Gender and motivation

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Received 28 September 2005; received in revised form 3 April 2006; accepted 3 April 2006

Abstract

The role of gender in shaping achievement motivation has a long history in psychological and educational research. In this review, gender differences in motivation are examined using four contemporary theories of achievement motivation, including attribution, expectancy-value, self-efficacy, and achievement goal perspectives. Across all theories, findings indicate girls’ and boys’ motivation-related beliefs and behaviors continue to follow gender role stereotypes. Boys report stronger ability and interest beliefs in mathematics and science, whereas girls have more confidence and interest in language arts and writing. Gender effects are moderated by ability, ethnicity, socioeconomic status, and classroom context. Additionally, developmental research indicates that gender differences in motivation are evident early in school, and increase for reading and language arts over the course of school. The role of the home and school environment in the development of these gender patterns is examined. Important implications for school professionals are highlighted.

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Keywords: Gender; Motivation; Expectancy-value; Attributions; Achievement goals; Self-efficacy

The role of gender in shaping achievement motivation has a long history in psychological and educational research. Early studies drew on achievement motivation theories to explain why adult women and men differed in their educational and occupational pursuits. Prior to the 1970s, men were more likely than women to obtain a college degree, pursue advanced study, and enter high-paying occupations. Over the last...
three decades, unprecedented changes in women’s level of educational participation and occupational status have been observed. For the first time in U.S. history, women are earning more college degrees than men, and they exceed men in many fields of study including psychology, accounting, and health-related professions (U.S. Department of Labor, 2003). The percentage of women earning professional degrees has also increased substantially in the last 30 years. Among secondary school students, large gender gaps in mathematics and science performance have decreased, and in some cases, have been eliminated (National Center of Educational Statistics [NCES], 2004). Additionally, with the exception of physics, young women today are just as likely as men to take challenging mathematics and science coursework in high school.

While considerable progress has been made, important gender differences in educational achievement and occupational attainment remain. More high school girls today are enrolled in advanced high school mathematics and science classes, but they are less likely than boys to report liking these courses (NCES, 2004). Also, college women continue to be underrepresented in some fields of study, such as engineering, computer and information science, physical science, and chemistry, and women earn less than half of the professional degrees in business, law, dentistry, and medicine (NCES, 2004). Additionally, there has been little change in gender gaps for reading and writing over the last 30 years (NCES, 2000). At all grade levels of the National Assessment of Educational Progress (NAEP), girls outperform boys (NCES, 2004). When achievement patterns are examined by socioeconomic status, ethnicity, or geographic location, there are significant disparities in students’ educational achievement and participation across different groups. Gender gaps in school performance, favoring girls, are particularly wide for non-white ethnic minority students (Grant & Rong, 1999). Motivation differences related to these gendered patterns of school achievement and participation need examination.

This review will examine the role of motivation in explaining gender differences in academic achievement and attainment. The review will first focus on four theories of motivation that have been most frequently used in the last 30 years to explain such differences. The theories include expectancy-value, attribution, self-efficacy, achievement goal theories. In keeping with the cognitive tradition in motivation research, these theories stress the importance of competency judgments, value beliefs, and goals. The review ends with a brief discussion of the role parental, school, and sociocultural influences on the development of gender differences in motivation.

Early psychological theories of achievement motivation

Early theories of achievement motivation focused on differences in men’s and women’s motives for success. Achievement motives were viewed as personality dispositions that were acquired early and remained stable over the life course. McClelland, Atkinson, Clark, and Lowell (1953) used the Thematic Apperception Test (TAT) to assess achievement motives in college men and women. This measure depicted men and women in different ambiguous situations, and participants were asked to provide a description of the picture. Male students were shown pictures of two men at a machine and a man at drafting table, whereas female students were shown pictures of two women in a laboratory and a woman
upholstering a chair. The assumption of the TAT was that people would project their own motives and desires into the picture and stories, and highly success-oriented people would write stories that included a good deal of achievement imagery. In general, college men of the time responded to the TAT assessments with more achievement imagery than did their female counterparts. Accordingly, women were viewed as less success-oriented than men or as fearful of success. Horner (1975) concluded that “most women have a motive to avoid success, that is, a disposition to become anxious about achieving success because they expect negative consequences such as social rejection and/or feelings of being unfeminine” (p. 207). Fear of success, as a psychological barrier to women’s achievement, generated a good deal of research in the 1970s.

Building on the work of McClelland, Atkinson (1957, 1964) introduced an expectancy-value model of achievement motivation. In this model, achievement motivation was a function of motives for success, expectations for success, the incentive value of success, and the motive to avoid failure. This model went beyond personality dispositions to include cognitive assessments represented by the person’s subjective expectation for success at a particular task and for the anticipated outcomes or consequences of an outcome. Whereas achievement expectancies were defined as subjective probabilities of success, the incentive value of the task was defined in terms of its perceived difficulty level. According to Atkinson’s theory, tasks that were more difficult and challenging would have more incentive value for the individual. Expectancies and values were inversely related so that highly valued tasks were those for which individuals had low expectations for success.

Like its predecessor, Atkinson’s expectancy-value theory continued to emphasize gender differences related to the motives to approach or avoid success. Atkinson’s research also indicated that men and women differ in their concerns about failure. For example, based on scores obtained from the Test Anxiety Questionnaire (Mandler & Sarason, 1952), female respondents, when compared with their male counterparts, scored higher on measures of test anxiety (Hill & Sarason, 1966; Maccoby & Jacklin, 1974). Finally, considerable research in the 1960s also documented that girls and women tend to have lower expectations for success than their male counterparts (Crandall, 1969; Feather, 1966; Veroff, 1969). Thus, according to the Atkinson expectancy-value theory, gender differences in motivation were related to motives to approach/avoid success, concerns about failure, and expectations for success.

By the late 1970s, much of the early research on achievement motives and fears of success had been refuted due to biases in research methodologies and inconsistent findings across studies (Frieze, Parsons, Johnson, Ruble, & Zellman, 1978). This research was also criticized because female achievement was often judged against a male standard that did not take into account gendered patterns of socialization and education that differentially shaped men’s and women’s academic and occupational choices (Eccles, 1994).

**Attribution theories of motivation**

During the 1970s and early 1980s, attribution theory was the predominant theory of motivation, and it was utilized to understand gender differences in achievement
motivation. This theory serves as the transition into cognitive perspectives on motivation. Whereas earlier theories included personality dispositions, such as motives to avoid success and fear of failure, attribution theories placed a heavy emphasis on the cognitive processes involved in interpreting success and failure experiences in achievement situations. Weiner (1985, 1986) stressed that two of the most important causal ascriptions people make concerning their perceptions of success and failure are ability and effort. Weiner’s theory also proposed that causal attribution patterns were related in systematic ways to expectations for success, to subsequent achievement striving, and to the affect associated with achievement. Causal attributions involving ability or effort have the most positive effects on achievement affect and behavior. He further proposed that causal ascriptions affect emotions and expectations for success.

**Gender differences in causal attribution patterns**

Research using an attribution framework identified gender differences in the ways that children and adults interpret their successes and failures. Early studies indicated that women were more likely to exhibit what has been labeled as a low-expectancy attribution pattern, and their achievement behavior has been found to suffer as a consequence. Specifically, men attributed their successes to internal stable causes (ability), whereas women attributed their failures, but not their successes, to these causes (Bar Tal, 1978; Crandall, Katkowsky, & Crandall, 1965; Frieze, 1975; McMahan, 1973). However, these patterns were not consistently found across all studies and findings appeared to be more marked for achievement areas that were sex-typed as masculine or feminine domains (Frieze, Whitley, Hanusa, & McHugh, 1982). In mathematics, for example, girls are less likely than boys to attribute their successes to ability. Instead, girls attribute their successes to effort and hard work, which may undermine their expectations for success as mathematics increases in difficulty (Eccles et al., 1983; Parsons, Meece, Adler, & Kaczala, 1982; Wolleat, Pedro, Becker, & Fennema, 1980). Similar differences in causal attribution patterns have also been noted for successes and failures in science courses (Kahle & Meece, 1994; Li & Adamson, 1995). By contrast, few studies report gender differences for achievement tasks involving verbal and language abilities (Parsons, Adler, & Meece, 1984). Thus, gender differences in causal attribution patterns are evident but depend on the achievement domain. Studies also suggest that results vary depending on student ability level and research methodology, such as open-ended versus rank-order questions (Parsons, Adler, & Kaczala, 1982; Parsons, Kaczala, & Meece, 1982; Parsons, Meece, et al., 1982).

**Causal attributions and learned helplessness**

Another prominent area of attribution research is the study of learned helplessness. Learned helplessness occurs when someone attributes failure to a lack of ability and gives up easily or shows a steady regression in problem-solving strategies when confronted with failure. Diener and Dweck (1978) reported that learned helpless children underestimated their performances, discounted their successes, and believed others performed better than they did. In contrast, children who do not experience learned helplessness continued to
perform a task after experiencing failure because they attributed failure to a lack of effort or task difficulty (Diener & Dweck, 1978; Dweck, 1986; Dweck & Reppucci, 1973).

Due to gender differences in attribution patterns, girls may be more prone to learned helplessness than boys, particularly with regards to mathematics and other male sex-typed domains (Dweck, 1986; Eccles et al., 1983; Farmer & Vispoel, 1990). Studies of children’s attribution patterns in laboratory settings have identified gender differences in causal attribution and behavior patterns that are consistent with learned helplessness (Dweck & Bush, 1976). However, as with studies of causal attributions, findings are not consistent across studies. For example, Parsons (Eccles), Meece, et al. (1982) used school-related learning tasks (number sequences and anagrams) to examine gender differences in learned helplessness patterns within a sample of adolescents (Grades 8–10). Although male and female students reported differential attributions to ability for successes and failures on the math problems, these causal attribution patterns did not translate into gender differences in behavioral responses (see also Kloosterman, 1990). That is, no differences were noted in persistence, expectancy judgments, or error rates for either math or anagram problems. In fact, girls persisted longer than boys on the math tasks when they experienced failure. Thus, attribution measures, rather behavioral responses to failure, tend to provide the strongest support for gender differences in learned helplessness. As discussed earlier, responses on attribution measures are influenced by many situational factors, including sex-role stereotypes and self-presentational concerns (Parsons, Adler, et al., 1982; Parsons et al., 1984; Parsons, Kaczala, et al., 1982; Parsons, Meece, et al., 1982; Farmer & Vispoel, 1990; Frieze et al., 1982; McHugh, Frieze, & Hanusa, 1982).

Summary

Considerable research has focused on gender differences in causal attribution patterns, with much of this research directed toward understanding the low expectancy patterns, achievement anxiety, and learned helplessness inhibiting female achievement. To date, research on gender differences in causal attributions and learned helplessness is inconclusive and equivocal. Patterns of gender differences depend on methodology used, academic domain, academic abilities, type of achievement task, and research setting (laboratory versus classroom). Additionally, when gender differences are found, they tend to be small in magnitude and not a strong predictor of behavioral responses (Eccles et al., 1983; Parsons, Adler, et al., 1982; Parsons et al., 1984; Parsons, Kaczala, et al., 1982; Parsons, Meece, et al., 1982).

Contemporary expectancy-value theories

As discussed previously, expectancy-value theories have been widely used to examine gender differences in motivation and achievement behavior. Building on the prior research of Atkinson (1957) and Weiner (1985, 1986), Eccles et al. (1983) introduced a social cognitive model of academic choice that included a socialization component focused on the role of culture, parents, and teachers in shaping achievement-related beliefs, as well as identity development processes. The Eccles et al. (1983) model has been applied to
different achievement domains (mathematics, science, and sports), as well as career choices and trajectories of young adults. In keeping with Atkinson, Eccles et al.’s model highlights the importance of expectancy and value beliefs. Each will be briefly described below.

Competency beliefs

Competency beliefs are defined as estimations of one’s ability to perform or to succeed at an activity (Eccles et al., 1983). Research with children, adolescents, and adults has shown that competency beliefs have a particularly strong relation to academic performance (Eccles et al., 1983; Parsons et al., 1984; Wigfield & Eccles, 1995). Over the past few decades, much has been learned about children’s competency beliefs and the gender differences associated with these perceptions. For example, as early as first grade, children make distinct judgments about their abilities in different domains, including mathematics, reading, music, and sports (Eccles, Wigfield, Harold, & Blumenfeld, 1993). Also, small gender differences in children’s competency beliefs also emerge in early elementary school (Eccles et al., 1993). Interestingly, the results follow gender norms and stereotypes with boys holding more positive competence beliefs for sports and mathematics than girls and with girls holding more positive competence beliefs for instrumental music than boys (Eccles et al., 1993). These gender differences emerge even though boys and girls perform equally well in these domains (Eccles et al., 1993).

Additionally, cross-sectional and longitudinal research indicates that all children experience declines in their competency beliefs over the course of schooling (Wigfield & Eccles, 2000; Wigfield, Eccles, Yoon, & Harold, 1997). However, the rate of change differs by gender and by achievement domain. Girls’ perceptions of their math abilities decline at a slower rate than boys, such that gender gaps in mathematic competence decrease over time (Fredricks & Eccles, 2002; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002). For language arts, boys and girls begin elementary school with similar ability perceptions, but boys’ perceptions rapidly decline in elementary school. By middle school, there are significant differences in boys’ and girls’ competency ratings for language arts. Like mathematics, gender gaps in language arts are somewhat smaller by high school (Jacobs et al., 2002). By contrast, gender differences in the sports domain, favoring boys, remain stable across all grades of school (Fredricks & Eccles, 2002; Jacobs et al., 2002).

Value beliefs

In Eccles et al.’s (1983) expectancy-value model, the influence of competency perceptions are moderated by the value attached to achievement activities. Task value is defined in terms of four components: (1) perceived importance of being good at an activity; (2) perceived usefulness of the activity for obtaining short- or long-term goals; (3) perceived interest or liking of the activity; and (4) perceived cost of engaging in the activity (e.g., time taken away from other activities, amount of effort needed to succeed, performance anxiety associated with the activity, etc.). Developmental studies have shown that both children and adolescents are able to distinguish between competency and value beliefs. That is, they are able to separate what activities they are good at and what activities
they value (Eccles et al., 1993). By fifth grade, children are also able to differentiate what activities may not hold much interest for them but are necessary to achieving a short- or long-term goal (Eccles et al., 1993). Additionally, research has shown that the subjective value of activities influence course enrollment patterns and participation rates. For example, the value adolescents attach to mathematics predicts their decision to enroll in optional mathematics courses (Feather, 1988; Meece, Wigfield, & Eccles, 1990; Parsons et al., 1984). Similarly, the value attached to sports predicts participation in athletic activities (Eccles & Harold, 1991).

Beginning with elementary school, gender differences are evident in the value children and adolescents attach to different academic domains. As with competency beliefs, the patterns follow gender norms and stereotypes. In a longitudinal study of first- through fourth-grade students, Eccles et al. (1993) defined task value as a composite score representing the perceived interest, enjoyment, importance, and usefulness of an academic domain. The results showed that boys placed a higher value on sports activities than girls, whereas girls placed a higher value than boys on musical and reading activities. Interestingly, there were no gender differences in the value attached to mathematics for elementary school children.

Studies with older children and adolescents also reveal similar patterns of gender differences in achievement task values. For example, Wigfield, Eccles, Mac Iver, and Rueman (1991) reported that students’ perceptions of the value of mathematics, reading, and sports declined at the transition to junior high school (Grade 7). As with younger students, girls placed a greater value on English than did boys; whereas boys placed greater value than girls on sports. Expanding this research, Jacobs et al. (2002) used growth modeling procedures to examine changes in students’ value perceptions from the first through the twelfth grade in three achievement domains. Over the course of schooling, students’ value perceptions related to mathematics, language arts, and sports all declined, with the value of language arts declining most rapidly in elementary school and the value of mathematics declining most rapidly in high school. As expected, an examination of gender patterns revealed that boys placed a higher value on sports activities than girls, while the reverse was found for language arts. Similar to Eccles et al. (1993), no gender differences were found for the valuing of mathematics, nor differences in the rate of change (see also Fedricks & Eccles, 2002). With respect to language arts, girls showed a more rapid decline in their value perceptions during elementary school than boys, but this direction reversed by the high school years (Jacobs et al., 2002).

Summary

Research based on Eccles et al.’s (1983) expanded expectancy-value model of achievement behavior has provided many important insights into gender differences in motivation. This research has revealed that boys and girls begin school with different views of their abilities and interests (Eccles et al., 1993; Jacobs et al., 2002). Boys begin school with higher perceptions of their math abilities, whereas girls report higher perceptions of their language arts abilities. Gender gaps in these perceptions narrow for mathematics and increase for language arts over the course of schooling. When task values are defined as interest and importance, there appear to be no gender differences regarding
the value of mathematics; however, gender differences are evident in students’ valuing of language arts across the school years. Whereas previous research had suggested that gender differences would increase at the transition to adolescence or to new school environments (Wigfield et al., 1991), recent analyses using growth modeling procedures indicate that the most rapid period of decline in both competency and value perceptions occurs in the elementary school years (Jacobs et al., 2002). There is also evidence to suggest the negative changes in competency perceptions are related to declines in achievement values over time (Jacobs et al., 2002). Thus efforts to improve motivation need to target students’ competency beliefs, as well as valuing of academic domains, during the elementary school years and beyond.

Are gender differences in students’ competency and value beliefs related to achievement behavior? Numerous studies have shown that children’s and adolescents’ competence beliefs are important predictors of their performance in different domains, even when the level of previous performance is controlled. In contrast, value perceptions are a stronger predictor of students’ choice to participate or engage in an activity. Further, relations for competency and value perceptions are found as early as first grade and the strength of these relations increase with age (Eccles, 1994; Eccles et al., 1983; Parsons et al., 1984; Wigfield & Eccles, 1992). Thus, if gender differences are evident in students’ competency and value perceptions, these differences are likely to have an impact on their activity choices, engagement, and performance.

**Self-efficacy theory**

Since its introduction almost 30 years ago (Bandura, 1977), the construct of self-efficacy has received increasing attention in educational research and the studies of academic motivation and self-regulated learning. Self-efficacy refers to a person’s judgment of their confidence to learn, perform academic tasks or succeed in academic endeavors (Bandura, 1986). Unlike more global beliefs such as self-concept, self-confidence and locus of control, self-efficacy involves judgments concerning one’s ability to attain a certain level of performance in a particular activity or situation (Meece et al., 1990; Schunk, 1989). For example, respondents are asked to rate their level of confidence for solving a certain number of mathematics problems correctly, for obtaining a certain grade in a course, for comprehending reading passages of different levels of difficulty, or for learning technical terms in biology (Pajares, 1996). Research has consistently shown that self-efficacy beliefs are important mediators of all types of achievement-related behaviors, such as effort and task persistence, self-regulatory strategies, course enrollment, and career choices (Bong & Skaalvik, 2003; Pajares, 1996; Pintrich & Schunk, 2002; Schunk & Pajares, 2002). Self-efficacy theory has also been applied to the career development of women (Betz & Hackett, 1987).

**Gender differences in self-efficacy beliefs**

Self-efficacy theory has been widely used to understand gender differences in motivation and achievement patterns. Much of this research has focused on academic areas that are...
traditionally sex-typed as male or female domains of achievement. For example, numerous studies document that boys tend to report higher self-efficacy and expectancy beliefs than girls about their performance in math and science (Anderman & Young, 1994; Pajares, 1996; Pintrich & DeGroot, 1990; Zimmerman & Martinez Pons, 1990). The results of Whitley’s (1997) meta-analysis of studies of gender differences in computer-related attitudes and behavior also revealed a similar pattern as men and boys exhibited higher computer self-efficacy than did their female counterparts. When the context were reading or writing, however, gender differences were reversed. For example, Pajares and Valiante (1997, 2001) reported that middle school girls had higher writing self-efficacy than boys, even though there were no gender differences in actual writing performance.

Research also suggests that gender differences in self-efficacy are linked to age or grade level (Schunk & Pajares, 2002), with differences beginning to emerge in the middle school years (Bandura, Barabaneli, Caprara, & Pastorelli, 2001; Wigfield, Eccles, & Pintrich, 1996). In Whitley’s (1997) meta-analysis of computer self-efficacy, mean effect sizes for gender differences varied depending on the age of the sample: .09 for grammar school (elementary and middle school/junior high), .66 for high school, .32 for college, and .49 for adult samples. Age-related gender differences in self-efficacy beliefs are generally attributed to increased concerns about conforming to gender-role stereotypes, which typically coincide with the entry into adolescence (Wigfield et al., 1996). However, research on gender differences in self-efficacy beliefs have not found a consistent pattern of gender differences among young adolescents (Pajares & Graham, 1999; Roeser, Midgley, & Urdan, 1996).

Summary

A large body of research has examined gender differences in self-efficacy beliefs. This research is guided by Bandura’s social cognitive theory (Bandura, 1986), which emphasizes the critical role of efficacy beliefs in human development and behavior. Compared to studies of academic competency beliefs, research on efficacy beliefs present a more mixed pattern of results. One explanation for this discrepancy is the task specificity of efficacy beliefs. Gender differences may be more prevalent in measures that elicit group comparisons or evaluation of worth (e.g., “I am good at science.”). In making these assessments, cultural stereotypes or gender expectations may lead to more biased assessments (Schunk & Meece, 2006). In fact, when gender role orientations are taken into account, gender differences in efficacy beliefs are no longer significant (Pajares & Valiante, 2001). Nevertheless self-efficacy has been positively correlated with higher levels of academic achievement and participation across studies of different age levels (Schunk & Pajares, 2002). Given its positive influence on achievement and motivation, better understanding of gender and age-related differences in the development of self-efficacy beliefs is needed.

Goal theories of achievement motivation

Achievement goal theory emphasizes the person’s reasons for choosing, performing, and persisting at various learning activities. As noted in this issue (Gilman & Anderman,
two types of goal orientations have been used to understand and to explain academic behaviors in school settings. Each goal type differs in terms of the standards used to judge performance and achievement. A learning or mastery goal orientation is defined as a desire to develop one’s competencies, to master a task, or to improve intellectually, whereas a performance goal orientation is concerned with demonstrating high ability relative to others, competing for grades, or gaining recognition for ability. In recent years, performance goals have been further differentiated into performance-approach goals, which focus on the attainment of favorable judgments of competence, and performance-avoidance goals, which focus on avoiding unfavorable judgments of ability (Elliot & Church, 1997; Elliot & Harackiewicz, 1996).

The goals individuals adopt in learning settings have important implications for a wide range of academic behaviors. In general, a mastery focus is positively related to a preference for challenging activities (Ames & Archer, 1988), to high levels of interest, task involvement, and persistence (Elliot & Dweck, 1988; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Stipek & Kowlaski, 1989), and to reported use of learning strategies that enhance conceptual understanding and recall of information (Ames & Archer, 1988; Meece, Blumenfeld, & Hoyle, 1988; Meece & Miller, 2001; Nolen, 1988). In contrast, performance-oriented goals tend to be associated with surface-level learning strategies (Graham & Golan, 1991; Meece et al., 1988; Nolen, 1988; Stipek & Gralinski, 1996), self-handicapping strategies (Urdan, Midgley, & Anderman, 1998), and academic cheating (Anderman, Griesinger, & Westerfield, 1998). However, some evidence suggests that performance-approach goals may be positively related with achievement outcomes, especially for college students (Harackiewicz et al., 2002).

Gender differences in achievement goal orientations

Compared with the other achievement theories discussed in this article, only a few studies have examined gender differences in achievement goal orientations. In a study of motivation and strategy use in elementary science, Anderman and Young (1994) reported that girls were more learning focused and less ability focused in science than were boys, even though girls reported lower levels of self-efficacy in science. In another study, Meece and Jones (1996) reported gender differences, favoring boys, in elementary school students’ science-related efficacy beliefs; however no main effects for gender were reported for mastery and performance goal scales. Gender effects were also moderated by the students’ ability level. In the low ability group only, boys reported a stronger mastery goal orientation than did girls. In a third study based on a sample of ethnically and economically missed sixth-grade students, Middleton and Midgley (1997) found that African American girls reported a stronger learning goal orientation than African American boys. No differences in goal orientations were found for European American students. In contrast to these findings, Greene and her colleagues (Greene, DeBacker, Ravindran, & Knows, 1999) reported no gender differences in high school students’ learning and performance goals in mathematics. Taken together, these studies reveal no clear pattern of gender differences in students’ achievement goal orientations. Differences are moderated by ability, race, and classroom context.
Sources of gender differences in motivation

Socialization and achievement experiences play an important role in the development of gender differences in motivation. Because gender differences are found so early in development, the child home environment plays an important role in the shaping of their competency beliefs and interests. At school, children have an opportunity to validate, refine, and enact their gender beliefs and behavior. According to the Eccles et al. (1983) model, both parents and teachers contribute to gender differences in motivation by (a) modeling sex-typed behavior, (b) communicating different expectations and goals for boys and girls, and (c) encouraging different activities and skills. This section briefly reviews research on parental and school influences. In addition, other cultural influences on gendered patterns of motivation will be reviewed.

Parental influences

The Eccles et al. (1983) expanded expectancy-value model included a parental socialization component. According to this model, there are several important pathways by which parents influence their children’s achievement motivation. Parents are important sources of information children draw on to form their ability and value perceptions. Parents also provide and encourage different recreational and learning activities that can support the development of specific skills and interests. Additionally, parents are important role models. They communicate information about their own abilities and skills, and what is valued and important, through their choice of work and leisure activities. With respect to gender differences in motivation, there is strong empirical support for the parental socialization component of the expectancy-value model (Eccles et al., 1983; Jacobs, 1991; Jacobs & Bleeker, 2004; Jacobs & Eccles, 1992; Jacobs, Davis-Kean, Bleeker, Eccles, & Malanchuk, 2005; Parsons, Adler, et al., 1982; Parsons, Kaczala, et al., 1982; Parsons, Meece, et al., 1982). Relevant findings are briefly summarized below.

Parental beliefs about their children’s abilities have a strong influence on their children’s own beliefs about their academic abilities (Bleeker & Jacobs, 2004; Eccles, Wigfield, & Schiefele, 1998; Jacobs, 1991; Jacobs & Eccles, 1992). Research has shown that cultural stereotypes (e.g., men excel in mathematics and science) influence parents’ perceptions of their children’s abilities, leading parents to form different perceptions of their sons’ and daughters’ academic abilities. For example, Parsons, Adler, et al. (1982) reported that parents, particularly fathers, thought that their daughters needed to work harder than their sons to do well in mathematics despite no differences in their children’s mathematics achievement. In a separate study, Jacobs (1991) found that parents who held gender stereotypes about men’s superior mathematical abilities reported less confidence in their children’s mathematics abilities if they had daughters but more confidence if they had sons. Research has also shown that both mother’s and fathers’ perceptions of their children’s abilities influence how children perceived their own abilities, even after controlling for differences in children’s achievement (Jacobs & Eccles, 1992). Similar patterns are found for children’s interests in mathematics and science (Jacobs et al., 2005).
Parental involvement in children’s activities has also been found to differentially affect girl’s and boy’s choice of activities. For example, in a study of single-parent families, the amount of time mothers engaged in supportive activities with their children was positively related to their children’s productive leisure activity during adolescence (Larson, Dworkin, & Gillman, 2001). Researchers have also found significant links between parents’ gender stereotypes, children’s gender stereotypes, and children’s activity choice. In a 2-year study of middle class girls and their parents, McHale, Shanahan, Updegraff, Crouter, and Booth (2004) investigated the amount of time girls spent in sex-typed leisure activities during middle childhood and adolescence. The researchers found that the more sex-typed beliefs parents and girls held, the more the girls were involved in sex-typed activities. Interestingly, while the parents’ personality qualities (e.g., kindness and competitiveness) were strong predictors of girls’ sex-typed activity, parental gender role attitudes were not. In addition, the mothers’ personality qualities best predicted the sex-typed activities in middle childhood, while the fathers’ qualities best predicted sex-typed activities in adolescence. This latter finding suggests that the paternal role ties children to the outside world and becomes more important as the children age (McHale et al., 2004).

Combining the above areas of research, Bleeker and Jacobs (2004) examined ways parents promote positive attitudes and behaviors toward mathematics and science in their children. Their study examined information on (a) parental selection of math- or science-related toys, games, books and other activities, (b) parental involvement and participation in mathematics and science activities, and (c) parental perceptions of their children’s math and science abilities. Parents’ promotive activities were found to be dependent on the gender of both the child and the parent and were connected to children’s later involvement in mathematics and science activities. More specifically, mothers were more likely to purchase mathematics and science items for boys than for girls, regardless of grade level; and 6 years later, analyses revealed an increase in children’s mathematics and science interests related to the number of purchases made (Bleeker & Jacobs, 2004). However, both mothers and fathers were more likely to be involved in their daughters’ mathematics and science activities than in those of their sons. This finding suggests that parents may think their daughters need more assistance with mathematics and science, and unsolicited help can be deleterious to girls’ self-perceptions (Graham, 1990).

Parental influence not only affects children’s choice of activities and achievement beliefs but also impacts children’s career interests and choices. Recent studies indicate that gender differences in mathematics and science course selection at the high school level have decreased since the 1980s (Coley, 2001). Despite this trend, occupation statistics continue to show gender differences in career choices, with men constituting the majority in science- and mathematics-related jobs (U.S. Census Bureau, 2003). Research has shown that parental beliefs and expectations can affect children’s occupational choices. In one study, mother’s beliefs about their children’s abilities in mathematics in Grade 7 were related to adolescents’ math and science career efficacy 12 years later (Bleeker & Jacobs, 2004). Another study revealed that parental expectations for their children at age 17 predicted their son’s and daughters’ career choices at age 28 (Jacobs, Chhin, & Bleeker, in press). Thus, parental behaviors, beliefs, and expectations appear to have an enduring influence on young people’s achievement attitudes and behaviors.
Schooling influences

Schools also play a key role in shaping children’s gender role conceptions, beliefs, and social identities. At school, children observe and learn about the adult world, and the adult images to which they are exposed may be more rigid and more polarized than those found in the larger society (Ruble & Martin, 1998). For example, women are more likely to perform traditional gender roles such as caring for young children, putting on Band-Aids, and preparing food, whereas men are more likely to manage the school and staff. Gender differences are also evident in staffing patterns at school. A majority of high school foreign language, humanities, business education, and English teachers are female, whereas only half the science teachers are female (Weiss, Banilower, McMahon, & Smith, 2001). Students also learn important gender role lessons from textbooks, videotapes, and computer software at school. Although textbooks are less gender biased than they were 30 years ago, male characters continue to outnumber female ones in basal readers, and representations of men have remained more stereotyped than those of women (Fleming, 2000).

Considerable research also has examined gender differences in teachers’ perceptions of their students’ abilities. Early studies suggested that teachers have higher achievement expectations for boys than for girls, especially in male sex-typed activities (for review, see Meece et al., 1982). However, subsequent studies of teacher expectations are mixed and equivocal (Dusek & Joseph, 1983; Jussim & Harber, 2005). When gender differences in ability perceptions or achievement expectations are found, they typically reflect actual differences in performance rather than a teacher bias toward one gender or the other (Jussim & Harber, 2005). The one exception to this pattern is the tendency of teachers to overestimate girls’ effort in mathematics, which may lead girls to attribute their successes more to effort than to ability (Madon et al., 1998). It is important to point out that detailed analyses of teacher expectancy effects have focused primarily on mathematics. Additional research is needed to examine how teacher expectations and perceptions may contribute to gender differences in students’ perceptions of their abilities in other academic areas such as reading and science.

A related area of research focuses on gender differences in classroom interaction patterns. Research suggests that teachers tend to be more supportive and warmer toward students for whom they hold high expectations. As a result, these students receive a disproportionately high number of opportunities to demonstrate mastery and to receive positive feedback in their abilities (Brophy & Good, 1974). The Brophy–Good Dyadic Child Interaction System (Brophy & Good, 1974) has been widely used to identify gendered differentiated patterns of classroom interactions. The system records teacher-interacted questions (direct questions, open questions, and call-outs), teacher-initiated feedback (criticism, praise, and neutral comments), student-initiated interactions (student questions, volunteering, spontaneous comments, etc.), and teacher-initiated interactions focused on behavioral management. Studies utilizing the Brophy–Good system have consistently documented that boys tend to have more interactions of all types than do girls (Altermann, Jovanic, & Perry, 1998; Jones & Dindia, 2004; Meece, 1987; Parsons, Kaczala et al., 1982). Results show that boys are called on more than girls to answer process, abstract, and complex questions, at both the
elementary and secondary levels. Further, compared with girls, boys also receive more acknowledgement, approval, encouragement, criticism, and corrective feedback in response to their answers. There gender differences in classroom interaction patterns communicate different learning expectations for boys and girls (Brophy & Good, 1974).

Gender-differentiated classroom interaction patterns appear to be more pronounced in stereotypically male sex-typed school subjects, such as mathematics and science, although these patterns are not consistently found across studies (Altermann et al., 1998; Jones & Dindia, 2004; Kahle & Meece, 1994; Parsons, Kaczala et al., 1982). Gender differences in classroom interactions are also moderated by children’s ability levels and by classroom structures (Parsons, Kaczala et al., 1982). For example, gender differences in interaction patterns are more pronounced in classrooms where whole-group instruction is the primary mode of instruction. Furthermore, evidence suggests gender differences in classroom interactions may be due to the fact that boys initiate more interactions with their teachers than do girls (Altermann et al., 1998; Eccles & Blumenfeld, 1985). Whether or not these teacher–student interactions reflect teacher responsivity, the patterns serve to reinforce gender role stereotypes of male authority and competence.

Less is known about what role specific instructional and management practices may play in the development of gender differences in motivation. Eccles and Midgley (1989) maintain that children are maximally motivated to learn when classroom situations fit well with their needs, interests, and skill levels. In this regard, evidence suggests that the learning environment of elementary classrooms may favor girls more than boys (Kedar-Voivodas, 1983). For example, some researchers have speculated that curriculum activities and materials, particularly in literacy, tend to be better aligned with the learning interests and preferences of girls than those of boys (Brozo, 2002; Connell, 1996). Other evidence suggests that elementary school teachers tend to have more favorable attitudes and expectations for students who are cooperative, conforming, respectful, and orderly. Children who are assertive, independent, and difficult to manage are the least preferred by teachers (Brophy & Good, 1974; Feshbach, 1969). Given the nature of gender role socialization, girls are more likely than boys to exhibit the types of behaviors that enable them to adjust well to the elementary school environment (Kedar-Voivodas, 1983).

By the secondary school years, instructional activities and practices may have a different impact. Considerable research has demonstrated the negative influence of school transitions on adolescents. This research has shown that as students move from elementary school to middle/junior high schools, learning environments become more impersonal, structured, and teacher-controlled (Eccles & Midgley, 1989). As they make the transition to middle school, adolescents also perceive their classrooms as more focused on competition and ability differences (Anderman & Midgley, 1997; Urdan & Midgley, 2003). While these classroom environments can undermine the motivation of most students, there is some evidence to suggest that girls respond more negatively to competitive teaching conditions. For example, Tobin and Garnett (1987) report that whole-class lessons in science tend to be dominated by high-achieving boys. Other research suggests that girls initiate more interactions with teachers and report higher achievement expectations for mathematics in classes where individualized or cooperative learning is the
primary mode of instruction (Kahle, 1990; Parsons, Kaczala et al., 1982). Because secondary teachers tend to use whole-class lecture and discussion as the primary mode of instruction, boys are more likely than girls to take an active role in those classrooms. Additional research is needed to examine the role of different instructional practices in the development of gender differences in motivation during the secondary school years.

**Sociocultural influences**

Identity processes play a central role in the development of motivation. According to Erikson (1963), a key aspect of identity development is to integrate self-conceptions with societal expectations and opportunities. Children begin to form gender role conceptions that influence their beliefs, attitudes, and behavior well before they enter school. By the preschool years, they prefer to engage in activities that are sex-typed as appropriate for their gender and react negatively to cross-gender behaviors (Ruble & Martin, 1998). As described earlier, gender stereotypes can permeate almost every aspect of children’s daily experiences from activities in the home to staffing patterns at school. Eccles et al. (1983) have argued that socialization processes that lead children to internalize and accept these gender stereotypes are largely responsible for gender differences in motivation and achievement. However, the influence of gender stereotypes is moderated by the child’s own sex-role identity. A masculine orientation is positively associated with self-perceptions of mathematics competence for both boys and girls (Eccles et al., 1983). Similarly, Pajares and Valiante (2001) have concluded that gender differences in writing motivation and achievement of middle school students may be more “a function of gender orientation rather than gender” (p. 376).

Despite the increasing cultural diversity of the school-aged population, little research has examined how gender differences in motivation differ by ethnicity, race, or socioeconomic status (Meece & Kurtz-Costes, 2001). Most studies compare girls and boys as if they represented homogeneous groups, and few studies have examined how race, socioeconomic status, and other cultural influences combine with gender to shape students’ social identities and learning experiences at school. Yet there are several reasons to expect gender differences to vary across ethnic or socioeconomic groups. First, research indicates that gender socialization patterns are quite different for Hispanic, Asian, and African American youth. For example, parents of Latina and Asian girls generally expect their daughters to be obedient, responsible, dependent, and submissive, whereas African American girls are socialized to be self-reliant, resourceful and assertive (Collins, 1998; Weiler, 2000). The socialization experiences of Latina and Asian girls are more consistent with the gendered expectations at school, and those girls may assimilate into school environments more easily than their African American peers. Along with gendered expectations, African American and Latina youth must also cope with stereotypes of their intellectual inferiority and ethnic discrimination (Spencer, Swanson, & Cunningham, 1991; Steele, 1992). Considerable research has also documented the processes that lead ethnic minority youth to “disengage” from school environments that devalue their own cultural or racial heritage (Fordham & Ogbu, 1986; Spencer et al., 1991). Moreover, non-white ethnic minority boys experience more academic and discipline problems than their
female counterparts at school, which can lead to gender differences in self-perceptions of abilities and valuing of school success.

Much of the available evidence on gender differences within ethnic groups is quite mixed. Some studies report gender differences favoring girls among high ability African American adolescents (Kirst, 1993), while other studies report no gender differences (Alexander & Entwisle, 1988; Pollard, 1993). In a large-scale study using data from the National Educational Longitudinal Study of 1988 (NELS:88), Catsambis (1994) reported gender differences favoring eighth- and tenth-grade boys across African American, Latino, and White samples. Specifically, girls reported less interest in pursuing mathematics and science careers, lower participation in math- and science-related extracurricular activities, and less confidence in their mathematical abilities than did their male counterparts. However, a larger proportion of African American and Latina girls than boys reported “trying hard in their mathematics classes.” Gender differences in math-related motivation were the largest among Latino students and the smallest among African Americans. Gender differences for African American adolescents disappeared when differences in background characteristics (SES, prior achievement, amount of homework completion) were controlled.

A different gender pattern emerges when the focus is value beliefs. Graham, Taylor, and Hudley (1998) reported more devaluing of academic achievement for African American boys than for girls of the same ethnic background. Further, African American girls nominated other girls of the same ethnicity and high achievers as the most respected and admired. Boys showed the same pattern when asked to nominate girls for the most admired and respected category. However, when nominating other males, African American boys selected low-achieving males as the most respected and admired. Overall, study results suggested a devaluing of academic achievement among African American and Latino males (Graham & Taylor, 2002).

A persistent call has been echoed for more research on sociocultural influences on motivation (Graham, 1994; Meece & Kurtz-Costes, 2001; Pintrich & Zusho, 2002). It is important to understand how boys and girls within different ethnic or socioeconomic groups construct their identities as learners in the context of gender and cultural expectations and norms. Future research should also examine how variations in socialization experiences in the home and school influence motivation and achievement patterns for boys and girls in ethnically diverse samples. One challenge for future research is to sort out the confounding influence of socioeconomic status as well as geographic location. Few studies have examined the motivation of African American and Latino samples from rural communities.

**Conclusions**

Although there has been a recent decline in the gender gap in many achievement domains, it is clear that gender differences in achievement motivation still exist. Grounded in expectancy-value, attribution, self-efficacy, and achievement goal theories, today’s motivation research uses improved methodologies to highlight specific areas where there are discrepancies between boys’ and girls’ achievement-related beliefs and values.
Whereas early theories of motivation depicted women as underachievers, current research indicates that gender differences in causal attributions as well as in competency, value, and self-efficacy beliefs are domain-specific. In general, boys tend to have positive achievement-related beliefs in the areas of mathematics, science, and sports while girls report show more favorable motivation patterns in language arts and reading. The gender gap in motivation related to mathematics and science tends to narrow with age, whereas differences in motivation related to language arts remains prominent throughout the school years. For these reasons, future research should pursue domain- or task-specific studies that try to understand children’s motivation beliefs and behaviors at several different time intervals during their lives.

This review also emphasized the important role that the home and school environment play in shaping gendered patterns of motivation. Because children enter school with sex-typed views of their interests and abilities, the home environment clearly plays a critical role in this developmental process. Schools also impact children’s gender role conceptions, beliefs, and social identities as children observe and imitate traditional gender roles and encounter gender stereotypes in their classrooms.

This review also documented the lack of research examining gender differences within ethnic and socioeconomic groups. As the school population becomes more and more ethnically diverse, research on within-group gender differences is critical for understanding the motivation and achievement patterns of all students. The challenge for research is to conduct studies that reflect the unique contributions of social class and community.

The research discussed in this review has important implications for school professionals. First, it is important to recognize that gender differences in some subject areas (e.g., mathematics) have been inflated by popular media (Hyde, 2005). By reinforcing gender stereotypes and neglecting male areas of underachievement, the focus on gender inequities in mathematics has resulted in negative consequences for both boys and girls. However, gender differences in students’ conceptions of their reading and athletic abilities emerge early and persist over the school years. School instructional and extracurricular activities may play an important role in reinforcing these patterns. Also, there is still much that can be done to change the feminine image of reading and writing and the masculine image of science and school athletics. Researchers have emphasized the important role that context plays in reinforcing, strengthening, or diminishing gender differences (Deaux & Major, 1987). Moreover, it is critically important to examine the schooling processes that lead a high proportion of non-white ethnic minority and low income students of both genders to lose confidence in their academic abilities and to devalue the importance of education for their futures.

References


