Development of Achievement Motivation

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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. J. 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 defintions 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)
Eccles, Wigfield, and colleagues' expectancy–value model of achievement motivation. (From Wigfield, A., and Eccles, J. S. (2000). Expectancy–value theory of achievement motivation. *Contemporary Educational Psychology*, 25(1), 69.)
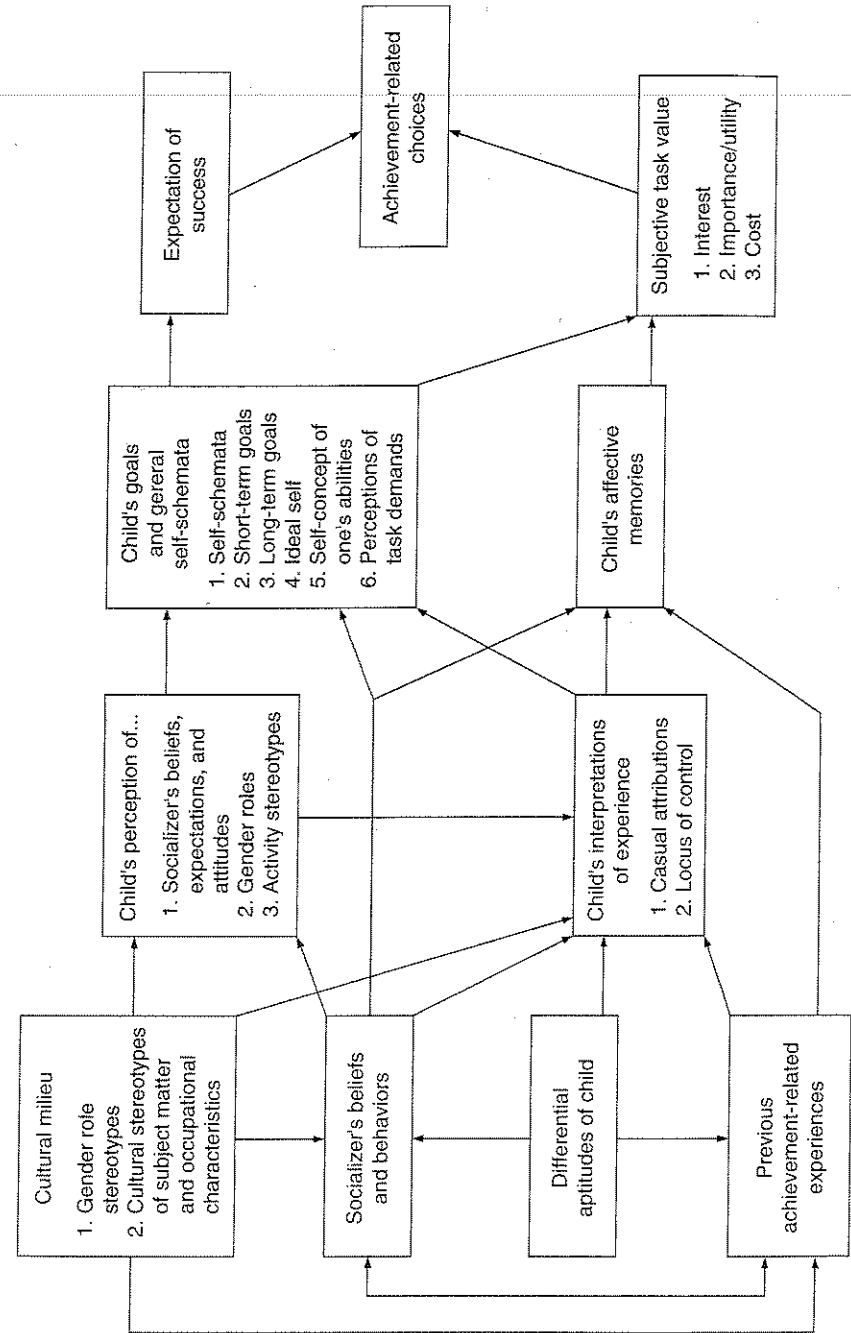
influence their goals and task-specific beliefs. Other influences are children's previous performance on different tasks, important socializers' beliefs, values, and behaviors, and various contextual and cultural influences.

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 specifity 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.[1]

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-

[1]A 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.

tinguish 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 & MacIver, 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, MacIver, 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 & MacIver, 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 &

Lilly, 1982) and, when found, are generally quite small (Marsh, 1989, Marsh, et al., 1998).[2]

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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[2]Work 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 vulnerability 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 vulnerability (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 ability is less predictive of general self-esteem for some African-American children (Winston, Eccles, Senior, & Vida, 1997).

Fordham and Ogbu (1986) made a similar argument linking African-American students' perception of limited future job opportunities to lowered 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 system, 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 discriminated against by mainstream American culture (e.g., African-Americans, 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., Steinberg et al., 1992; Taylor et al., 1994). But several studies show that disidentification, 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, particularly 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 Longitudinal Study (NELS). He found that the self-reported grades of White students 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 colleages 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–avoid 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

activites 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 Busemyer & 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 general 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 methodolgy.

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.

Acknowledgments

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