earlier work gender differences in the value of math emerged in high school (Eccles, et al., 1983). Recently we found that high school girls and boys reported valuing math equally (Jacobs et al., 2000). However, there are sex differences in interest in math and science-related fields during adolescence (see Gardner, 1998, and Wigfield, Battle, Solomon, & Eccles, in press, for review). By adolescence, girls report less interest in science than do boys and are much less likely to enroll in science and technically oriented classes, or pursue these areas for their careers.

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2Work on children's attributions for success and failure is for the most part outside the scope of this chapter. However, because ability is a central attribution, work on sex differences in attributions to ability is germane to this section of the chapter. Sex differences in attributions to one's ability have been observed in some studies, but not in others. Some researchers (e.g., Dweck & Goetz, 1978) find that girls are less likely than boys to attribute success to ability and more likely to attribute failure to lack of ability. Others have found that this pattern depends on the kind of task used, occurring more with unfamiliar tasks or stereotypically masculine achievement task and sometimes does not occur at all (see Eccles et al., 1998, for further review).
Values also can be conceived more broadly to include things such as notions of what are appropriate activities for males and females to do. Sometimes such values can influence engagement in achievement-related activities. The role of conflict between gender roles and achievement in gifted girls’ lives is well illustrated by results of an ethnographic study of a group of gifted elementary school girls. Bell (1989) interviewed a multiethnic group of third to sixth grade gifted girls in an urban elementary school regarding the barriers they perceived to their achievement in school. Five gender-role-related themes emerged with great regularity: (a) concern about hurting someone else’s feelings by winning in achievement contests (b) concern about seeming to be a braggart if one expressed pride in one’s accomplishments (c) overreaction to nonsuccess experiences (apparently not being the very best is very painful to these girls) (d) concern over their physical appearance and what it takes to be beautiful and (e) concern with being overly aggressive in terms of getting the teacher’s attention. In each case the gifted girls felt caught between doing their best and either appearing feminine or caring (see Eccles et al., 1998 for more details on gifted girls).

In summary, as with competence beliefs there are gender differences in children’s and adolescents’ valuing of different activities. These differences are important for understanding the development of gender differences in achievement, particularly as exemplified in choices of which activities to pursue. Although overall it appears that sex differences in achievement in different areas have declined over the last quarter century (see Eisenberg, Martin, & Fabes, 1996; Ruble & Martin, 1998), sex differences in choice of which activities and careers to pursue remain strong (see Wigfield, Battle, Solomon, & Eccles, in press). These differences are tied to the gender differences in valuing of various activities just reviewed.

**Ethnic Differences in Competence Beliefs and Values**

As is the case in many areas of psychology, less is known about the motivation of children from different racial and ethnic groups (see Graham, 1992). However, work in this area is growing quickly, with much of it focusing on the academic achievement difficulties of many African-American children (see Berry & Asamen, 1989; Hare, 1985; Slaughter-Defoe, Nakagawa, Takanishi, & Johnson, 1990). Recent work has also focused on other minority groups within the United States and on recent immigrant populations, some of whom are doing much better in school than both white middle class children and third-and-fourth generation members of the same national heritage (e.g., Slaughter-Defoe, Nakagawa, Takanishi, & Johnson, 1990; Chen & Stevenson, 1995, Kao & Tienda, 1995).
Graham (1994) reviewed the literature on differences between African-American and European-American students on such motivational constructs as need for achievement, locus of control, achievement attributions, and ability beliefs and expectancies. She concluded that, in general, the differences are not very large. Further, she argued that many existing studies have not adequately distinguished between race and socioeconomic status, making it very difficult to interpret any differences that emerge. Cooper and Dorr (1995) did a meta-analysis of many of the same studies reviewed by Graham in order to compare more narrative and more quantitative types of reviews. Although there were some important points of agreement across the two reviews, Cooper and Dorr concluded that there is evidence suggesting race differences in need for achievement favoring Whites, especially in lower socioeconomic status (SES) and younger samples.

Research on competence beliefs and expectancies has revealed more optimism among African-American children than among European-American children, even when the European-American children are achieving higher marks (e.g., Stevenson, Chen, & Uttal, 1990). But more importantly, Stevenson et al. found that the European-American children's ratings of their ability related significantly to their performance, whereas the African-American children's did not. Graham (1994) suggested the following explanations: (1) African-American and European-American children may use different social comparison groups to help judge their own abilities and (2) African-American children may say they are doing well to protect their general self-esteem, and may also devalue or disidentify academic activities at which they do poorly in order to protect their self-esteem. However, neither of these explanations has been adequately tested. If African-American children's competence-related beliefs indeed do not predict their school performance, then questions must be raised about how relevant theories focusing primarily on competence-related beliefs are for understanding these children's motivation.

Initially, researchers studying minority children's achievement values focused on the broader valuing of school by minority children and their parents. In general, these researchers find that minority children and parents highly value school (particularly during the elementary school years) and have high educational aspirations for their children (e.g., Stevenson, Chen, & Uttal, 1990). However, the many difficulties associated with poverty (see Duncan, Brooks-Gunn, & Klebanov, 1994; Huston, McLoyd, & Coll, 1994; McLoyd, 1990) make achievement of these educational aspirations problematic. It is important for researchers to extend this work to more specific value-related constructs. Graham and her colleagues have begun very important work in this area, and it is in Chapter 5 of this volume.

Researchers interested in ethnic and racial differences in achievement have proposed models linking social roles, stereotyping of groups, and individuals' competence-related beliefs and values (see Chapter 5 in this volume for...
further discussion). For example, Steele (1992) proposed stereotype vulner­
ability and disidentification to help explain the underachievement of African­
American students. Confronted throughout their school career with mixed
messages about their competence and potential and with the widespread
negative cultural stereotypes about their academic potential and motivation,
African-American students are likely to find it difficult to concentrate fully on
their school work as a result of the anxiety induced by their stereotype vul­
nerability (see Steele & Aronson, 1995). In turn, to protect their self-esteem,
they are likely to disidentify with academic achievement, leading to both a
lowering of the value they attach to academic achievement and a detachment
of their self-esteem from positive and the negative academic experiences
alike. In support, researchers have found that academic self-concept of abil­
ity is less predictive of general self-esteem for some African-American chil­
dren (Winston, Eccles, Senior, & Vida, 1997).

Fordham and Ogbu (1986) made a similar argument linking African­
American students' perception of limited future job opportunities to low­
ered academic motivation: Since society and schools give African-American
youth the dual message that academic achievement is unlikely to lead to
positive adult outcomes for them and that they are not valued by the sys­
tem, some African-American youth may create an oppositional culture that
rejects the value of academic achievement. Ogbu (1992) discussed how this
dynamic will be stronger for involuntary minorities who continue to be dis­
criminated against by mainstream American culture (e.g., African-Ameri­
cans, Native Americans) than for voluntary minority immigrant groups (e.g.,
recent immigrants from Southeast Asia). Although voluntary minorities
have initial barriers to overcome due to language and cultural differences,
these barriers can be overcome somewhat more easily than the racism faced
by involuntary minorities, giving voluntary minorities greater access to
mainstream culture and its benefits.

Contrary to this view, several investigators found no evidence of greater
disidentification with school among African-American students (e.g., Stein­
berg et al., 1992; Taylor et al., 1994). But several studies show that disidenti­
fication, particularly as a result of inequitable treatment and failure
experiences at school, undermines achievement and academic motivation
(e.g., see Finn, 1989; Taylor et al., 1994). It is likely that some students, par­
ticularly members of involuntary minority groups, will have these experiences
as they pass through the secondary school system.

Indeed, Osborn (1997) studied disidentification longitudinally from eighth
through twelfth grade in a nationally representative sample of White, Hispanic,
and African-American students, using data from the National Educational Lon­
gitudinal Study (NELS). He found that the self-reported grades of White stu­
dents stayed stable over time, those of the Hispanic-American students
decreased somewhat, and those of African-American students decreased the
most. At all three time points the African-American students reported the highest self-esteem. Relations of grades and self-esteem were significant but relatively modest for all groups in eighth grade. All groups showed some decrease over time in the relations of their self-esteem to their grades, but this decrease was most pronounced for African-American males. At both tenth and twelfth grades the correlations were not significant for this group; in all other groups they remained significant. This is important evidence for disidentification with school in African-American males. The sex differences in these correlations are particularly important to note; Steele's and Ogbu's analyses seem more applicable to African-American males than to African-American females (see Graham, and Taylor, Chapter 5, this volume, for further discussion of race by gender interactions).

Any discussion of motivational differences across different ethnic groups must take into account larger contextual issues. For example, Spencer and Markstrom-Adams (1990) argued that many minority children, particularly those living in poverty, have to deal with several difficult issues not faced by majority adolescents such as racist prejudicial attitudes, conflict between the values of their group and those of larger society, and scarcity of high-achieving adults in their group to serve as role models. These difficulties can impede identity formation in these adolescents, leading to identity diffusion or inadequate exploration of different possible identities (Taylor et al., 1994). Similarly, Cross (1990) argued that one must consider the development of both personal identities and racial group identity. Some African-American adolescents who have positive personal identities may be less positive about their racial group as a whole, whereas others may have negative personal identities but positive orientations toward their group. Cross argued that many researchers have confounded these two constructs, leading to confusion in our understanding of identity development in, and its motivational implications for, African-Americans.

Finally it is critical to consider the quality of the educational institutions that serve many of these youth. 37% of African-American youth and 32% of Hispanic youth, compared to 5% of European-American and 22% of Asian youth, are enrolled in the 47 largest city school districts in this country. In addition, African-American and Hispanic youth live in some of the poorest school districts in this country: 28% of the youth enrolled in city schools live in poverty and 55% are eligible for free or reduced cost lunch, suggesting that class may be as important (or more important) as race in the differences that emerge. Teachers in these schools report feeling less safe than teachers in other school districts, dropout rates are highest, and achievement levels at all grades are the lowest (Council of the Great City Schools, 1992). Finally, schools that serve these populations are less likely than schools serving more advantaged populations to offer either high-quality remedial services or advanced courses and courses that facilitate the acquisition of higher order
thinking skills and active learning strategies. Even children who are extremely motivated may find it difficult to perform well under these educational circumstances.

Graham (1994) made several important recommendations for future work on African-American children's motivation. We think these recommendations can be applied more broadly to work on different racial and ethnic groups. Two particularly important recommendations are (1) the need to separate out effects of race and social class, and (2) the need to move beyond race comparative studies to studies that look at individual differences within different racial and ethnic groups (e.g., McClendon & Wigfield, 1998), and at the antecedents and processes underlying variations in achievement outcomes among minority youth (e.g., Connell, Spencer, & Aber, 1994; Luster & McAdoo, 1994; Schneider & Coleman, 1993; Tienda & Kao, 1995). Studies of recent immigrant populations and comparative studies of different generations of immigrant populations move in these directions. For example, work by Stevenson and his colleagues, by Tienda and her colleagues, and by Fuligni demonstrates the power of the types of motivational construct discussed thus far in explaining both within- and between-group variation in academic achievement (e.g., Chen & Stevenson, 1995; Lummis & Stevenson, 1990).

**EXPECTANCIES, VALUES, GOALS, AND ACHIEVEMENT BEHAVIORS**

The work reviewed in the preceding sections provides a picture of our current knowledge about the development of competence-related beliefs and achievement task values in different groups. For the most part in the preceding discussion we treated these constructs separately. In our model these constructs are said to interrelate, to relate to other constructs, and to relate to different achievement outcomes. We turn to these interrelations in the sections that follow and describe some of our recent empirical efforts designed to address them.

**Relations Among Competence-Related Beliefs and Subjective Task Values**

In original statements of the expectancy-value model, competence beliefs were posited to predict both expectancies for success and achievement values. Relations between expectancies and values themselves were not specified. Researchers have found that children's' competence and expectancy beliefs relate positively to their subjective values (e.g., Battle, 1966; Eccles & Wigfield, 1995), with the relations apparent as early as first grade (Wigfield et
al., 1997). These findings contrast with Atkinson’s (1957) assertion that the most valued tasks are the ones that are difficult for individuals to do (i.e., tasks on which individuals have low expectancies for success). It appears that for real-world achievement, individuals value the tasks at which they think they can succeed.

Eccles and Wigfield (1995) and Wigfield et al. (1997) looked at how the different components of task value related to competence and expectancy beliefs. Wigfield et al. (1997) found that children’s competence-related beliefs related more strongly to their interest in academic activities than to the perceived usefulness of the activities. In nonacademic domains (sport, music) these relations were similar in size. Eccles and Wigfield (1995) in their study of fifth through twelfth graders’ math self-perceptions and values found that relations between competence—expectancy beliefs and both interest and perceived importance were stronger than relations of competence—expectancy beliefs and perceived usefulness of math. Thus the more intrinsic aspects of value (interest and importance) relate more closely to children’s competence-related beliefs.

Much has been written in the motivation field about relations of competence beliefs and interest; for instance, both Harter (1978) in her effectance motivation model and Ryan and Deci (2000) in their self-determination perspective propose that competence beliefs and intrinsic motivation relate positively. Our work provides further support for these relations. We have begun to examine relations over time between children’s competence-related beliefs and values, focusing on the interest component of value. This work addresses the crucial question of causal relations between competence beliefs and value. In this work we used data from the Michigan Childhood and Beyond Study (see Eccles et al., 1993; Wigfield et al., 1997) to examine the relations over a three-year period in three different cohorts of children ranging in age from second through sixth grades. We looked at these relations in the achievement domains of math, reading, and sport. Interesting cohort and domain differences emerged in the structural equation modeling analyses. For the youngest cohort (second through fourth graders), competence-related beliefs were linked over time, as were children’s ratings of interest, but there were few direct links over time between competence beliefs and interest. In the older cohorts relations over time among the constructs generally were stronger. When cross-construct relations over time emerged, they tended to be from competence-related beliefs to interest rather than the reverse. This pattern was most likely to occur in the domains of reading and sport; in math few of the cross-construct relations were significant.

Our work is the first study to look at these relations over time, and the results indicate that competence beliefs appear to take some causal precedence, as predicted in our earlier model (Eccles et al., 1983). For the achievement domains we studied, a sense of competence appears to influence the level of interest of children of elementary school age in the activity, especially
reading and sport. These results have important implications for motivational intervention, notably that it may be better to focus initially on competence beliefs when working with children with motivational problems.

**Relations of Competence-Related Beliefs, Achievement Values, and Achievement Goals**

With the emphasis in motivation theory on cognitive aspects of motivation, many motivation researchers have begun to study the goals children have for achievement. Researchers studying children's goals have focused on the content of these goals, relations between academic and social goals, and goal orientations children have toward achievement (see Chapter 8 by Anderman, Austin, and Johnson and Chapter 9 by Wentzel for review).

Because goals and values both have to do with the purposes individuals have for engaging in different activities, we have been interested in exploring possible relations between children's achievement values and achievement goals, focusing on children's goal orientations (see Wigfield, 1994; Wigfield & Eccles, 1992). As discussed in greater detail in Chapter 8, for a number of years two kinds of goal orientations were the major focus of researchers. The first emphasizes individuals' attempts to master tasks and increase their competence. This orientation is labeled task involved by Nicholls and his colleagues (e.g., Nicholls, 1979b; Nicholls, Cobb, Yackel, Wood, & Wheatley, 1990) and Maehr, Midgley, and their colleagues (e.g., Maehr & Midgley, 1996; Midgley et al, 1998); it is classified as learning by Dweck and her colleagues (e.g., Dweck & Leggett, 1988), and as mastery oriented by Ames (1992). The second kind of goal orientation concerns individuals' attempts to maximize favorable evaluations of their competence and minimize negative evaluations of competence. This orientation labeled ego involved by Nicholls and his colleagues, and performance by Dweck and colleagues and Ames, Maehr, Midgely, and their colleagues. Although there are some differences in the conceptualizations of these goal orientations by different researchers (see Thorkildsen & Nicholls, 1998), many motivation researchers believe they overlap in substantial ways. Goal theorists generally posit that a task or mastery orientation has important motivational benefits.

Researchers have now made further distinctions between different kinds of performance goals. Performance-approach goals lead individuals to do achievement tasks to get better grades than others and to demonstrate their good performance. By contrast, performance-avoidance goals involve attempts to avoid failure or the appearance of incompetence. Such goals can inhibit achievement strivings (see Elliott & Harackiewiz, 1996). This distinction is reminiscent of the approach–avoidance distinction contained in the classic Atkinson (1957) expectancy–value model of achievement motivation. This distinction is discussed in more detail in Chapter 8.
Wigfield (1994) and Wigfield and Eccles (1992) discussed ways in which children's achievement values might relate to their goal orientation. They suggested that when an individual values a task primarily for intrinsic reasons, they would be likely to approach the task with a mastery goal orientation. If the individual valued the task primarily for utilitarian reasons then perhaps they would approach it with a performance orientation, attempting the task if they know they can succeed, and avoiding it if it seemed too difficult.

Wigfield, Anderman, and Eccles (2000) used data from the Michigan Childhood and Beyond study in an empirical assessment of relations between third through sixth grade children's competence beliefs, achievement values, and goal orientations. They had two fundamental purposes in this work: to assess whether the constructs were empirically distinct, and to look at relations among them. The questionnaires children completed included items assessing competence-related beliefs, achievement values, and goal orientations; to date no study has addressed all three constructs together. The items assessing goal orientations tapped mastery goals, performance–approach goals, and extrinsic goals, which have to do with accomplishing schoolwork because parents or teachers want the child to. Confirmatory factor analyses indicated a six-factor solution best fit the data; one competence belief factor, two task values factors (interest and usefulness–importance), and three goal factors (mastery, performance–approach, and extrinsic). Children's competence-related beliefs related significantly to both their mastery and performance–approach goals, but not to extrinsic goals. Children's achievement values related significantly to all three kinds of goals, but the relations were strongest for task mastery goals.

The most intriguing results of this study are that children's achievement values and goal orientations formed distinct factors. Although both constructs deal broadly with the purposes children have for engaging in different activities, they appear to be distinct. These results lend support to both expectancy–value theory and goal theory. Given the distinctiveness of each construct, an interesting task for future research is to examine further the relations between them. Our results indicate that values and goals are positively related. How might these relations unfold over time? Does the way in which children value different activities influence the kinds of goal orientations they have? Or do their goal orientations lead them to value tasks in different ways (see Wigfield, 1994; Wigfield & Eccles, 1992, for further discussion)? Such questions await further research.

**Competence Beliefs, Achievement Values, and the Self-Regulation of Achievement Behavior**

In various presentations of the model, we have posited that individuals' expectancies for success and achievement values predict their achievement outcomes, including their performance, persistence, and choices of which
activities to do (e.g. Eccles, 1993; Eccles et al., 1983; Eccles et al., 1998). We have obtained empirical support for these proposed links in longitudinal studies of children ranging in age from 6–18. The major findings from these studies are that even when the level of previous performance is controlled, students' competence beliefs strongly predict their performance in different domains, including math, reading, and sport. Students' achievement task values predict both intentions and actual decisions to keep taking mathematics and English and to engage in sports. The relations are evident in children as young as first grade, although the relations strengthen across age (Eccles, 1984a, 1984b; Eccles et al., 1983; Eccles & Harold, 1991; Meece, Wigfield, & Eccles, 1990; Wigfield, 1997; see Wigfield, 1994; Wigfield & Eccles, 1992 for more detailed review of these studies). Note one important difference between these findings and the links predicted in the model: In the model, competence-related beliefs and values were posited to predict the same outcomes. In the empirical work, children's competence-related beliefs have their strongest direct effects on performance, while achievement values have their strongest direct effects on choice. Because of the positive relations of competence-related beliefs and values, it is important to note that each does have indirect effects on the other achievement outcomes.

Most of our empirical work to date has examined how children's competence beliefs and values relate to these rather general achievement outcomes like course grades and course enrollment decisions. Wigfield (1994) provided a more micro-level analysis of the relations of children's achievement values, and their achievement behaviors. He suggested that students who value different academic activities likely will study harder and more effectively. They also should continue to pursue goals they have set even if they encounter difficulties. Wigfield also discussed the issue of the synchrony of the components of achievement values. Some children may find certain achievement activities interesting, important to them, and useful. Others may see utility in some tasks, but have little interest in doing them. Children whose values are in synchrony may be more positively motivated to engage in an activity than those whose values are not in synchrony. Our empirical work shows that the components of task value do relate positively to one another, particularly the interest and importance components. Thus many children's values may be synchronous, but given that the relations among the value components are not at unity, this is not always the case.

The previous discussion concerns how children's expectancies and values help to regulate their achievement behaviors. The question of how people regulate their behavior in different areas has been a focus of a great deal of research over the past two decades (see Pintrich & Zusho, Chapter 10, this volume, and Boekaerts, Pintrich, & Zeidner, 2000, for review). Researchers have developed various models of self-regulatory and volitional processes having to do with the control of action (see Wigfield, 1994, for discussion of how achievement values and volitional processes may relate). These models
are relevant to this section of our chapter because they go beyond documentation of relations of beliefs and behavior to a consideration of processes involved in these relations. Some of these processes could be incorporated into expectancy–value models to clarify the links between beliefs, values, and achievement behaviors. At the same time, expectancy–value models have relevance for models of self-regulation, in as much as the particular beliefs and values included in the models likely influence the ways in which individuals regulate their behavior. We consider next some of the ways in which these two bodies of work can be connected.

As is the case in studies of motivation, researchers proposing models of self-regulation have attended more to competence-related beliefs than to values. For instance, Schunk and Ertmer (2000) and Zimmerman (2000) take a social–cognitive approach to self-regulation. These researchers discuss phases of self-regulation, including forethought/planning, performance, and reflections on performance. Self-efficacy plays a prominent role in each of these phases; Zimmerman highlights efficacy’s role in goal setting, to give one example. When individuals believe they can accomplish different activities, they set loftier goals for themselves. Efficacy beliefs also help guide performance and play a part in the self-regulation of that performance. Rheinberg, Vollmeyer, and Rollett (2000) also posit that expectancies are important determinants of individuals’ goals and the strength of their motivation in different learning situations.

Carver and Scheier (2000) have developed an intriguing model of self-regulation dealing with how intentions are translated into actions and then assessed. The assessments involve elaborate feedback processes that help the individual determine whether the goal has been achieved, particularly by the use of standards in judging one’s behavior. Decisions about whether to continue to pursue the activity, or withdraw from it, are an important part of the model. Individuals’ expectations play a key role in how confident they are about whether they can attain a goal, and also figure in decisions about whether to maintain engagement or to disengage. When expectancies are high, continued engagement is more likely. From the perspective of this model, processes involved in the relations of competence beliefs to performance thus include how individuals set goals for themselves, their confidence while they are doing different activities, and how they interpret feedback they receive about their performance.

In contrast to competence-related beliefs, achievement values have played a less central role in many models of self-regulation, although they have received some attention. Schunk and Ertmer (2000) noted that the value of an activity is an important part of the forethought or preengagement phase of self-regulation; when activities are valued, students will devote more time both to planning for them and doing them. Rheinberg et al. (2000) also incorporated values into their model. They specified different questions individuals pose to themselves concerning potential links of their actions to
desired outcomes. One of the questions is a “values” question: Are the con­sequences of the action important enough to me? If the answer is yes, the individual more likely will undertake the action. If no, then engagement is less likely.

Generally, however, those posing models of self-regulation emphasize goals rather than values; goals are given a prominent role in leading people to action (e.g., Boekaerts & Niemivirta, 2000; Carver & Scheier, 2000; Pintrich, 2000; Schunk & Ertmer, 2000; Zimmerman, 2000). Some of these researchers emphasize goal orientations (Boekaerts & Niemivirta; Pintrich), whereas others discuss specific goals for different tasks or activities (Carver & Scheier, Schunk & Ertmer, Zimmerman). There may be an intersection of these constructs in the notion of a goals hierarchy. Both Carver and Scheier and Shah and Kruglanski (2000) posit that some goals are organized in hierarchies. For Carver and Scheier the importance of the goal is a basis for the goal hierarchy; goals at higher levels of the hierarchy are thought to be more important to the individual. From the perspective of expectancy–value theory, goal hierarchies also may be organized around the other aspects of task value. Different goals may be more or less useful to the individual, or more or less interesting. We have predicted that the relative value attached to the goal should influence its placement in a goal hierarchy, as well as the likelihood that the individual will try to attain the goal.

Shah and Kruglanski (2000) also stressed that goals are related laterally as well as hierarchically. They stated that goals are more likely to be attained when they are in synchrony with other goals. When goals conflict, however, they are harder to fulfill. The person’s achievement values again could play a role in determining how much goals are in synchrony with one another, or in conflict. The cost aspect of values defined by Eccles et al. (1983) could be particularly relevant in these relations. As discussed earlier, cost concerns are important for task choice: Individuals understand that doing one activity (studying) precludes doing another activity (going outside to play). Thus the relative cost of different activities could have an impact on the kinds of goals one sets. If an activity is perceived as too costly, then goals to attain it might be changed.

One essential part of behavioral regulation is choice of whether or not to continue to do different activities; such choices often can be complex in real-world achievement situations where there are many uncertainties about probable outcomes (see Buseymer & Townsend, 1993; Byrnes, 1998 for discussion of complex decision making under uncertainty). The decision about whether to continue or discontinue an activity often comes as individuals reflect back on their performance (see Schunk & Ertmer, 2000; Zimmerman, 2000). Scheier and Carver (2000) provide a fascinating discussion of how information processing through feedback loops, affective reactions, and expectancies for success provides the basis for deciding whether or not to continue doing an
activity. As discussed earlier, we have found that children's valuing of different activities predicts their choices about which activities to pursue, often more strongly than expectancies for success. Thus we would argue that the role of values in such decision making needs to be considered more carefully in models of self-regulation.

How might the self-regulatory models influence expectancy-value models? Certain of the processes we have discussed, such as Carver and Scheier's (2000) feedback notions, and the different phases of behavioral regulation discussed by Schunk and Ertmer (2000) and Zimmerman (2000), seem particularly useful in conceptualizing more clearly relations of expectancies, values, performance, and choice. The incorporation of such processes from recent models of self-regulation into expectancy-value models would allow them to address the nuances of performance and choice more clearly.

This chapter (and book) focuses on the development of various motivational processes, and we conclude this section with a brief consideration of developmental issues regarding expectancies, values, and self-regulation. The kinds of self-evaluative process involved in the regulation of behavior require sophisticated cognitive processing of performance and other information, something young children have difficulty with, as discussed earlier. Although the regulation of achievement behavior is an important educational goal, many children only gradually learn how to regulate their own behavior. Zimmerman (2000) discussed developmental levels of self-regulation, beginning with the observation of someone who already is skilled at self-regulation. Next is emulation, in which the individual can model his or her behavior after the expert. The third level is self-control, where learners can regulate behavior on their own in relatively simple, structured settings. Individuals are said to be self-regulated when they can adapt and control their own behavior under a range of conditions and circumstances. Zimmerman does not assume these phases form an invariant sequence. It also is possible that in very new learning situations some of the levels may need to be revisited. However, Zimmerman notes that once learners have reached level 4, it often is their own choice that determines whether they act in self-regulated ways.

The processes by which expectancies and values influence (and are influenced by) self-regulation are also likely to change over time. As discussed earlier, children's competence-related beliefs and values initially are optimistic and not accurate in terms of their relations to performance. Their influence on self-regulatory processes likely is limited at this time. As children's beliefs and values reflect their performance more closely, they can have a stronger impact on self-regulation, and decisions about whether to continue to engage in activities. The specific ways these complex relations change over time await further study.
FUTURE RESEARCH DIRECTIONS

Suggestions for future research have been made throughout the chapter. In this final section we discuss some additional topics we think are deserving of future research.

Research on Competence Beliefs

As a result of the focus in the motivation literature on competence-related beliefs, we have learned a great deal about them. There still is important work to do on the development of competence-related beliefs, however (see also Chapter 1 by Schunk and Pajares, this volume). One important issue is to continue to examine how similar or different the various constructs in this area (self-efficacy, competence beliefs, expectancies) are. Theoretically, distinctions among them can be drawn; but as discussed earlier, empirically they often are strongly related. For instance, Skaalvik and Rankin (1998) factor-analyzed children's responses to a self-efficacy measure and to a broader measure of self-concept of ability. They found that the two sets of items loaded on the same factor. In our work, competence beliefs and expectancies also load together. Yet there are some compelling theoretical reasons for distinguishing among these constructs.

The issue of domain specificity vs generality of competence beliefs also is an important one to consider (see also Schunk & Ertmer, Chapter 1, this volume; Wigfield, 1997). In our work different areas of academic and nonacademic competence can be clearly distinguished even in young children; children have a differentiated view of their abilities (Eccles et al., 1993). Yet as children accumulate more experience in a domain, perhaps they also develop a generalized sense of competence (or incompetence) in that domain. Marsh's (1990) work on the structure of academic self-concept showing higher order factors explaining relations among first-order factors exemplifies this idea. This generalized sense would be much more sophisticated than the earlier undifferentiated sense of competence Harter (1983) discussed, since it is based on extensive experience in a given domain. The developmental progression of such more generalized belief structures still is not completely understood.

Research on Achievement Values

As mentioned earlier there has been less work on the development of children's achievement values than on their competence-related beliefs. This situation is changing in important ways, however. We now have charted the course of development from childhood through adolescence of the different components of task value specified in our model (e.g., Eccles et al., 1993;
Jacobs et al., 2000; Wigfield, et al., 1991; Wigfield et al., 1997). Graham (Chapter 5 in this volume) is doing some very interesting work on valuing of achievement in different groups of students, using a peer nomination methodology.

Other researchers are contributing important work on achievement values. In the lead article in a special issue of *Educational Psychologist* devoted to achievement values, Brophy (1999) made the point that we still do not understand how learners come to value different learning activities. He discussed how children’s valuing of activities is facilitated when the activities are meaningful to them, are connected to other things they do, and are authentic; these points are similar to those made by cognitive researchers on how to foster learning. Brophy emphasized teachers’ roles in scaffolding children’s valuing of learning, helping them to appreciate and recognize as authentic different activities that they do. He also proposed that there may be a motivational zone of proximal development (ZPD) along with a cognitive ZPD, and argued that learning occurs best when students are in both their cognitive and motivational ZPDs.

In particular, students may appreciate learning activities when they see that the activity relates to their future goals. Raynor (1969) and Raynor and Entin (1982) expanded Atkinson’s (1957) classic expectancy-value theory to include future orientation as an important motivational characteristic. Markus and Nurius’s (1976) notion of “possible selves” also deals with individuals’ sense of themselves in the future. In our model, concerns about the future are best exemplified in the attainment value notion, which deals with how tasks and activity relate to the individuals’ sense of themselves.

Husman and Lens (1999) recently reintroduced a concern for the future into expectancy-value theory with their notion of future time perspective (FTP); see also Lens (1986). They stated that FTP can be characterized by its extensivity, or how long into the future the individual is looking, and by realism, or how likely the future goal is. Lens and his colleagues have shown that valuing of the future has important motivational implications; students with stronger FTPs are more motivated to succeed in school (see Husman & Lens, 1999, for review). Thus although researchers have argued for the importance of proximal goals (e.g., Schunk, 1991), this work suggests that more distal goals seem crucial too. Husman and Lens also discussed how FTP can relate to students’ goal orientations. Students with stronger FTPs seem to be more mastery oriented in their approach to learning, though the relations are complex.

These interesting new directions in work on the valuing of achievement need further exploration, in order that our understanding of children’s achievement values continue to grow. There are fascinating developmental questions that can come out of the work just reviewed. For instance, how is the motivational ZPD best characterized, and how might it change over time? Young children often have FTPs, but when do these become realistic enough to influence their motivation? What exactly are the relations of students’ current motivations to their FTP, and to their achievement outcomes?
We close this section on values with one last suggestion. Earlier we mentioned that there has been some interesting work on how children's notions or understanding of what "ability" means change over time. Such work has not been done on children's achievement values, and it could prove to be quite informative. How do younger children as compared to older children think about the "usefulness" of a given activity? How might their sense of interest change over time (see Wigfield, 1994, for further discussion)? Such work also would inform work on children's sense of the future, particularly the issue of when children's FTPs become more realistic. Interview methods such as those used by Nicholls (1978) to probe children's understanding of ability possibly could be adapted to study children's developing understanding of different components of achievement values.

Influence of Context on Children's Competence Beliefs and Values

Contextual influences on motivation have taken center stage in work on motivation, as researchers move beyond an individual difference approach to motivation (see Eccles et al., 1998; Turner & Meyer, 1999; Urdan, 1999). Turner and Meyer discussed how attention to contextual influences can alter some general conclusions coming from work on motivation. For instance, researchers have discussed how "optimal challenge" often is motivating for students. Turner and Meyer discussed how the school's norms and values can have a strong impact on the level of challenge students prefer; in some situations many students may find optimal challenge too risky, and so seek to avoid challenge. It is difficult to make conclusions about students' motivation without considering closely the classroom contexts in which they find themselves.

We have long been interested in contextual influences on competence and values, focusing in particular on how changes in school and classroom contexts as children move from elementary to middle school influence their motivation (e.g., Eccles et al., 1993; Wigfield, Eccles, & Pintrich, 1996). We also have been interested in how various teaching practices influence students' motivation. Although researchers have learned much about how different educational contexts influence motivation, much more remains to be done in this area. Tests of models like the expectancy-value model discussed in this chapter must be done in a variety of educational contexts.

To conclude, we have learned much about the development of competence beliefs and values over the past decade and a half. Much remains to be done, and we look forward to continuing research in this area.
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