CHAPTER ONE

Motivation in Educational Contexts: Does Gender Matter?

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Abstract

Girls and women now outperform boys and men on many indices of academic achievement. Gender differences in motivation may underlie these trends. In this chapter, I review and integrate research on gender differences in self-evaluation, self-regulation, and achievement goals. I argue for the existence of gendered tendencies “to prove” versus “to try and to improve,” whereby males tend to orient to demonstrating and defending their abilities, and females to working hard and addressing deficiencies. I discuss how these motivations develop within social and educational contexts of learning, and intersect with gendered patterns of socialization, values, and behaviors in other arenas, especially relational ones. Recurring themes include the costs and benefits of differential emphases on competition and self-promotion versus affiliation and consideration of others in the family, peer group, and classroom. I conclude with some recommendations for creating classroom environments that might promote optimal motivation among all students, regardless of gender.

1. INTRODUCTION

For me, as for many women who went to college in the 1970s, discovering gender was a formative and transformative experience. Feminist analyses provided us with a new way of understanding ourselves and the world that had a profound influence on the ways we lived, or at least tried to live our lives, on our career choices, on our relationships, and also on how we understood and did theory and research. The following decades brought exciting advances in understanding gender and more generally in conceptualizing the intersections of the personal and social in human psychology. But from being an important focus also of theory and research on motivation, gender has again become a somewhat neglected topic (albeit with some notable exceptions). I continue to be surprised by the number of manuscripts I come across—published papers, submissions, grant proposals—in which it does not seem to have occurred to the authors that gender might be relevant. They did not address gender in the literature review, did not conduct even a preliminary examination of possible gender effects, and at most provided a mention when describing the sample (e.g., 52% female).

One possibility is that gender no longer matters, in the sense of meaningfully impacting motivation and motivational outcomes in educational contexts, at least in the Western populations that still make up most of the samples in published studies. Another is that the study of gender is no longer intellectually engaging, because we already understand how and why it impacts motivation and achievement. So, this is a good time to ask whether gender
matters for the academic motivation of females, males, or both, as a prelude to introducing the central theme of this chapter. Girls and women score higher on graded achievement from elementary school through college, are less likely to drop out of school, and are now more likely than boys to continue to further education (e.g., American Association of University Women Educational Foundation, 1998; Snyder & Dillow, 2011). Despite changes in social attitudes men continue to achieve more at work than do women, and not only in science, technology, engineering, and mathematics (STEM) fields. To take just two academic examples, men wrote 80% of the books reviewed in the New York Review of Books in 2010 (http://www.vidaweb.org/the-count-2010). In the same year, men made up 75% of the faculty at the University of Chicago, about the same as was true in 1892 (88%; https://provost.uchicago.edu/initiatives/academicwomensreport.shtml).

In this chapter, I ask how motivation contributes to differential patterns of engagement and achievement at different stages. I propose that there are gendered tendencies “to prove” versus “to try and to improve.” That is, I propose that males tend to be more oriented to demonstrating and defending their abilities, and females tend to be more oriented to working hard and to identifying and addressing deficiencies. I examine the extent to which this notion can serve to organize and interpret research on gender influences on motivation in educational settings, paying particular attention to strategies of academic self-evaluation and self-regulation, and to the costs and benefits of both proving and improving approaches. Thus, throughout, rather than focusing on one or the other sex (traditionally females, but increasingly males, an interesting shift in itself), I consider how core constructs of “proving” and “improving,” of competence and values impact the self-views, task engagement, self-regulation, achievement, and aspirations of both females and males. I also discuss influences on gendered motivational tendencies and strategies, focusing on how these develop within the social and educational contexts of learning and achievement. Recurring themes include motivational influences of emphases on competition and self-promotion versus affiliation and consideration of others in the family, peer group, and classroom on males and females. I also discuss how gender intersects with other categories of identity and social membership, and with gendered patterns of socialization, values, and behaviors in other arenas, especially relational ones to shape achievement motivation and behavior. I conclude with some implications for educational practice and policy.

Some clarifications before I begin. As befits a volume on gender and education, I focus on achievement motivation, the kind of motivation most
studied in educational settings. In this, as in other areas, gender influences can be expressed in several ways. There might be differences in the mean level of a construct (e.g., academic self-concept), in the distribution of a variable, or in the associations among variables (e.g., between self-concept and persistence). Some words of caution are in order. First, returning to my earlier point, in many potentially relevant studies, especially in recent years, authors did not report tests for sex differences. In others, sex was entered as a control, a strategy that does not provide information about gender similarities and differences in associations among variables. Second, variance within each sex is invariably larger than differences between the sexes; mean sex differences tend to be small and not always significant. Thus, there is a real risk of exaggerating gender differences and losing sight of no less meaningful gender similarities (Hyde, 2005; Petersen & Hyde, 2014 [Chapter 2 of this volume]). Even small differences in theoretically related variables can have cumulative and reciprocal effects that yield meaningful and influential gendered patterns or motivational styles, however. Finally, any analysis in terms of gendered tendencies raises the specter of essentialist claims regarding innate differences between the sexes. This is not my view. Rather, I shall discuss throughout how boys and girls construct and maintain motivational beliefs and motivated achievement strategies within the cultural milieu, contexts, and interactions of their lives.

2. THEORETICAL FRAMEWORKS: EARLY AND CONTEMPORARY APPROACHES

2.1. Beginnings

The study of achievement motivation began with the pioneering work of McClelland and Atkinson, developed for present purposes in two main stages. First, in a major conceptual and empirical endeavor McClelland, Atkinson, and their colleagues defined and explored the intensity of the need to achieve as a dimension of personality, or individual differences (McClelland, Atkinson, Clark, & Lowell, 1953). Influenced by prevailing drive theories, they extrapolated from learning theories to conceptualize need achievement as a kind of learned drive, acquired to a greater or lesser extent during early socialization in the family. Extrapolating from psychoanalysis, they developed a projective measure that assessed need achievement according to the achievement imagery in stories people wrote about pictures that presented men and women in various ambiguous situations. Second, Atkinson (1957) posited a second motive to avoid failure, expressed in test anxiety. He also extended the theoretical model to include values and
expectancies. Atkinson conceptualized value in terms of affect, which depends on task difficulty. People will experience more pride when they succeed on difficult tasks and more negative emotion when they fail on easy ones. The expectancy component recognized that resultant motivation depends not just on the intensity of motives and the value of success but also on the subjective probability of success.

McClelland and his colleagues famously, or notoriously, based their book exclusively on research with men. This is often cited as a classic example of male bias in psychology: male psychologists who equate “human” with “male,” develop theories that they test mainly on men, and respond to any aberrant results with women, such as those reported by Veroff, Wilcox, and Atkinson (1953), by continuing to study men. A close reading of this early paper shows a more nuanced picture, however. Unusually for the time, the authors recognized the importance of developing two sets of pictures, one with male and one with female protagonists. The “aberrant” finding was that female high school and college students, unlike males, did not provide more achievement themes in an achievement-arousing than in a neutral condition. Women who wrote about female pictures produced hardly any achievement imagery. But the same was true of men. The most interesting finding was that women who wrote stories about male pictures produced the most achievement imagery. Discussion focused, as it might well do still today, on gendered roles, role models, expectations, and achievement opportunities. The authors concluded that rather than simply expressing societal norms, women projected their own, apparently rather high, need achievement onto plausible achievement figures—and at the time this meant males but not females.

This research group was not motivated to further explore women’s achievement motivation, however. The emergence of interest in achievement motivation among girls and women coincided, unsurprisingly, with second-wave feminism. Horner (1972), intrigued by indications that competitive settings undermined the performance of women but not men, ventured that competent women experience not two, but three conflicting motives in achievement settings. Like men, they can be motivated to succeed and to avoid failure, but women are also motivated to avoid success because they learn early that achievement is incompatible with femininity. Horner found that 70% of women undergraduates who wrote about Anne, who was at the top of her class in medical school, wrote negative and occasionally quite angry descriptions, as compared with fewer than 10% of men who wrote about John. Some wrote about ambitious but unattractive and
socially isolated bookworms who might become successful doctors but would live to regret not having a family, others about women who dropped out of school to find fulfillment in marriage. The notion of “fear of success” as a deeply rooted uniquely female kind of motivation fell out of favor, in part because subsequent studies showed that quite a few men also wrote negative stories about a successful man (Hoffman, 1974). The insight that aspiring to succeed can have costs when achievement runs counter to social constructions of not only female but also male opportunities and identities continues to resonate, however.

2.2. Expectancy-Value Theory

Contemporary theoretical approaches to achievement motivation in educational settings all draw on these early beginnings, but in different ways. Eccles’ Expectancy-Value (E-V) framework (Eccles (Parsons) et al., 1983) posits that students will invest more in an academic domain when they both expect to succeed and value achievement. In keeping with the cognitive revolution, Eccles and colleagues emphasized students’ perceptions of their competencies and values. Thus, rather than deep-rooted, semi-conscious drives or motives, E-V researchers assess students’ reports of their interest (intrinsic value), desire to succeed (attainment value), and perceptions that success is important for future plans (utility value). They also consider costs. Investing in an academic domain might leave little time for other activities, have negative consequences for social relationships or status, or conflict with other, for example, family goals.

Students form self-views via processes of social learning, on the basis of their academic outcomes and beliefs and the perceptions and communications of parents, teachers, and the cultural milieu, including gender roles and expectations. Studies have confirmed the motivational role of expectancies and values (for reviews, Eccles, 2009; Petersen & Hyde, 2014 [Chapter 2 of this volume]; Valentine, DuBois, & Cooper, 2004). Academic self-concepts predict school achievement and educational choices after controlling for prior achievement. The value of success makes an additional contribution. Thus, any gender differences in expectancies or values will have important consequences for the motivation and achievement of boys and girls. Importantly, Eccles and her colleagues developed the E-V model explicitly to address the influence of possible gender differences in expectancies and values on educational and career choices, and especially on the underrepresentation of women in STEM fields (see also Leaper & Brown, 2014 [Chapter 6 of this volume] and Liben & Coyle, 2014 [Chapter 3 of this volume]). This approach continues to guide much of the research on gender and academic motivation.
2.3. Attribution Theory

Weiner’s attribution theory of achievement motivation also accords pride of place to cognitions, in this case to perceptions of the causes of achievement outcomes. Early approaches emphasized the role of the locus of control, namely, the degree to which students believe that their outcomes are due to internal factors such as their capacities and investment, or to external factors such as the teacher or luck, in determining expectancy and continuing motivation (Rotter, 1966). Influenced by Atkinson’s distinction between expectancy and values, Weiner (1986) developed a $2 \times 2$ framework whereby any cause could be defined not only as internal or external but also as stable or unstable. He reasoned that expectancy depends mainly on the latter dimension. Attributing an academic outcome to ability, an internal and stable cause will lead to higher expectancy that the outcome will recur than attribution to effort, an internal but unstable cause. Attribution to relatively stable external causes such as task difficulty or the teacher will influence expectancy more than will attributions to luck, which might change for better or worse. The locus of control influences value, such that students experience more positive emotion when they succeed and more negative emotion when they fail if they attribute an outcome to an internal than to an external cause. As we shall see, research generated by this approach has shown quite coherent sex differences in achievement attributions.

2.4. Achievement Goal Theory

In contrast with both E-V and attribution approaches, achievement goal theory focuses on the kind of motivation that operates in achievement settings. The emphasis on the role of cognitions is similar, however. Achievement goal theory focuses on students’ constructions of the meaning of success, and thus of the goals they strive to achieve. In a direct critique of McClelland and Atkinson, who in his view defined need achievement mainly as a drive to succeed more than others, Nicholls (1989) proposed that there is more than one way of defining success. Initially, theorists distinguished between ego or performance goals that orient students to demonstrate competence by showing superior or masking inferior ability versus task or learning goals that orient students to define success as learning, and to strive to develop competence by acquiring worthwhile skills and understandings (Dweck, 1986; Nicholls, 1989). Although the terms ego versus learning goals best capture the difference between strivings to prove versus improve competence emphasized in this chapter, so as not to confuse readers familiar
with this literature, I shall use the more common “performance” and “mastery” labels. Influenced in part by Atkinson’s distinction between motives to achieve and to avoid failure, some researchers subsequently proposed that strivings to prove superior ability and strivings to avoid failure and the demonstration of poor ability reflect distinct performance-approach versus performance-avoidance goals (e.g., Harackiewicz, Barron, Pintrich, Elliot, & Thrush, 2002).

Mastery and performance goals constitute distinct motivational systems that are associated with qualitatively different antecedents, processes, and outcomes (for a review, Butler, 2000). In present terms, mastery goals orient students to try and to improve—to attribute outcomes to effort, to define and evaluate competence relative to task demands or prior outcomes, to construe difficulty as diagnostic of the need for further learning, and to respond by increasing effort, trying different strategies, and seeking help and information that can support learning. Performance goals orient students to prove—to define and evaluate competence relative to others, to attribute outcomes to ability, to construe setbacks as diagnostic of low ability, and to avoid exposing inadequate ability by asking for help. Debates continue whether these rather negative processes are associated only with performance-avoidance or also with performance-approach goals. Both kinds of performance goals, however, are maladaptive when students do poorly, whereas mastery goals are more likely to orient students to maintain motivation and effort even if they are not at the top of the class (Butler, 2000).

In keeping with their social-constructivist approach, achievement goal theorists posit that students construct goals in large part in response to instructional emphases on the importance of learning and progress or of demonstrating superior levels of performance and achievement. Despite evidence that girls tend more to mastery and boys to performance goals, researchers in this tradition rarely focus on the far-reaching implications for understanding gender and motivation in educational settings.

3. A QUESTION OF CONFIDENCE? GENDER AND PERCEPTIONS OF COMPETENCE AND CONTROL

3.1. Perceptions of Competence

Men tend to convey more confidence than women in performance-oriented settings. Even when minimally prepared, men believe they can “wing it” and get through successfully. But, no matter how thoroughly prepared women are, they feel unprepared.
Successful males are sure they can obtain beneficial results, while successful females continue to express doubts about their capabilities. I find this frustrating, because the accomplished women are as proficient as accomplished males.

Craver (2012)

This observation by a law professor accords well with the bulk of the research on students' beliefs about their competence. On average, males score higher than females on measures of general self-esteem (Kling, Hyde, Showers, & Buswell, 1999), academic self-concept (Stetsenko, Little, Gordeeva, Grasshof, & Oettingen, 2000), and perceived intelligence (Steinmayr & Spinath, 2009). Studies of domain-specific academic self-concepts show a more nuanced picture of robust, albeit typically small sex-typed differences. Most have focused on math, in large part due to concerns about the underrepresentation of women in STEM fields, but many have examined language arts, both for purposes of comparison and because of concerns about boys’ relatively poorer achievement in these subjects. Boys have more positive self-concepts in math and science; differences favoring girls in reading and language arts emerge in about Grade 3 (e.g., Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Wilkins, 2004). Sex differences in math were larger among gifted than non-gifted students (Preckel, Goetz, Pekrun, & Kleine, 2008). Research on academic self-efficacy, defined by Bandura as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attaining” (Bandura, 1997, p. 3) has yielded similar patterns (Meece, Glienke, & Burg, 2006).

Given that students construct perceptions of competence in large part on the basis of prior outcomes, might domain-specific sex differences in self-concepts simply reflect differential abilities and achievements of boys and girls? Debates about possible biological differences in verbal and especially math abilities rage on and are addressed in other chapters in this volume (see Bigler, Hayes, & Liben, 2014 [Chapter 7 of this volume], Liben & Coyle, 2014 [Chapter 3 of this volume]; Petersen & Hyde, 2014 [Chapter 2 of this volume]). For present purposes, however, in elementary school girls receive higher grades in all subjects. Differences favoring girls in language are marked throughout the school years; on average girls do better than boys in secondary school also in math and science (American Association of University Women Educational Foundation, 1998).

Thus, early sex differences in math self-concepts cannot be attributed to differences in achievement. In studies in which researchers specifically examined self-evaluative bias, boys showed more positive bias in math than did girls. Negative bias, whereby perceived competence was actually lower than
would be expected in the basis of achievement, was more prevalent among girls than boys (Dupeyrat, Escribe, Huet, & Regner, 2011; Kurman, 2004). Similarly, males overestimated and females underestimated their numerical, spatial, and general intelligence (Steinmayr & Spinath, 2009). These patterns have been linked to culturally transmitted gender roles and expectations that orient students to be both more confident and more motivated to succeed in what are perceived as gender-appropriate domains. Overall, sex-typed differences in self-concepts are more marked when students and parents endorse traditional gender attitudes and in Western countries that are less gender egalitarian (Eccles, Jacobs, & Harold, 1990; Nagy et al., 2010). Explicit endorsement of math as a male domain has decreased in recent years, but studies have shown the continuing existence of implicit stereotypes that male = male among children, adolescents, and adults; stronger implicit stereotypes predicted lower math self-concepts and achievement among women, while associations among men were on the opposite direction (Cvencek, Meltzoff, & Greenwald, 2011; Nosek, Banaji, & Greenwald, 2002).

In stereotypically feminine academic domains, girls did not show more positive and boys did not show more negative bias, however (Kurman, 2004). Controlling for the higher achievement of girls eliminated sex differences in perceived competence and self-efficacy in language (Pajares & Valiante, 1999). Given that on average boys learn to read later than girls, evidence that sex differences in reading self-concept emerge only in about Grade 3 suggests that initially boys show more positive bias also in this presumably feminine domain. Indeed in kindergarten, boys rated themselves as more competent readers than did girls; boys overestimated and girls underestimated their competence (Frey & Ruble, 1987).

School curricula typically assign more time to reading-related than to other activities in the early grades, so it seems likely that reading well is initially as much or maybe more about being a successful student than about gender roles. In the early grades, children did not have sex-typed perceptions of verbal and math abilities (Heyman & Legare, 2004). In a representative study (Jacobs et al., 2002), initially boys and girls did not differ in the degree to which they valued doing well in language; children of both sexes valued reading more than math. At older ages, boys valued success in language-related subjects less than did girls, but girls valued success in math and science as highly as did boys at all ages. Over time, students increasingly valued domains in which they were more confident and devalued domains in which their self-concept was lower. Adjusting the perceived value of success in line with expectancy is a strategy for maintaining positive self-views. The
influence of perceived ability on changes in the valuing of both math and English appears more marked among boys than girls (Jacobs et al., 2002).

### 3.2. Do Sex Differences in Perceived Competence Change with Age?

Researchers have raised competing hypotheses about whether sex differences will increase or decrease with age (e.g., Jacobs et al., 2002). According to gender intensification theory (Hill & Lynch, 1983), internal and external pressures to conform to gender roles and expectations increase, especially after the transition to adolescence. In this case, sex-typed differences in self-appraisals should also increase, especially during secondary school, as girls become more negative about male-stereotyped domains (e.g., math) and boys about stereotypically female domains (e.g., language). The gender convergence hypothesis (Jacobs et al., 2002) predicts that sex differences will decrease because boys begin school with more inflated self-views. Given that reality constrains positive illusions, boys should subsequently lower their self-concepts more than girls in alignment with their actual achievements. But girls tend to quite realistic and boys to overestimate their capacities in valued domains throughout the school years. In this case, one can propose a third, gender stability hypothesis. The difference favoring boys in math self-concept will be stable because boys will continue to show inflated perceptions. Beginning in middle childhood, the difference favoring girls in language arts will also be stable, because boys are less prone to positive bias in this less valued domain, and girls perform better. Overall, studies support this third hypothesis (e.g., Marsh & Yeung, 1998; Nagy et al., 2010).

So, yes, gender still matters. Beliefs about male and female abilities in the sciences versus the humanities influence corresponding self-concepts, but they do not tell the whole story. Rather, a remarkably consistent pattern evident already in the early school years is for males to self-aggrandize especially when they value a domain. Self-enhancement varies in keeping with individual, cultural, and contextual emphases on the importance of demonstrating superior worth and ability (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997). Boys might value and thus self-aggrandize in STEM more than in the humanities not only because they are typed as masculine but also because of widespread beliefs that they require and reflect higher intelligence. Indeed, when perceived competence was assessed for verbal IQ, rather than for language-related school subjects, adolescent boys did not rate their ability lower than did girls (Steinmayr & Spinath, 2009). In present terms, boys seem more motivated to construct favorable views of
their abilities, or to proving that they are competent, whereas girls tend to be more realistic, modest, and on occasion self-denigrating. Similar patterns emerge also from research on students’ perceptions of the determinants of academic outcomes.

### 3.3. Perceptions of Causality and Control

Research generated by Weiner’s framework has confirmed the importance of distinguishing between attributions to internal versus external causes and to stable, typically uncontrollable factors, such as ability (or gender) versus unstable, typically more controllable factors, such as effort, motivation, or learning strategies (for a review, Weiner, 1986). As is the case for self-concepts, students make causal inferences in part logically and realistically, based on prior outcomes and information in the immediate environment. Students who do poorly on a test are more likely to attribute their grade to chronic low ability rather than to inadequate preparation, difficult questions, or poor instruction if they consistently fail in school than if they generally succeed, if most of their classmates did better, or if they revised thoroughly. But studies have also confirmed a pervasive motivated bias whereby people accept more responsibility for success than for failure in the service of maintaining positive self-views (Campbell & Sedikides, 1999).

In an early study with 10-year-olds, Nicholls (1975) identified a suggestive pattern of sex differences. Children worked on problems in either a success or a failure condition. Girls attributed failure more to poor ability than did boys and attributed success less to high ability. Girls were more likely to attribute failure than success to ability, while boys showed the opposite pattern. Boys attributed failure to bad luck more than did girls. In terms of attribution theory, girls showed a low-expectancy and boys a high-expectancy pattern. Indeed, boys maintained higher expectancies after failure than did girls. Nicholls concluded that boys and girls showed contrasting self-serving versus self-denigrating biases that both reflect and reinforce sex differences in perceived competence. Results from a meta-analytic review of experimental studies with college students confirmed greater self-serving attribution bias both among high versus low self-esteem individuals and among men than women (Campbell & Sedikides, 1999).

Attributions for classroom outcomes show more similarities than differences between the sexes, presumably because students have more experience and information to draw on. For example, in keeping with cultural norms and school messages, students tend to prioritize effort. Some fairly consistent, albeit
typically small, sex differences have emerged, however, again mainly for math and science. Beginning in elementary school and continuing through college, among both general and gifted samples, females rated ability as a less important determinant of success and a more important determinant of failure than did males and rated external factors as less important, especially for negative outcomes. Females tended to rate effort, especially sustained application, as a more important determinant of success; males were more likely than females to attribute failure to a combination of poor preparation, lack of interest, and external causes (e.g., Beyer, 1999; Cramer & Oshima, 1992; Ryckman & Peckham, 1987; Stipek & Gralinski, 1991).

Interpretations have typically emphasized the maladaptive consequences of attributing unsatisfactory outcomes to ability and the adaptive consequences of favoring unstable causes such as effort instead. For example, Dweck theorized that girls are more likely than boys to respond to difficulty with helpless decrements in confidence, persistence, and performance (e.g., Dweck, Davidson, Nelson, & Enna, 1978). However, selectively favoring not only external factors but also effort as a cause of failure more than success can be a defensive strategy to maintain self-worth by avoiding inferences of low ability. In this case, students may not try harder in the future because doing poorly despite high effort is clear evidence of low ability. Males are more inclined than females to construe effort as a double-edged sword, whereby the benefits of trying hard are counter-balanced by beliefs that high effort implies low ability and detracts from the value of success (Covington & Omelich, 1979). Prioritizing effort as a cause of both positive and negative outcomes, as is more typical of girls, should spur students to continue to work hard rather than resting on their laurels when they do well, and maintain or even increase effort when they are doing poorly, in part to compensate for their perceived inadequate ability.

In contrast with Dweck’s proposal, girls invest more sustained effort in their studies and try harder to master difficult material than do boys, according to both teachers’ and students’ reports (for an overview, Duckworth & Seligman, 2006). Boys are more likely than girls to self-handicap by withdrawing effort when they fear or anticipate a poor academic outcome (Urdan & Midgley, 2001). McCrea and colleagues have showed that gender differences in self-handicapping reflected differences not only in defensive attribution bias but also in beliefs about the inherent value of effort versus ability (Hirt & McCrea, 2009). Women agreed more than men that they aspire to try hard as possible and pride themselves on being hard workers, that they admire effortful application in others, and that
they disapprove of people who do not try hard. Men agreed more than women that they value ability over effort. Gender-differentiated perceptions of the relative value of ability and effort partially mediated sex differences in academic self-handicapping. Koestner, Zuckerman, and Koestner (1989) provided direct evidence that younger girls and boys responded differently to effort and ability cues. Praise for ability after success enhanced, whereas praise for effort undermined, perceived competence, performance, and intrinsic motivation among boys. The opposite pattern was true among girls. The most negative patterns were shown by boys praised for effort.

If boys are more ambivalent than girls about the value and virtue of effort, one can wonder about the effectiveness of interventions designed to enhance motivation by encouraging attributions of classroom outcomes to effort. Indeed, attribution retraining enhanced perceived academic competence, persistence, and performance among girls in elementary school (Craske, 1985) and in a secondary school chemistry course (Ziegler & Stoeger, 2004) but had no effects on boys. These findings are suggestive, but one must be cautious about generalizing because it is not clear whether in other studies that showed positive effects of attribution retraining in mixed samples researchers did not report effects by gender because they did not conduct them or because preliminary analyses showed no sex differences.

To summarize, research on perceptions of control converges with and extends that on perceptions of competence. The tendency of boys to take more responsibility for success than for failure is adaptive for maintaining confidence and self-worth, but may actually undermine continuing persistence and achievement, especially when they do poorly. Taken together with their less biased and confident self-appraisals, the attribution style more typical of girls suggests that they are indeed less inclined to “wing it” and more inclined to believe that they always need to try hard and that there is always room for improvement. The tendency of girls to take more responsibility for academic outcomes and to discount the role of ability in success should also render them more vulnerable to self-doubts and anxiety, however. Indeed, girls worry more about schoolwork than do boys (Pomerantz, Altermatt, & Saxon, 2002). This combination of lower confidence, greater anxiety, and beliefs that success depends on considerable investment may be particularly critical in influencing girls to set their sights lower than need be when making educational and career choices in secondary school and young adulthood. Clance and Imes (1978) suggested that it might also render high-achieving females vulnerable to the “imposter phenomenon”—the belief that one is less bright than one appears and will eventually be found out.
The research reviewed so far implies that boys and girls tend to use and interpret the informational environment for rather different purposes and in different ways. In the following sections, I discuss approaches to evaluation and achievement that might be related to the overconfidence of boys and to the lesser confidence and greater investment of girls.

4. PROVING AND IMPROVING: GENDER AND MOTIVES FOR EVALUATION

4.1. Approaches to Evaluation

Over 30 years ago, Lenney (1977) reviewed the extant literature and concluded that women were more likely to lower their evaluations and expectancies after receiving negative feedback than men, especially in settings that invite competition and social comparison. In a later review, Roberts (1991) reached the same conclusion. For instance, Roberts and Nolen-Hoeksema (1994) found that, although women expressed somewhat more positive initial ratings of their ability to give a persuasive, effective, and intelligent speech than men, they were significantly more likely than men to lower their appraisals when confronted with a critical peer remark about their performance. Roberts theorized that men and women approach evaluative feedback differently. Men treat evaluative settings as competitive arenas that call on them to prove and stand by their capacities and self-views, and thus to discount others’ evaluations, especially if these are negative. Women are more inclined to approach such situations as opportunities to gain information about their abilities and thus treat evaluative feedback as more diagnostic.

More generally, gendered patterns of competence and control and approaches to evaluation are reminiscent of those associated with self-enhancement versus self-improvement motives for self-evaluation. When motivated primarily to maintain self-esteem (self-enhancement), individuals are prone to positive bias, prefer favorable over diagnostic but unfavorable information, and use various self-protective strategies, including attribution biases, to avoid, refute, or discount negative feedback (Crocker & Park, 2004). When motivated primarily to improve, they are interested in information relevant both to acquiring skills and understandings and to accurate self-appraisal, because one cannot know whether or how to improve without a clear sense of current performance and capacities (Butler, 2000). In this case, women might be more inclined to treat evaluative settings as opportunities not only for learning about, but also for improving their capacities.
Taking critical evaluations seriously enables one to identify and address deficiencies but carries the risk of losing self-confidence, devaluing one’s capacities, and experiencing anxiety in evaluative settings such as tests. Conversely, prioritizing self-esteem carries the risk of failing to embrace and benefit from learning opportunities, including potentially useful evaluative information. A study by Mandel (2010) neatly illustrated these costs and benefits. College students rated their thoughts and emotions after they received negative feedback on their performance on an unfamiliar and challenging verbal task presented as a test of “creative intelligence.” Men scored higher than women on hostile emotions and self-protective thoughts aimed at denying, discounting, or refuting the negative feedback (e.g., “I am thinking that the test is not a valid measure of creative intelligence”), whereas women scored higher on anxious emotions and self-denigrating cognitions (e.g., “I am thinking about my poor creative intelligence”). Before working on the task, men rated their “creative intelligence” higher than did women. Women rated the feedback as more diagnostic than did men. As a result, although participants of both sexes rated their performance fairly negatively, only women significantly lowered their evaluations of their general creative intelligence. However, women scored higher on self-improvement cognitions (e.g., “I am thinking about different ways to solve the problems”) and spent more time than men reading information that presented examples of effective problem-solving strategies.

4.2. Development of Proving and Improving Approaches to Self-Evaluation

Gendered approaches to evaluation appear to develop well before the college years. By middle childhood (when children can respond reliably to self-report surveys) and continuing through college, girls reported basing their academic self-efficacy beliefs on social feedback from parents, teachers, and peers far more than did boys. Boys based their self-efficacy almost entirely on their past attainments and perceived ability (for a review, Usher & Pajares, 2008). Usher and Pajares interpreted these results as evidence that boys develop more internal, autonomous standards for self-evaluation than girls. This is an oversimplification, however, because from an early age boys tend to be very responsive to another kind of social information—social comparison.

In a current project, we are asking children between the ages of four and nine to give an example of something they are good at, and succeed in, and something that they are not good at, and do not succeed in (Butler, 2012a).
For each, we ask them how they know. By age five, more girls than boys spontaneously referred to social feedback (my teacher, parent, peers say I’m good or not good at the activity); more boys than girls cited social comparison ("I run faster than Adam"). Beginning at ages six to seven, boys, but not girls, showed an increasing preference for upward over downward social comparisons; they were more likely to say that they know they are good at something because they do better than others than they were to say that they are not good at something because they do worse (see Figure 1). Approaches that posit a universal tendency to self-enhance vis-à-vis valued domains and standards (Sedikides, Gaertner, & Toguchi, 2003) might imply that girls will show a bias toward valued positive over negative social feedback. If young girls attend to both positive and critical social feedback, they should not show positive bias, however. The frequencies in Figure 2 show that girls were equally likely to cite social feedback as their source of knowledge about low and high competence. There was a weak tendency among the older boys to refer to positive more than negative feedback.

There is other evidence that young boys are more interested in social comparison and that sex differences in self-appraisals and strategies are made rather than born. Some years ago I asked children between the ages of four and eight to rate their performance on a tracing task after we showed them the work of another child who had traced either more or less of the path (Butler, 1998a). I also asked children why they evaluated their performance as they did. Among even the preschoolers, more boys than girls cited the social standard. Beginning in kindergarten, boys were more likely than girls to give a social comparison reason if they did better rather than worse than
the other child or to refer to the social standard in a self-serving manner, for example, by saying that they did better than the superior other, “because his line is crooked.” Boys rated their performance higher than did girls; they also expressed more optimistic expectancies about their future performance. In an observational study of KI to Grade 4 classrooms, Frey and Ruble (1987) found that boys made more self-congratulatory and fewer self-critical spontaneous comments than girls; boys were also more likely than girls to denigrate and less likely to praise peers’ work. Ruble, Eisenberg, and Higgins (1994) found that boys were more prone to self-other bias; given the same performance outcome, boys rated themselves more favorably and the other child less favorably than did girls.

Young children rarely cite progress as a standard for self-appraisal (Frey & Ruble, 1987), possibly because the understanding that comparison information is diagnostic for self-appraisal develops later for temporal than for social comparisons (Butler, 1998a). In another study, children at ages four to nine rated their performance and explained their rating in one of two conditions (Butler, 2012a). In the normative success–temporal failure (NS–TF) condition, they saw that they had traced more of the path than a peer, but less than on an earlier attempt. In the normative failure–temporal success (NF–TS) condition, they did worse than another child, but better than before. Looking first at the results for girls in Figure 3, as one would expect on developmental grounds, the number of girls who explicitly compared current with prior performance increased with age; older (but not younger) girls attended more to the temporal than the social standard. Importantly, girls were equally likely to

![Figure 2 Standards and strategies for inferring high and low competence: Social feedback.](image-url)
base performance-appraisal on temporal comparison when they had done better than when they had done worse than before and were equally likely to cite an upward as a downward social comparison. The results for boys presented in Figure 4 were very different. Again, the youngest children attended mainly to the social standard in both conditions. By Grade 1, boys were far more likely to cite the more favorable standard and to make a gratifying downward social comparison in the NS-TF condition and a gratifying downward temporal comparison in the NF-TS condition. As a result, the sex difference favoring boys in performance-appraisal increased with age.
These results provide further confirmation of the early development of male proving. They also suggest that with age girls become increasingly interested in whether they are learning and improving. In another new study in our lab, middle school students worked on problems in which the aim was to pour a certain quantity from other jars to a target jar in as few moves as possible. Scores depended on the quality of the strategy, so it was possible to improve during the session. Students could choose whether to receive their overall percentile score, their scores on each problem in order of presentation, or no information. They also rated the degree to which normative and temporal information were each useful for evaluating their performance. As expected, girls rated temporal information as more diagnostic than normative information, whereas boys rated normative information as more diagnostic. Girls were more likely than boys to ask for their scores on problems over time, and were far less likely to choose to receive no information. Thus, by early adolescence girls were clearly more oriented to evaluating whether they had learned and improved. Furthermore, information-seeking was moderated dramatically by math self-concept among boys but not girls. Among boys who thought that they were good at math, most (70%) chose to receive their percentile score and none preferred to receive no information. In contrast, among boys who thought that they were not good at math, few (20%) chose to receive their percentile score and 40% preferred to receive no information.

So from an early age, boys and girls tend to be guided by different self-evaluative motives that orient them to different evaluative strategies and inferences. Motives for self-enhancement, veridical self-assessment, and self-improvement are themselves motivated, however, by what people are trying to achieve in a given situation, and in the classroom by their achievement goals for schoolwork (Butler, 2000).

5. ACHIEVEMENT GOALS

5.1. Gender and Achievement Goals

Much research on motivation in educational settings has been guided by the simple proposal that students’ motivational beliefs, strategies, and outcomes depend importantly on their constructions of the goals or purposes of schoolwork, on the kind of success they value, and thus on what they want to achieve. If boys are more oriented to proving and girls to improving, are they also differentially inclined to corresponding performance-approach and mastery goals? Researchers did not always test for sex differences. When they
did, however, girls usually endorsed mastery goals more than did boys and boys scored higher on performance-approach goals (e.g., Dupeyrat et al., 2011; Marsh, Craven, Hinkley, & Debus, 2003; Meece & Holt, 1993). Recall that because women score higher on test anxiety, Atkinson inferred that they are more motivated to avoid failure. Studies have not shown a consistent sex difference in performance-avoidance goals, however.

Thus, boys tend to be oriented to proving and girls to learning and improving in both their achievement-related judgments and strategies and the goals that they pursue in the classroom. Achievement goals and gender have similar influences on motivational beliefs and achievement-related strategies. Presenting an activity as an opportunity to develop competence (mastery goal condition) evoked motives for both self-improvement and veridical self-assessment. Presenting the task as a test of some valued ability (performance goal condition) evoked self-enhancement motivation and self-serving information-seeking biases (Butler, 2000). Competitive settings, which promote performance goals, increased self-serving bias (Campbell & Sedikides, 1999).

Similar parallels have emerged for other strategies of academic coping and defense. For example, mastery goals and contexts orient students to ask for needed help with schoolwork because they evoke positive perceptions of help seeking as an adaptive learning strategy. Performance goals and contexts invite constructions of help seeking as a threatening admission of inadequate ability and orient students to avoid overt bids for help and increase the likelihood that they will cheat instead (Butler, 2006). From elementary school through college, more girls seek help when they encounter difficulty with their schoolwork, while more boys cheat (Butler, 1998b; Newstead, Franklin-Stokes, & Armstead, 1996; Ryan, Gheen, & Midgley, 1998). Self-handicapping, is more common among students who prioritize performance over mastery goals (Urdan & Midgley, 2001); as I have already noted, boys self-handicap more than do girls.

5.2. Gender and Achievement Goals in Context

Teachers create a mastery goal structure or learning context when they emphasize meaningful learning, treat errors as learning opportunities, and consider effort and progress when evaluating students. They create a performance goal structure when they stress correct answers, assign frequent tests, and encourage competition and social comparison by grouping students by ability, grading students relative to one another, and show preferential
treatment of high-achieving students. Because students in the same class do not necessarily experience the same educational context, researchers emphasize students’ perceptions of the classroom goal structure as the main determinant of their motivational beliefs and responses. Perceived mastery goal structure promotes mastery goals for learning and positive kinds of academic and social engagement—deep learning strategies, satisfaction with schooling, and cooperative relationships with peers and teachers (for a review, Rolland, 2012). Perceived performance goal structure is associated with performance goals and in some studies with negative kinds of student engagement, including anxiety, disruptive behavior, and dissatisfaction with schooling and relationships. Overall, associations tend to be weaker than for perceived mastery emphases. One reasonable but rarely examined possibility is that performance-oriented classrooms, like personal performance goals, have negative effects on low but not necessarily high achievers. Solmon, 2014 [Chapter 4 of this volume] provides a discussion of performance orientation and related motivational topics within the realm of physical education.

Another possibility is that null or weak main effects might be due to interactions with gender. Specifically, boys may respond more positively to performance-oriented and girls to mastery-oriented learning contexts because these match their motivational approaches. In support, males enjoy competing and often perform better in competitive settings, in part because they tend to overestimate their chances of winning. Females prefer to cooperate and are more prone to show discomfort, anxiety, and performance decrements when competing (for a review, Croson & Gneezy, 2009). Individual differences in mastery and performance goals seem to influence motivational beliefs, strategies, and consequences in similar ways among boys and girls, however (Koul, Roy, & Lerdpornkulrat, 2012; Nolen, 1988). Mastery and performance goal conditions overrode gendered self-evaluative motives, strategies, and judgments, orienting boys to behave more like girls in mastery goal conditions, orienting girls to behave more like boys in performance goal conditions, and orienting both to show more positive patterns of motivation and self-regulation in the former (Butler, 2000). Researchers who examined effects of perceived classroom goal emphases typically did not test for main or interaction effects involving gender, but this may be the case for perceived classroom goal emphases as well (e.g., Koul et al., 2012).

These findings are a salutary reminder of gender similarities, of the benefits of mastery goals and contexts for both boys and girls, and importantly, of the malleability of motivational approaches. Boys and girls might tend to perceive the classroom environment differently, however. Students perceive the classroom goal structure in part through the lens of their own
achievement goals. If boys and girls tend to construe evaluative settings as competitive arenas and learning opportunities, respectively, this might be the case for the classroom as well. In a study in 70 middle school classes in Israel, I found that boys agreed more than girls that teachers created a performance goal structure whereas girls agreed more than boys that teachers created a mastery goal structure (Butler, 2012b). Intrigued, I conducted a literature search to determine whether this was the case in other studies and countries. Researchers rarely reported tests for sex differences. In all the few exceptions, boys scored higher on perceived performance goal structure than girls, although tendencies for girls to score higher on perceived mastery goal structure than boys were not significant.

It is possible that any differences are not only in the eyes of the beholders. In a later section, I shall consider indications that teachers interact more with boys in ways that convey the importance of demonstrating superior ability and more with girls in ways that convey the importance of trying and improving. In all events, it is clearly important if girls and boys tend to experience the classroom context somewhat differently. For instance, if boys tend to perceive the classroom as more competitive, this should exacerbate their tendencies to performance goals and proving modes of self-appraisal and self-regulation. Although this may energize high-achieving boys, it may render low-achieving boys even more prone to defensively withdrawing effort, disengaging from schooling, and seeking other arenas in which they can prove themselves.

6. ACHIEVEMENT AND SOCIAL GOALS, VALUES, AND INTERESTS

6.1. Gender and Relationships

Classrooms are not only achievement but also social arenas, in which achievement and social roles, identities, motivations, goals, strategies, and behaviors, are necessarily intertwined. There are clear parallels between “proving” and “improving” orientations to self-appraisal and achievement and gendered interpersonal goals, styles, and behaviors. From an early age girls tend to display more empathic concern, interpersonal responsibility, compliance, and desire to please, whereas boys tend to be more competitive, more inclined to boast, and less amenable to adult influence (Maccoby, 1998). Biological differences may play some role but so do early social interactions (see Martin, Fabes, & Hanish, 2014 [Chapter 5 of this volume]). Parents tend to socialize children in ways that place more emphasis on the development of autonomy and agency in boys and of affiliation and consideration for others in girls.
Gender-differentiated activities are potent arenas of gender socialization because they invite and develop different behaviors and interactions. Young boys tend to engage in competitive games with several playmates, activities that invite social comparison, and strivings for social dominance (Rose & Rudolph, 2006). Young girls, in contrast, tend to engage in socio-dramatic play, an activity that invites coordination and cooperation with others (see Martin et al., 2014 [Chapter 5 of this volume]).

In their analysis of same-sex peer groups, Maltz and Borker (1982) distinguished between the competitive, adversarial orientation of boys who speak to assert themselves and to maintain an audience, and the collaborative, affiliative orientation of girls who speak to “create and maintain relationships of closeness and equality” (p. 207). When conflicts arise, boys tend to act single-mindedly to prevail and achieve their goals, and girls to consider partners’ goals as well and thus to negotiate and compromise (Sheldon, 1993). Later on, boys, more than girls, endorse “proving” kinds of social demonstration and social dominance goals to influence peers, to belong to high-status groups, to promote their own interests, and to present themselves in a positive light. Girls, more than boys, endorse intimacy and “improving” social development goals to create close and mutually supportive friendships, to resolve conflicts, to avoid hurting others, and to improve their relationships (for a review, Rose & Rudolph, 2006). During joint problem-solving, boys were more likely to denigrate and girls to try to teach less competent others (McCloskey, 1996). Boys are concerned mainly to prove themselves in interactions with boys, while girls are oriented to attending to and affiliating with both peers and adults (Maccoby, 1998). Because adult and peer norms regarding desirable social behaviors tend to correspond for girls but often conflict for boys, one route to peer approval for boys (but not girls) is to oppose adults. Boys in different cultures were more likely than girls to be swayed by peer than by adult norms and disapproval (Bronfenbrenner, 1970).

Gendered interpersonal goals and interactions develop before school entry. They likely play an important role in orienting boys and girls toward proving or improving approaches to the self and to achievement, and then in maintaining these approaches. In the following section, I consider how gender roles and social goals meet motivational goals, beliefs, and strategies in the classroom.

6.2. Good Girls, Brainy Boys: Performing Academically and Performing Gender

In many ways, female approaches to schooling and relationships match teachers’ images of the ideal student; girls care more than boys about pleasing
teachers, are more compliant and less disruptive, are more responsive to feedback and criticism, and try harder (for an overview, Kenney-Benson, Pomerantz, Ryan, & Patrick, 2006). But studies continue to show that it can be difficult for girls “to perform academically and to perform as feminine” (Walkerdine, 1989, p. 277), even prior to adolescence. A group of gifted girls in Grades 3–6 talked to Bell (1989) about the costs of performing academically in terms of violating feminine roles and relational goals. They were concerned about hurting other students’ feelings and seeming boastful if they expressed pride in their accomplishments, and about being seen as aggressive if they asked or answered too many questions in class. In an ethnographic study of 10- to 11-year-olds in the UK 20 years later, Renold (2001a) documented how high-achieving girls negotiated student and relational goals by downplaying their achievement, which is clearly marked in British schools by ability-grouping and assignments that range in difficulty in clearly designated Levels. One girl, who was at Level 6, insisted that she was at Level 2. Another girl, described by peers in a group interview as excelling, admitted after considerable prompting that she was “quite” good. These observations accord with experimental research showing that concerns about femininity and relationships led women (but not men) to self-denigrate more in public than in private, and more in interaction with a less than a more successful other (Heatherington et al., 1993).

Even at this quite young age, girls in Renold’s study expressed concerns that peers might like them less if they were in the top rather than in middle ability groups. During group work, boys ignored or denigrated the contributions of bright girls. Similarly, German adolescents in selective high schools rated a girl described as excelling in physics as more masculine, less feminine, and less liked than a girl described as excelling in music (Kessels, 2005). Girls who excelled in physics perceived themselves as less liked by boys than girls who excelled in music. Thus despite critiques of “fear of success” as a distinctly female kind of motivation, high-achieving girls may still experience conflicts between strivings for academic excellence and social acceptance.

Although high academic achievement is sometimes viewed as unfeminine, school is often analyzed, paradoxically, as a feminine arena. Brophy (1985) proposed that boys see schooling as feminine not just because most teachers are women, but because demands to behave, comply, and defer do not fit the culturally prescribed male gender role and peer norms. High-achieving boys in the classes studied by Renold (2001b) were ridiculed and marginalized by other boys as sissies and squares, but for being
studious and well-behaved, rather than clever. A common strategy was for bright boys to “prove” their masculinity by becoming experts in sports trivia or subverting authority by challenging the teacher and making other kids laugh. Bright boys bragged about their accomplishments and less able boys reported getting higher grades than they did.

Jackson (2002) interviewed adolescent boys in England about what it means to be a “lad,” British parlance for “one of the guys.” Being a lad meant acting male by playing soccer, having a laugh in class, provoking teachers, and importantly not acting female, which for them meant not only talking about clothes, but also studying and worrying about schoolwork. Most of the boys wanted to do well in school, however, not just as a path to further education or better jobs, but also because it was important to them to present as clever, especially before other boys. Many gave explicit examples of strategies to protect and enhance academic self-worth. Typically, they downplayed their effort, but not their achievements. They denied revising not only after a poor but also a good test grade, because, as one boy put it, “that would make me sound brainier ’cause I already knew it and I didn’t have to revise” (p. 595). In keeping with results from quantitative research, boys described self-handicapping before tests in hard subjects. Continuing the theme that “lads” avoid the appearance of effort, but not of ability, none talked about potential costs of success for their identities as lads or their social status. When asked if they discuss grades with friends, they typically said that they boasted about high grades and kept low ones to themselves.

Jackson concluded that “laddish” norms and behaviors protect self-worth from threats to masculinity and, perhaps more importantly, to competence. Pretending one has not worked or actually withdrawing effort while trumpeting one’s achievements enabled boys to present themselves as male, because connotations of effeminacy were reserved for boys who were hardworking and well-behaved, rather than “brainy.” No less important, these strategies enabled attributions of poor performance to low effort and attributions of success to effortless achievement, the hallmark of true ability for these boys and for students who pursue performance goals. So for boys, the conflict seems to be less between masculinity and excelling academically and more between masculinity and studying and deferring.

One implication is that male peers are a greater impediment to boys’ academic engagement than any feminization of schooling. Boys dominate classroom environments and interactions (for a review, Beaman, Wheldall, & Kemp, 2006), to the possible detriment of students of both sexes. For instance, Lavy and Schlosser (2011) found that the achievement of both girls
and boys increased with the number of girls in the class. Moreover, this was due to the effect of gender composition on the classroom environment. As the number of girls in a class increased, students of both sexes reported more enjoyment, better relationships with teachers and peers, fewer disruptive student behaviors, and less peer aggression. Teachers reported less fatigue in classes with more girls. The authors concluded that the feminizing influence of girls directly benefitted boys and teachers, while the benefit to girls derived simply from the fact that more girls in a class necessarily meant fewer boys.

6.3. Interests, Values, and Identity

In contrast with the generally small differences in other motivational variables, studies of young children’s interests continue to show marked sex differences that correspond with sex-typed differences in early play and toy preferences. In a representative study, Alexander, Johnson, Leibham, and Kelley (2008) found that far more 4- to 5-year-old boys than girls had a strong and sustained interest in construction and in domains relevant to the acquisition of categories and concepts. More girls than boys had a sustained interest in socio-dramatic play and in arts and crafts. Sex differences in interest in “things” versus “people,” in realistic versus social and artistic domains, and STEM versus language-related subjects continue from school through adulthood (e.g., Frenzel, Goetz, Pekrun, & Watt, 2010; Su, Rounds, & Armstrong, 2009; Wigfield et al., 1997). Effect sizes vary with the generality of interests; they are larger for measures of interest in people versus things and smaller for most academic subjects (see Petersen & Hyde, 2014 [Chapter 2 of this volume]).

Given the early divergence of interests, some researchers are now proposing that biological predispositions to different interests, possibly as a result of prenatal hormones, might drive sex differences in educational and vocational motivations and choices (Valla & Ceci, 2011). However, even Lytton and Romney (1991), who concluded that overall parents do not treat sons and daughters differently, noted that they encourage sex-typed activities in young children, and respond more negatively to cross-sex preferences among boys than girls. In addition, already by age three children are very motivated to work out what it means to be a boy or a girl and actively avoid cross-sex activities (Ruble et al., 2006). Early interests and skills can be precursors of subsequent academic interests, orienting boys to realistic and girls to expressive domains. When students are interested in a topic, they tend to process it more deeply and understand it better, are more likely to generate
novel ideas, to engage in the topic outside class and to develop expertise and a sustained personal interest (Hidi & Renninger, 2006). Thus, interests promote competence and competence development enhances interest. Adolescents begin to integrate interests, for example, in math versus language into their general sense of identity. They also begin to consolidate higher order motives, or values. In studies of some 70,000 adolescents, college students, and adults in close to 70 countries, Schwartz and Rubel-Lifschitz (2009) found that females scored higher than males on altruistic values whereas males scored higher than females on self-enhancement values (proving superior achievement and exerting power).

Interests and values play a central role in educational choices of advanced courses in high school and majors in college, and in choices of subsequent jobs and careers (see Liben & Coyle, 2014 [Chapter 3 of this volume]). In keeping with their tendency to self-enhancing, proving values and motives, males typically aspire to high-status, well-paying jobs that involve working with things and systems, and offer opportunities for promotion and the exertion of power and influence over others. In keeping with their favoring of altruistic, affiliation, and self-improvement values and motives, women prefer jobs that offer opportunities to work alongside rather than above others, to help people, to make a contribution to society, to develop skills and knowledge, and to balance career and family; these values gravitate against choice of STEM fields (see Chapter 7).

Importantly, sex differences in interest in masculine versus feminine occupations develop early and remain fairly stable (Weisgram, Bigler, & Liben, 2010). By early childhood, boys expressed more negative attitudes toward feminine occupations than did girls toward male ones. During adolescence, boys tend to become more single-mindedly committed to a limited number of typically masculine values and domains, while girls develop more flexible identities that incorporate both masculine and feminine traits and interests (Eccles, 2009). A recent study by Wang, Eccles, and Kenny (2013) showed that this might be the case for abilities as well. More 12th grade girls than boys with high ability in math also had high verbal ability, possibly because girls invest in developing skills in all school subjects. Subsequently, men are less likely than women to choose majors and careers in fields traditionally associated with the other sex. Contributing personal factors include ideological beliefs about gender equality and personal beliefs about gender typicality and self-efficacy in traditional versus nontraditional domains (Leaper & Van, 2008). Thus, social pressures and personal beliefs and values constrain the choices of males as well as females (see Petersen & Hyde, 2014 [Chapter 2 of this volume]).
7. SOCIAL INFLUENCES

I have referred throughout to ways in which gendered motivational approaches are constructed within cultural milieus, families, peer groups, and classrooms. I now turn to a more systematic discussion of the role of parents and teachers. Socio-cultural differences in the socialization of boys and girls in different ethnic groups might moderate sex differences in motivational beliefs and outcomes but space constraints preclude discussion here. Barbarin, Chinn, and Wright (2014) [Chapter 10 of this volume] and Rowley et al. (2014) [Chapter 9 of this volume] provide excellent reviews of academic motivation and achievement at the intersection of gender, race, and class within the United States.

7.1. Parents

Most attention has been paid to parents’ beliefs about gender roles and the sex-typed abilities of their own sons and daughters. Results are not surprising, but also not trivial (e.g., Bleeker & Jacobs, 2004; Chhin, Bleeker, & Jacobs, 2008; Eccles et al., 1990). To the extent that parents have sex-typed beliefs, they believe that sons are more talented in math and attribute the math success of sons more to ability and of daughters to hard work and good study habits. Parental perceptions of their children’s competence in math predicted both parental expectancies for their children’s educational and career achievement and their children’s perceived competence, course selection, and occupational choices, even after controlling for students’ actual achievements. Frome and Eccles (1998) reported that parents perceived girls to be more competent than boys in English; again parental perceptions significantly predicted adolescents’ perceived competence. However, in keeping with the research on students’ self-concepts, mothers overestimated the math competence of sons, but evaluated the English competence of children of both sexes quite realistically. Similarly, parents overestimated the intelligence of sons and underestimated that of daughters (Steinmayr & Spinath, 2009).

These differential perceptions suggest that even today, even in Western countries, parents tend to have higher and more positively biased expectations for boys than for girls (see Leaper & Brown, 2014 [Chapter 6 of this volume]). Results of a recent intervention program designed to increase adolescents’ enrollment in STEM courses by promoting maternal perceptions of their utility value for their children are consistent with this analysis (Rozek, Hyde, Svolbords, Hulleman, & Harackiewicz, accepted for publication). The
intervention had no effect on high-achieving boys (who were already taking many STEM courses), increased course-taking among high-achieving girls and low-achieving boys (suggesting that these students had previously received less parental encouragement), and actually decreased course-taking among low-achieving girls. Apparently, mothers of low achievers were more inclined to believe that their sons than their daughters had the requisite ability.

If parents are especially invested in maintaining favorable beliefs about their sons’ academic abilities, even in the face of disconfirming evidence such as their actual achievements, one can venture that they play a role in orienting boys to believing in and proving their abilities. In support, Friedel, Cortina, Turner, and Midgley (2007) reported that boys perceived not only teachers but also parents as placing greater emphasis on performance goals than did girls. I cannot evaluate how general a phenomenon this is because other studies of perceived parental goal emphases did not look at sex differences. Conversely, if parents perceive daughters more than sons as succeeding because of effort and application, they likely also convey to girls more than boys the importance of investing effort in schoolwork. Evidence suggests that parents monitor the academic progress of girls more closely than that of boys, criticize young girls more than boys for poor performance on an achievement task, and give girls more unsolicited help than boys (for an overview, Kenney-Benson et al., 2006). Such behaviors serve as low ability cues that convey the need for greater compensatory effort. Tendencies to socialize girls more than boys to be attentive to, compliant with, and considerate of others may also orient girls to be humble about their abilities, to try hard in school to please rather than disappoint adults, and to worry about their schoolwork.

7.2. Teachers

Overall, teachers seem to evaluate the academic competence of both boys and girls more realistically than parents (Madon et al., 1998). But teachers may convey the relative importance of effort versus ability and of improving versus proving in other ways. An early study showed striking differences in teacher communications (Dweck et al., 1978). Teachers were more likely to praise boys for the intellectual quality of their work, and girls for their conduct or neatness, but criticized boys mainly for conduct and girls for performance. Thus, teachers conveyed both that girls are less able and that “positive evaluation is less indicative of ability for girls than for boys, and negative evaluation is less indicative of ability for boys” (p. 274). In support, Parsons, Kaczala, and
Meece (1982) found that the frequency of teacher praise was positively correlated with student ratings of both teacher expectancies and their own ability for boys, but not for girls. The tendency for boys to more selective than girls in attending to positive more than to negative evaluative feedback should increase the impact of such differential communications.

Subsequent studies have confirmed that teachers tend to interact differently with boys and girls (see Beaman et al., 2006; Leaper & Brown, 2014 [Chapter 6 of this volume]). They pay more attention to boys, across different cohorts, ethnicities, and social classes. Teachers give boys more negative attention in the form of reprimands about their conduct, but also direct more high-level questions to boys than girls and give boys more academic feedback. In large part, these differential responses are due to the different behaviors of boys and girls. Boys dominate classroom interactions both because they are more disruptive and less compliant than girls, especially if they are low achievers, and because they are more likely to call out answers to questions directed to the whole class, especially if they are high achievers. Thus, teachers tend to encourage able boys more than girls to demonstrate their knowledge and abilities. In contrast, teachers tend to engage in escalating cycles of negative interactions with low-achieving boys that may contribute to deepening their academic disaffection and alienation. These patterns might also mean that they create a more performance-oriented climate for boys than for girls.

Overall, teachers’ interactions with girls are less stimulating, but more pleasant and harmonious than their interactions with boys. Teachers typically perceive girls as more attentive, conscientious, cooperative, teachable, hard-working, and persistent in trying to overcome difficulty than boys (e.g., Beaman et al., 2006; Mullola et al., 2012). Girls in turn have more positive perceptions of the school environment and a greater sense of belonging in school than boys. An implication generally overlooked in the literature concerns the presumably reciprocal influences of student tendencies and teacher responses on the self-regulation of boys and girls. To do well in school, students need to pay attention in class even when the material or teacher is boring, read questions carefully before answering them, and do their homework even when TV and Facebook beckon. Girls score higher than boys on effortful control in early childhood and on conscientiousness and self-discipline at later ages (Duckworth & Seligman, 2006). As a result, they tend to be less dependent on teacher control, leading teachers to pay them less attention and thus to reinforce continuing self-discipline to a greater extent among girls than boys.
8. CONCLUSIONS

8.1. Improving, Proving, and Academic Motivation Among Boys and Girls

There is still so much I want and need to learn. Every sentence I write raises questions that send me back to the literature. How can I submit a manuscript until I’m sure I’ve understood the full complexity and have something new and worthwhile to say?

\[S, \text{ a gifted (female) postdoc}\]

Gender still matters, for the academic motivation of both females and males. Studies guided by different theoretical frameworks that assessed different motivational constructs among diverse cohorts, populations, and age-groups show patterns of typically small but consistent sex differences that by and large can be conceptualized in terms of coherent gendered motivational approaches “to prove” versus “to try and to improve.” These approaches emerge very early and continue through college; studies converge in showing striking similarities among children, adolescents, and young adults. Considering the role of the socialization and development of competitive versus affiliation social goals and interaction styles has proven helpful in accounting for both the early emergence and the persistence of gendered motivational approaches.

Thinking in terms of gendered approaches to “trying and improving” and “proving” can shed light on the apparent paradox I mentioned in my opening comments that girls do better in school but men achieve more in later life. There is consensus among researchers, parents, and teachers that girls show more adaptive patterns of motivation in school than do boys. Girls’ motivational strengths go hand in hand with their vulnerabilities, however. As girls learn to attend to the needs and evaluations of others and to be conscientious and hardworking in school, they also learn to question their abilities and downplay their accomplishments. Tendencies to favor veridical and self-improving motives, judgments, and strategies enable girls to learn from negative performance outcomes and evaluations, but render them vulnerable to self-doubts and anxiety. The relational goals that orient girls to please, affiliate with, and accommodate others help them assimilate school demands, but also orient them to avoid presenting as too clever. During the school years, girls’ strengths tend to prevail. Although female motivational vulnerabilities do not intensify markedly during adolescence, the
pipeline starts to leak in secondary school when girls are called on to make decisions. Discussion has focused mainly on avoidance of STEM domains and careers. But the reflections of the postdoc, who did not pursue the academic career in psychology to which she was eminently suited, well illustrate how believing that there is always room for improvement and caring too much what others say or write may exacerbate self-doubts and impede women’s achievement in other fields as well.

What are the consequences of male proving for boys’ academic motivation? One clear conclusion is that they differ substantially for high- versus low-achieving boys. Boys who excel reap the benefits because they are able to prove themselves in school. Their positive illusions are not extreme and presumably do not require much protection. Even in socially diverse schools, the route to peer acceptance for high-achieving boys generally lies more in hiding effort and performing as masculine than in downplaying their ability or avoiding success. These boys’ self-confidence, together with the greater early interest of boys in realistic domains and continuing social pressures and gender expectations, prepare them to aspire to prove themselves in prestigious, demanding, and remunerative careers. However, I have also discussed the attendant risks of failing to learn and benefit from difficulties and performance evaluation, even among bright boys. For low or even some average achievers, male proving has many costs and apparently no benefits for their academic motivation and achievement in later life. In their case, concerns about boys’ academic disaffection, alienation, poor motivation, and low achievement are fully justified.

8.2. Implications for Theory and Research

My discussion of gendered motivational approaches is intended to complement, integrate, and extend other theoretical perspectives. Returning to my opening complaints about incipient gender-blindness, E-V theory is exempt. This approach continues to generate an impressive body of empirical research that increasingly considers the influence of socio-cultural beliefs, practices, and affordances on the gender-typed motivational beliefs and choices of both boys and girls, not only in STEM but also in other domains. The focus on sex-typed domains may disguise more general gendered motivational tendencies, however, such as those discussed in this chapter. Achievement goal theory has confirmed the importance of considering not only the value of success but also the kind of success students strive to achieve. My own grounding in this approach pointed me in the direction
of male proving and female improving, but readers cannot fail to notice my frustration that researchers in this tradition so often ignore gender. As a result, we still know little, for example, as to whether and how gender might moderate the effects of performance goals and contexts among low versus high achievers. In my discussion of attributions and self-evaluative motives, I often had to rely on relatively early studies because recent ones did not consider gender. Thus, it is possible that some of the trends I identified might have changed, in keeping with changes in social attitudes and affordances. I have focused on gender and motivation in the West, simply because there is not yet enough relevant research in other countries. Few studies of academic motivation in Eastern cultures have compared boys and girls. It is suggestive, however, that although students in collectivistic cultures self-enhance less in agentic and achievement domains than do their counterparts in the West, women self-enhanced less than males also in Japan (Kitayama et al., 1997). Last, but not least, thinking about gender led to many insights about motivation in the past and can, I believe, continue to do so in the future.

8.3. Implications for Education

Evidence that girls and boys tend to develop different motivational approaches suggests two contrasting kinds of educational recommendations. One would be to fit the learning environment to the motivational styles of boys and girls via the establishment of single-sex frameworks. Single-sex frameworks are discussed extensively in other chapters of this volume (Bigler et al., 2014 [Chapter 7 of this volume]; Barbarin et al., 2014 [Chapter 10 of this volume]). Here, I shall just note that there are some grounds for proposing that these might benefit girls by building on their motivational strengths and mitigating their vulnerabilities. In contrast, the evidence reviewed here implies that all-boy classes will reinforce tendencies to pursue performance over mastery goals, to value ability over effort, and to respond to difficulty with attempts to protect and salvage self-esteem, rather than by trying harder. Thus, they should exacerbate boys’ motivational vulnerabilities and undermine rather than sustain their academic confidence, especially if they are low achievers.

The other, in my view preferable, approach would be to learn from the respective benefits and costs of each style to adapt the learning environment to promote optimal motivation among students, regardless of gender. One possibility would be to capitalize on evidence that mastery goals evoke positive patterns of motivation, self-regulation, and learning among both
boys and girls by encouraging teachers to create mastery rather performance-oriented school and classroom environments. Classrooms that value learning and progress might be very effective in enabling even less able boys to experience a sense of success, self-worth, and belonging in school. But might such classrooms lead high-achieving boys to lose some of their drive and edge? And might girls not benefit from opportunities to more confidently embrace and learn from a measure of intellectual competition? One direction could be raise awareness of the advantages and disadvantages of each motivational approach through explicit classroom discussions. Incorporating practices of critical argumentation and joint problem-solving (e.g., Muller Mirza & Perret-Clermont, 2009) into mastery-oriented classrooms might then be a fruitful way for students to put their insights into practice. Learning to present and defend a reasoned idea or solution while considering other students’ arguments and contributions can mitigate boys’ tendencies to adversarial discourse, balance girls’ tendencies to accommodate and affiliate, and promote meaningful learning among both. Most generally, sex differences are constructed and thus best modified in social interactions (Maccoby, 1998). Coeducational classes can be fruitful arenas to confront sex-typed beliefs about academic abilities and interests, to equip girls to confidently take their place in a co-sex world and boys to embrace effortful accomplishment, emerge from the confines of their peer group and accept girls as equal participants in learning and life.

REFERENCES


