Achievement Motivation and Gifted Students: A Social Cognitive Perspective

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The purpose of this article is to provide an illustrative review of recent research on achievement motivation and gifted students from a social cognitive perspective. The review discusses several constructs that have been a focus of motivation research: perceived competence and self-efficacy, attributions, goal orientations, and intrinsic motivation. For each construct, motivational research from the general motivation literature and from the field of gifted and talented studies are critiqued and compared. The review suggests that a general social cognitive perspective is a useful theoretical framework for research on motivational processes involved in the intellectual and personal development of gifted and talented students and that a process-oriented model is superior to a static model for research on both giftedness and achievement motivation. Implications of the review for future research on motivation and talent development are discussed.

Human accomplishments result from the reciprocal influences of external circumstances, a host of personal determinants, including endowed potentialities, acquired competencies, reflective thought, and a high level of self-initiative. (Bandura, 1986, p. 41)

Motivational issues have drawn increasing attention from researchers in the field of gifted and talented studies (A. Robinson, 1996). However, theoretical exposition of motivational processes that are associated with, or give rise to, gifted and talented performance is no easy task. First of all, giftedness is an elusive and controversial construct that is not easy to define and measure (Gallagher, 1996; Tannenbaum, 1996). Even if we narrow the focus to the intellectually talented, academically talented, or both, we still face the issue of how to interpret gifted and talented performance: Is it the result of genetically endowed ability, developmental precocity, or the effects of enriched environment and dedicated effort? Educational and psychological researchers have adopted different conceptions of giftedness (Gallagher & Courtright, 1986). Some include motivation as part of the definition of giftedness (Feldhusen, 1986; Renzulli, 1986). Others see giftedness as genetically based aptitudes that are to be developed into special talents through personal and social catalysts, including achievement motivation (Gagne, 1995). Thus, we are dealing

with a population and a construct that have not been clearly defined (see Sternberg & Davidson, 1986).

Achievement motivation is subject to different theoretical views and methods of assessment as well. Consistent with the history of motivation theories and research, early research on the achievement motivation of gifted students tended to relate motivation to personality traits and used such terms as energy level, enthusiasm (Halpin, Payne, & Ellert, 1975), zeal, motivational vigor (Freehill & McDonald, 1981), and need for achievement and perseverance (Zilli, 1971). More recently, motivational constructs and models from cognitive theories have been adopted, reflecting a trend from a trait approach to a focus on cognitive and affective processes underlying achievement behaviors (Pintrich & Schunk, 1996). Similarly, Clinkenbeard (1996) suggested that there are two categories of motivation research in gifted education: One focused on motivation as a stable characteristic or personality trait; the other focused on motivation as an environmentally induced transitory state. Trait-state controversy has a long history in personality research (Kenrick & Funder, 1988). Although a situational view of motivation predominates in current research, a model that integrates global, contextual, and situational aspects of motivation is warranted (see Vallerand, in press).

SOCIAL COGNITIVE PERSPECTIVE

In this review, we use a general social cognitive perspective as a theoretical framework that includes constructs from a

number of different social cognitive theories, such as those developed by Bandura (1986), Deci and Ryan (1985), Dweck (1986), Nicholls (1984), and Weiner (1986). The essence of a social cognitive perspective lies in its emphasis on both social–contextual and personal factors as reciprocally interacting with each other to determine human motivation. Furthermore, this general social cognitive perspective postulates that human motivation in general and achievement motivation in particular are mediated by self-reflective and self-directive processes that have a salient cognitive component (e.g., Bandura, 1986). This view of motivation departs from the traditional theory of achievement motivation in that, rather than assuming an omnibus achievement motive underlying achievement behaviors and treating achievement motivation as a trait or an invariant disposition, a social cognitive perspective views achievement motivation as determined by a multitude of personal and social–contextual factors and mediated by self-processes. It also differs from the behavioristic view of motivation in that it views human beings as capable of self-motivation, self-influence, and self-direction, instead of only passively conditioned by the environment. Although social cognitive theories emphasize the situational nature of human motivation, and, thus, subscribe to a view of motivation as a state rather than a trait, they also assert that once self-perceptions and self-beliefs are formed they tend to be relatively stable and to have enduring effects on motivation and behavior (Schunk, 1991).

To facilitate our review of research on the achievement motivation of gifted students from a social cognitive perspective, we developed a model (Figure 1) in which sets of personal and social–contextual factors are mediated by a set of self-processes (self-reflective and self-directive) to influence achievement behaviors. According to this model, social–contextual factors such as societal value systems and educational opportunities represent relatively exogenous sources of influence that channel one's energy and amplify certain personal experiences. On the other hand, personal dispositions such as aptitudes and temperaments, whether genetically predetermined or experientially calibrated in early life, are relatively endogenous factors that predispose individuals to selectively and differentially respond to social–contextual influences, affording their personal experiences different valences and levels of intensity. The interaction of social–contextual and personal factors, as shown in the model, is cognitively and affectively engendered or mediated by sets of self-processes, that is, self-reflective and self-directive cognitive processes. In addition, finally, the motivational effects of these self-processes are borne out by manifested achievement behaviors such as effort, choice, and persistence.

In this review, we discuss several motivational constructs: self-concept, attributions, goal orientations, and intrinsic and extrinsic motivation. Although self-processes in our model are the focus of this review, our model suggests that these processes should be understood in the context of various distal and proximal social–contextual and personal determinants of achievement motivation and talent development. Consequently, research on self-processes will be critiqued as to whether it helps us understand the possible antecedents, consequences, or both, for these self-processes in gifted students. Our model, therefore, reflects an integrative effort to facilitate a dialogue between general motivation researchers and those from the field of gifted and talented studies who share a general social cognitive perspective on human functioning and development.

We restrict our review to intellectually talented students, academically talented students, or both, although giftedness can be manifested in many other ways and domains. Our purpose is not to do a comprehensive review of research and draw conclusions about the findings but to raise theoretical and research issues and suggest how these issues can be approached from a social cognitive perspective. It also attempts to assess the relevance and significance of mainstream motivation models and theories to a special population because such an effort can help us reflect on and understand the utility of these models and theories as well as the motivational processes germane to gifted students. To this end, we developed the following criteria for selecting studies to be reviewed: (a) studies on intellectually gifted students, academically talented students, or both, using the previously mentioned constructs; (b) relevant research that does not focus on the gifted population but has a clear bearing on this population; and (c) research that is particularly illustrative of how motivational issues in gifted students can be effectively investigated.

SELF-CONCEPT: PERCEIVED COMPETENCE AND SELF-EFFICACY

Theoretical Foundations

Self concept is a generic construct that represents an individual's collective self-perceptions, including, but not limited to, self-esteem, perceived competence, and self-efficacy (Pajares, 1996a; Schunk, 1991). It generally indicates the process and product of the self-evaluation of competencies that are valued by the society or that allow individuals to function effectively in the society. Early self-concept theorists emphasized global self-concept, using constructs such as *self-esteem* and *self-confidence* (Coopersmith, 1967; Rogers, 1951; Rosenberg, 1979). More recently, a multidimensional view of self-concept, which differentiates several domains of competence and dimensions of the phenomenal self, has been widely adopted (Harter, 1982; Markus & Nurius, 1986; Marsh, 1990; see Harter, 1983; Hattie, 1992, for comprehensive reviews of self-concept literature; see Hoge & Renzulli, 1993, for a review of gifted literature).

Theoretically, giftedness itself denotes socially valued attributes people ascribe to relatively few individuals for their
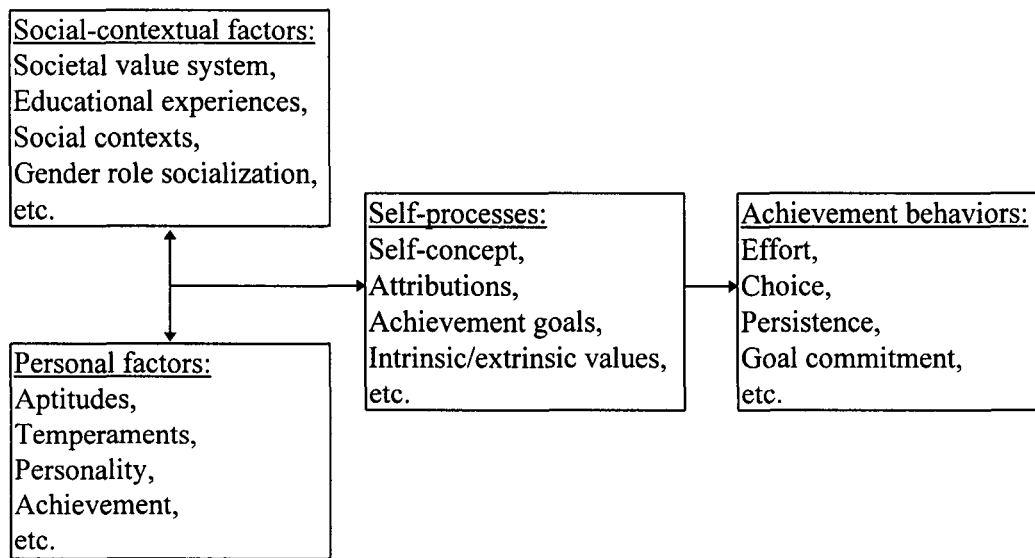
Social-contextual factors: Societal value system, Educational experiences, Social contexts, Gender role socialization, etc.		Self-processes: Self-concept, Attributions, Achievement goals, Intrinsic/extrinsic values, etc.	Achievement behaviors: Effort, Choice, Persistence, Goal commitment, etc.
Personal factors: Aptitudes, Temperaments, Personality, Achievement, etc.			

FIGURE 1   A social cognitive model of achievement motivation.

exceptional performance. The social labeling itself has an inherent impact (both evaluative and reinforcing in nature) on students' self-perceptions and self-beliefs. On the personal side, gifted students base their self-appraisals on their own enactive or vicarious experiences and interpretations of social events (e.g., being labeled *gifted* or winning academic awards). As for the consequences of self-concept, early research pinpointed the importance of self-confidence and absence of inferior feelings in gifted children for their future career success (Terman & Oden, 1959). From a social cognitive perspective, a perception of self as highly competent and possessing high potentialities valued by society not only enhances one's self-worth and influences effort and educational and vocational choices but may also lead to higher personal standards and greater goal commitment (Bandura, 1986; Feldhusen, 1986).

Empirical Research

It is useful to make a distinction between *perceived competence*, which is a summative self-evaluation of competence in a given domain, and *self-efficacy*, which represents a more situational, task-specific appraisal of self-competence (see Pajares, 1996a, for a discussion). However, conceptual and empirical linkages between the two are obvious. For example, the correlation between perceived math competence and math self-efficacy is relatively high ($r = .61$; Pajares & Miller, 1994).

Group differences in perceived academic competence and self-efficacy. High perceived academic competence has long been recognized as setting gifted students apart from other students (Hoge & Renzulli, 1993). Research on self-efficacy of gifted students, although sparse,

has yielded interesting findings. Research with various age groups invariantly has found higher math and verbal self-efficacy among gifted students (Bouffard-Bouchard, Parent, & Larivee, 1993; Ewers & Wood, 1993; Pajares, 1996b; Zimmerman & Martinez-Pons, 1990). Gifted students have also been found to surpass average students in prediction accuracy or calibration (Ewers & Wood, 1993; Pajares, 1996b). Average students have been found to be more likely to overestimate their ability than gifted students (Ewers & Wood, 1993; Pajares, 1996b) and gifted students more likely to feel challenged than average students (Bouffard-Bouchard et al., 1993). The results of the limited research available suggest a possible self-enhancement bias in regular students' self-efficacy appraisals and a task-diagnostic focus by gifted students. In other words, regular students tend to judge their efficacy favorably even when the tasks involved are quite challenging, and they are unlikely to succeed on them, whereas gifted students are likely to base their appraisals of self-efficacy on the actual difficulty levels of the tasks in question and, therefore, predict their performance more accurately.

Although group mean comparison studies have their own merits, the recent focus of research on the self-concept of gifted students seems to have shifted to structural similarities and differences across ability groups (Pajares, 1996b; Williams & Montgomery, 1995; Zhang, Archambault, Owen, & Kulikowich, 1997). For example, one similarity that has been found is that math and English achievement and math and English self-concepts are related in the same manner among gifted students as they are among regular students (Williams & Montgomery, 1995; Zhang et al., 1997). This trend implies that researchers have started to go beyond description (generating group psychological profiles) and become more theory driven (tracing the sources of variability in self-concept).

Aptitude, achievement, perceived competence, and self-efficacy. Because giftedness is often operationalized either as high intellectual aptitude (e.g., high IQ) or high academic achievement, these two personal factors have been hypothesized to influence self-concept, particularly academic self-concept or perceived academic competence. There is evidence that IQ and other cognitive ability tests make a significant contribution to gifted students' perceived competence and self-efficacy even when grades or achievement test scores are partialled out (Davis & Connell, 1985; Pajares, 1996b). This has led some researchers to speculate that gifted students may base their perceptions of their cognitive ability on cognitive competence cues other than academic attainment such as grades (Davis & Connell, 1985; Pajares, 1996b). However, other studies have found that academic achievement mediates the effects of intelligence on perceived intellectual and academic competence for gifted students (e.g., Van Boxtel & Monks, 1992). It is possible that competence information other than school performance plays an additional role in bringing high aptitude to self-awareness.

Social and educational contexts of self-concept formation and changes. Although the examination of the impact of aptitudes and achievement enhances our understanding of the personal factors that account for the between-group or within-group variability in self-concept, a more contextual approach allows one to examine the formation, maintenance, and changes of self-concept within a specific social and instructional context and time frame (Bereiter, 1990). For example, researchers have started to examine a subtle but important phenomenon related to self-concept formation: crystallizing experiences (Walters & Gardner, 1986). Crystallizing experiences represent those moments in which an individual becomes aware of his or her own capabilities and comes to see the self in a new or different way. They are vivid and memorable phenomenal experiences that have an enduring impact on one's life path. The prevalence and significance of crystallizing experiences in talent development is suggested by anecdotal reports of many eminent scientists and artists (Bandura, 1986; Bloom, 1985; Walters & Gardner, 1986). Consistent with self-concept theories (Bannister & Agnew, 1976; Rosenberg, 1979) and social cognitive theory (Bandura, 1986), crystallizing experiences often involve social comparison processes and evaluative feedback from significant others (Bloom, 1985; Cameron, Mills, & Heinzen, 1995; Heinzen, Mills, & Cameron, 1993). Research in this direction represents an important step forward to understanding the social context and developmental patterns of self-concept formation.

In addition to formative processes, researchers have also paid a great deal of attention to the effects on self-concept changes of social and instructional contexts introduced by various kinds of enrichment and acceleration programs. For example, Harter (1992) suggested students who participate in self-contained classes for gifted students may face new aca-

demic challenges, new criteria for the evaluation of their competence, and a new social comparison group. These changes in their educational and social environments seem to provoke a reevaluation of their academic competence. In a more explicit manner, Marsh, Chessor, Craven, and Roche (1995) conducted two experiments to test the "big-fish-little-pond effect (BFLPE)," namely, the hypothesis that participation in gifted programs will lead to a decline in academic self-concept due to changes in social comparison group. The underlying assumption is that the development of self-concept is mainly based on social comparison with the performance of the immediate peer group (Marsh, 1990). The BFLPE theory is supported by the results of Marsh (1990) and his colleagues' studies and by the studies of several other researchers (Chan, 1988; Colman & Fults, 1982; Delcourt, Loyd, Cornell, & Goldberg, 1994).

One wonders, however, whether these changes in self-perception of competence are enduring or transitory and whether the magnitude of these changes indicates a qualitative change of self-concept. If the reevaluation of self following participation in a gifted program is a situational adjustment rather than an enduring change in view of self, then it follows that the personal consequences of such changes in terms of motivation and self-esteem should depend on how individual students perceive and interpret the situational conditions (new peer group) that cause these changes and the standards they adopt in evaluation and reevaluation of self (Higgins, Strauman, & Klein, 1986).

Few studies have investigated the motivational effects of gifted programs using a longitudinal design. Brounstein, Holahan, and Dreyden (1991) compared gifted students who participated in a summer residential program and those who did not, using preassessment, postassessment, and remote postassessment of global and domain-specific self-concepts over a 9-month period. They hypothesized that gifted students who attended a summer program should increase their global and domain-specific self-concepts through a "consensual validation process" with gifted peers. The results failed to support their hypothesis. Instead, they observed a decrease of scores on each of 11 components of self-concept over repeated administrations for both groups. Similar declines were found over a longer period of time in other studies (e.g., Terwilliger & Titus, 1995). On the other hand, Moon, Feldhusen, and Dillon (1994) conducted a qualitative follow-up study of a pull-out enrichment program and found positive and enduring long-term effects on self-concept.

These longitudinal studies represent laudable efforts to understand the origins, stability of, and changes in, self-perceptions and self-concept in various social, educational, and developmental contexts. From a social cognitive perspective, this approach is more revealing than a mere structural analysis of self-concept because it taps into the dynamic process aspects of self-perceptions. However, these program-based longitudinal studies put a burden on interpretation of the results because of various possible confounding variables. For

example, developmental and other contextual factors may mask or override the program effects on self-concept. Besides, conditions and antecedents introduced by various gifted programs may also vary. Clearly, more longitudinal research is needed to clarify these issues, and more theoretical preparation and methodological thoroughness can significantly increase the internal validity of such program-based research.

Motivational consequences of self-perceptions and self-conceptions. The motivational underpinnings of self-concept have been explored from several points of view with gifted students. Compared to average ability students, gifted students have been found to perceive themselves as more competent, exhibit greater intellectual curiosity, academic interest, and challenge-seeking behavior, and have a higher preference for independent mastery (A. W. Gottfried, Gottfried, Bathurst, & Guerin, 1994; Vallerand, Gagne, Senecal, & Pelletier, 1994). These group differences in motivational orientations have been attributed partly to their higher perceived competence (Vallerand et al., 1994). Supporting evidence also comes from research on the effects of gifted programs. Increases or decreases in intrinsic orientation after participating in a self-contained gifted program have been found to be associated with increased or decreased perceived competence (Harter, 1992). Although causality cannot be determined by such correlational studies, these results are suggestive of a causal relation between perceived competence and motivational orientations as postulated by several theories (e.g., Deci & Ryan, 1985; Harackiewicz, Manderlink, & Sansone, 1992; Harter, 1992).

In contrast to self-concept research, research on self-efficacy of gifted students has focused on performance rather than general motivational orientations. Zimmerman and Martinez-Pons (1990) found that use of self-regulated learning strategies was moderately correlated with both verbal and math efficacy measures and Pajares (1996b) found that math self-efficacy is a good predictor of math performance for both gifted and regular students. It is not clear from these studies, however, how self-efficacy levels affect students' motivation and performance because there was no index of effort expenditure or persistence to ascertain the motivational effects of self-efficacy. Nevertheless, it may be assumed that self-efficacy appraisals are more of a proximal mediator of task behavior than perceived competence, which seems to exert a more general self-directive influence.

Academic motivation depends on many factors other than perceived competence and self-efficacy (Schunk, 1991). For example, one study (Chapman & McAlpine, 1988) shows that, although gifted students had higher academic self-concept than average students, there was no difference between the two groups in school satisfaction. The motivation literature also suggests that, although perceived competence is closely associated with intrinsic satisfaction in sports, an intrinsic, learning goal orientation is more closely related to intrinsic satisfaction than perceived competence in the academic area (Duda & Nicholls, 1992). Thus, whether high perceived competence, self-efficacy, or both lead to higher academic motivation and greater school satisfaction seems to depend on other personal and contextual factors (see later discussion on goal theories and research).

Summary

Empirical evidence pinpoints the importance of self-perceptions in the achievement motivation of gifted students. Strong self-beliefs that one is capable of making a difference in domains of strength may be at the core of achievement motivation for gifted students. Research also suggests that these self-beliefs are not innate characteristics but are fashioned through person–environment transactions, with various personal and contextual factors playing a role (see Figure 1). Perceived competence and self-efficacy, as conceptualized under different theoretical frameworks, may be functional elements of the same evolving self, operating at different levels of specificity and acting on different aspects of achievement behavior.

ATTRIBUTIONS AND REACTIONS TO SUCCESS AND FAILURE

Theoretical Foundations

Although various attributions can influence achievement behavior (Weiner, 1986), research on gifted students has focused mainly on ability and effort perceived by students as causal factors for success and failure. Students form ability and effort attributions based on situational cues. For example, ease of learning and relative standings in school performance contribute to ability attributions, and mental effort and persistence lead to effort attributions (Nicholls, 1978; Schunk, 1994). In addition, evaluative feedback from significant others such as teachers and parents also has an impact on how students perceive the causes for their success and failure (Graham, 1991).

The construct of attribution in the context of achievement motivation has inherent connections with perceived competence, outcome expectancy, and self-efficacy. Attributions are one type of cue students use to make self-efficacy appraisals (Schunk, 1991) and form their self-concept, especially in the case of ability attributions (Pyryt & Mendaglio, 1994); for instance, labeling some students *gifted* is itself an attribution. Once perceived competence, outcome expectancies, and self-efficacy are formed, they bias attributions in certain directions. For example, people who are initially confident of passing a test tend to attribute success to ability and failure to bad luck; the reverse is true for people with low self-confidence, who tend to attribute failure to low ability and success to external factors (Feather & Simon, 1971). From a developmental point of view, perceived competence, self-efficacy,

and attribution are interconnected constructs and their relations are reciprocal.

Research questions concerning gifted students revolve around two issues: Is there uniqueness about gifted students' attribution patterns, and what are the motivational consequences of different attributions? If ease of learning and early mastery are hallmarks of high aptitude or giftedness (Gagne, 1995), then it follows that gifted students might form their self-perceptions of talent mainly through ability attributions based on their direct experiences of success, performance feedback from significant others, and social comparison with peers. Concerns have been raised, however, as to whether attributing success to high ability in general and giftedness in particular has negative effects on motivation (Dweck, in press). For example, will someone labeled *gifted* act defensively to protect his or her self-image as a gifted person rather than seeking challenges that may cause failure and cast doubts about his or her giftedness? This is a legitimate question that needs to be addressed empirically as well as theoretically.

Empirical Research

For the sake of conceptual clarity and methodological precision, it is helpful to distinguish among three attribution constructs. *Attribution appraisals* are online explanations, so to speak; they are typically assessed following actual or manipulated success or failure in performing a specific task. *Attribution (or causal) beliefs* are domain-specific or domain-general beliefs about the causes for success and failure; these beliefs are not made contingent on the outcomes of actual performance. *Attribution styles* are generalized, stereotypical patterns of attributions and dispositional beliefs. Assessment of attribution styles is very similar to that of attribution beliefs except that a certain typology (optimistic vs. pessimistic) is imposed on the data using predetermined criteria (e.g., Peterson & Seligman, 1984). After a discussion of attribution processes and attribution beliefs pertaining to gifted students, we examine empirical research on implicit theories of intelligence (Dweck, 1986; Dweck & Leggett, 1988) of gifted students in terms of attribution style.

Research evidence suggests that, although high achievers have higher self-efficacy in reading and writing than low achievers, they only ascribe moderately high importance to intelligence as a cause of academic achievement; their ratings of the importance of intelligence were significantly lower than low achievers' ratings (Shell, Colvin, & Bruning, 1995). Research has also found that gifted students are more likely to attribute failure to lack of effort and less likely to attribute failure to low ability than regular students (Chan, 1996). Results of these studies suggest that high achievers tend to believe that both effort and ability contribute to high achievement, whereas low achievers are more likely to overemphasize ability as being responsible for academic success and failure. It is possible that low achievement or unsuccessful

academic effort biases low-achieving students toward an ability attribution. It is also possible that salient normative evaluation and competitive classroom climates exacerbate this tendency (Nicholls, 1984). However, from a self-regulation point of view, such an attribution clearly does disservice to motivation (Schunk, 1994) and can lead to helplessness (Dweck & Licht, 1980).

Regarding the generality of attribution beliefs, research on gifted students suggests that ability attributions for both success and failure are domain-specific, whereas effort attributions cut across different academic subjects (Li & Adamson, 1995). This is consistent with the self-concept literature that shows that students gradually differentiate their self-perceptions of competence for different subjects, particularly language arts (e.g., English) and mathematics (Marsh, 1990); it is also in line with the motivation literature that documents differential ability attributions as a function of academic subjects (e.g., Eccles, Adler, & Meece, 1984). In contrast, effort beliefs are more likely to generalize across school subjects, which makes them analogous to generalized locus of control beliefs (Rotter, 1990).

Very few experimental studies have been conducted on gifted students' online attribution appraisals (Bogie & Buckhalt, 1987; Shucard & Hillman, 1990). In one such study (Bogie & Buckhalt, 1987), in which relatively easy design tasks were presented in the success condition and unsolvable tasks provided in the failure condition, gifted and average students did not differ in attributions in the success condition and all students rated task difficulty as most responsible for their failure to solve the task problems and ability or inability as the second most important causal factor in the failure condition. Several problems may account for the failure to find any significant attribution differences. First, to infer ability from performance, the task involved must be relatively difficult in an absolute or normative sense (Nicholls, 1978). When success comes too easily, ability attributions are unlikely. Second, for attributions for failure, the experimental condition was set in such a way that differentiation of attributions between gifted and average students was more difficult than failure conditions in real academic learning situations. These potential problems again point out the importance of social and educational contexts for differential attribution processes (Nicholls, 1989).

Implicit theories of intelligence as attribution styles.
Implicit theories of intelligence can be seen as attribution styles for several reasons: First, implicit theories, as formulated by Dweck (1986), are trait-like; that is, they are generalized, dispositional beliefs that serve as a superordinate mental structure around which cognitions, goals, and affect are organized. Second, implicit theories tap into the stability dimension of attributions because they are mainly concerned with the changeability of basic ability or intelligence (Graham, 1995) as well as the controllability dimension because futility or effectiveness of effort is implied. Third, individual

differences in implicit theories of intelligence are formulated in terms of a typology and dichotomy, similar to attribution styles for instance, incremental versus entity or optimistic versus pessimistic Peterson & Seligman, 1984). Finally, fourth, the theory of implicit theories has historical and theoretical linkages with the tradition of research on helplessness and attribution styles (e.g., Dweck & Goetz, 1978; Dweck & Licht, 1980).

Dweck (1986, in press) suggested that implicit theories determine how individuals interpret and react to success and failure and how they set achievement goals. There is some evidence that mastery-oriented gifted students, as compared to helpless-oriented gifted students, have high confidence in writing and stronger beliefs in their ability to improve their writing; they also have higher motivation to write and a stronger desire to publish (Clark & Tollefson, 1991). In line with Dweck's theory, levels of confidence were found to moderate the relation between views of intelligence and performance orientations; that is, students who had low confidence in their ability and who also tended to doubt the improvability of intelligence were most vulnerable to challenge avoidance (Dai & Feldhusen, 1996).

The prevalence of entity versus incremental views of intelligence among gifted students is another issue that has been investigated by researchers. Gifted students appear to be much more likely to hold an incremental view of intelligence than an entity view (Dai & Feldhusen, 1996; Feldhusen & Dai, 1997; Hsueh, 1997). A more fundamental question is whether beliefs about the changeability of intellectual ability should be seen as stable individual differences that represent an either–or condition and, thus, warrant a dichotomous treatment (see Peterson, 1995) or whether one may acknowledge individual differences in intellectual capacity while still believing that effort can improve one's ability (Nicholls, 1989; Schunk, 1995; Stipek & Gralinski, 1996). Moreover, some research findings are at variance with Dweck's (in press) theory. For example, Hsueh (1997) studied goal orientations of 191 gifted children and found that gifted students with an entity orientation had stronger learning and performance goals than gifted students with an incremental orientation, a result quite different from that predicted by Dweck's model. These results call for caution when applying a deficit-oriented theory to a population of high-ability students whose motivational and behavioral parameters may well be beyond the scope of the theory. Notwithstanding these possible limitations, Dweck's model still has clinical utility for identifying those gifted students who do demonstrate helpless behavior in a way consistent with Dweck's theory (e.g., Clark & Tollefson, 1991). There has been some research evidence suggesting that it may be particularly applicable to gifted girls (see Dweck, in press; see also later discussion on gender differences in attribution).

In addition to causal influences of beliefs or implicit theories on motivation, Dweck (in press) also suggested that labeling students *gifted* may encourage an entity view of their ability or intelligence. However, this assertion has yet to be supported by empirical evidence. Extant literature indicates that gifted students construe the meaning of giftedness in terms of both high aptitude and hard work. In one study (Kerr, Colangelo, & Gaeth, 1988), about two thirds of gifted students interpreted giftedness in terms of performance. In another study (Manaster, Chan, Watt, & Wiehe, 1994), trait interpretations were more prevalent (72%); of these trait interpretations, one third of the traits referred to natural talents, and two thirds referred to abilities to learn easily, to understand, and so on. In yet another study (Guskin, Okolo, Zimmerman, & Peng, 1986), 295 academically or artistically gifted students were asked "Can anybody have special abilities or skills?" Sixty-five percent answered yes, and about one half of the 15% answering no indicated that one needs to be born with them. Forty-four percent referred to motivation, hard work, and practice or use of skills, or time spent learning, and 23% referred to innate capacity as being responsible for their special abilities or skills. However, emphasis on motivation, hard work, and practice was greater when they were asked what it takes for a gifted and talented person to become outstanding. Together, these studies suggest that the effects of the gifted label on student's self-perceptions of ability and personal growth are generally positive, and gifted students also tend to relate the gifted label to the accessibility of challenging learning opportunities, although its effects on their social relations may be negative (see also Feldhusen & Dai, 1997; Hershey & Oliver, 1988).

Summary

Based on limited research on attributions of gifted students, we suggest that most findings can be explained by the phenomenon of attribution asymmetry. Attributing failure to ability implies both the stability of ability and the limits set by ability on the effects of effort in improving performance (Nicholls, 1978). However, realistic attributions of success to ability do not carry the same connotations; on the contrary, especially among gifted students, such attributions represent self-awareness of high potentialities that constitute a necessary but not sufficient condition for high levels of performance. Furthermore, attributing success or talented performance to effort also has a self-enhancing and motivating effect in that one feels in control of one's own development by exercising personal agency instead of totally submitting one's development to the mercy of naturally endowed aptitude over which one has no control. This is probably why high-ability students tend to attribute their success or "gifted" performance to both high aptitude and hard work.

This attribution asymmetry also indicates the differing valences of attributions: positive versus negative, and optimistic versus pessimistic. In achievement domains, and probably in the social domain as well, incremental theorists tend to be optimists who believe that things will get better, whereas

entity theorists tend to be pessimists who are more likely to attribute bad events to some stable personal attributes (Peterson & Seligman, 1984) and thereby experience low self-esteem.

INCENTIVE CONDITIONS, GOAL ORIENTATIONS, AND INTRINSIC MOTIVATION

Theoretical Foundations

Research on incentive conditions was initially concerned with differential effects of ego-involving and task-involving experimental conditions on learning and retention processes (Alper, 1946). According to Nicholls (1984), the two experimental conditions resemble what occurs in real classroom settings. In an ego-involving condition, tasks are presented as a test of valued skills or ability, normative evaluation and competition are typically involved, and participants' public self-consciousness is aroused. Under this condition, participants attempt to demonstrate their high ability (ego superiority) or, alternatively, withdraw mentally or physically to protect their self-worth (self-protective), or simply admit their inadequacy (helplessness). In a task-involving condition, tasks are presented in a way that encourages self-improvement of skills and ability. Participants are mainly concerned with improving their skills and perceive learning as an end in itself rather than a means of outperforming others. These two goal conditions potentially influence causal attributions, expenditure of effort, task choice, subjective experience, and performance, depending on the levels of perceived competence and the self-esteem of participants in question (Nicholls, 1984; Thompson, Davidson, & Barber, 1995). Similar goal conditions, phrased as performance goal versus mastery or learning goal conditions have also been conceptualized by other researchers (Ames & Ames, 1984; Dweck & Leggett, 1988; see Ames, 1992, for a review).

Goal theories are important for the achievement motivation of gifted students on several grounds. First, they take into account both social and educational contexts and individual differences, thus, representing a more integrative view of achievement motivation that resonates with a social cognitive perspective. Second, they suggest the possibility that the desire to win or outperform others, which the traditional achievement motivation theory views as indicative of high need for achievement (Murray, 1938), may actually trigger defensive acts of avoiding challenging tasks and undermine intrinsic motivation to learn. Third, they raise the issue of how students' incentive or goal orientations are developed and regulated in the service of their achievement motivation.

Empirical Research

It is important to distinguish between measures of *goal states* set up or induced by experimental conditions and self-report measures of *goal orientations* that either assess relatively situated goals or intentions in specific achievement settings (e.g., Meece, Blumenfeld, & Hoyle, 1988) or assess more general individual differences in goal orientations in specific domains (e.g., Duda & Nicholls, 1992). The former is an objectively defined task condition, whereas the latter taps into the valence of task incentives for individuals and is, thus, subjective in nature. Although developed in the same conceptual framework, goal states induced by experimental conditions do not necessarily correspond to what is tapped by self-report measures of goal orientations.

Research on the effects of goal conditions. There is convergent evidence that in task-involving, or learning goal conditions, ability levels and perceived competence are not particularly good predictors of motivation and performance (e.g., Butler, 1992; E. S. Elliott & Dweck, 1988). It is under ego-involving, or performance goal, conditions that ability levels and perceived competence significantly influence attributions, affective reactions, performance, and subsequent intrinsic interest and continuing motivation (Boggiano, Main, & Katz, 1988; Butler, 1987, 1992; E. S. Elliott & Dweck, 1988). Findings are mixed, however, as to whether task and ego goal conditions represent a win–win situation for high-ability students. There is evidence that students, regardless of their levels of perceived ability, tend to make more conservative choices of tasks in performance goal conditions than in learning goal conditions (E. S. Elliott & Dweck, 1988). Compared to normative grades or standardized praise for sixth-grade students, learning goal conditions and task-diagnostic comments on student performance lead to a greater likelihood of attributing success to interest, effort, and prior experiences; higher task interest; and better performance, regardless of levels of achievement and perceived competence (Butler, 1987, 1992).

Although the findings of the previous research favor learning goal conditions, other researchers point to the motivational advantages of performance goal conditions, at least for high achievement-oriented or success-oriented individuals. For example, Harackiewicz and her colleagues (A. J. Elliot & Harackiewicz, 1994; Harackiewicz et al., 1992) showed, in a series of experiments, that social comparison information and competitive goals enhance the intrinsic motivation of individuals who value competence, prefer ability-diagnostic information, and hold high expectations for their performance but undermine intrinsic motivation for those who have low perceived competence, who avoid ability-diagnostic information, and who have low outcome expectancies. This goal condition–individual difference interaction effect has also been found using attributions, preference for challenge, and subsequent gains in interest-enjoyment as dependent variables, performance and learning goal conditions as independent variables, and achievement orientation, attribution styles, and control beliefs as moderator variables (Boggiano et al., 1988; Butler, 1987; A. J. Elliot & Harackiewicz, 1994; Koestner, Zuckerman, & Olsson, 1990).

Due to the different operationalizations of the goal conditions and individual difference variables, no direct comparison can be made between these research findings. It is worth noting, however, that studies that incorporated individual difference variables such as achievement orientation or attribution style have provided some evidence that individuals with different motivational orientations may differentially respond to competition, evaluative feedback, and social comparison in terms of their cognition (goals), affect (self-evaluative reaction), and motivation (approach–avoidance).

Limited research has been done on the effects of goal conditions on gifted students. Clinkenbeard (1989) asked gifted students to respond to two scenarios in which a student is successful in either a competitive or an individualistic situation and found that gifted students perceived greater continuing motivation, stronger effort attributions, and better learning in the individualistic than the competitive goal condition. Shucard and Hillman (1990) examined the combination of competitive and individualistic goal conditions and success and failure feedback conditions and found that, under the competitive condition, failure led to diminished self-perception of ability for girls but not for boys. In the individualistic condition, high effort was maintained in the face of failure. Schunk and Swartz (1993) provided fourth-grade gifted children with a learning goal condition that emphasized the learning of strategy use and a performance goal that focused on completion of a task, and they found that the strategy goal followed by progress feedback exerted a greater impact on achievement outcomes than other conditions.

The previous three studies on the effects of goal conditions on gifted students seem to suggest an advantage of learning goal incentive structures over the performance goal or ego-involving condition. It is possible, however, that the performance goal manipulation in these studies was so designed that the motivating and self-enhancing aspects of competitive goals, normative comparison feedback, heightened self-focus, and self-evaluative reaction to success were not fully explored, whereas their self-debilitating, ego-defensive aspects were accentuated (see A. J. Elliot & Harackiewicz, 1996, for the partitioning of performance goals into approach and avoidance goal conditions). In addition, goal setting, cognitive engagement, self-monitoring, and self-evaluation mediate the effects of performance goals on intrinsic motivation in Harackiewicz's model (Harackiewicz et al, 1992). These mediational processes were not incorporated in the previous studies with gifted or high-ability students.

Research on goal orientations.   Findings concerning goal or incentive orientations of high-ability or gifted students are variable, depending on what instruments or experimental conditions are involved. Butler (1992) found that high-achieving students spent more time on normative comparison information than low-achieving students in the control (no goal manipulation) condition. However, Ruble and Flett (1988) found that high-achieving students preferred self-referenced task information over social comparison information for self-assessment of ability. Schunk and Swartz (1993) found elementary school gifted students scoring high on both performance and learning goal measures adopted from Meece et al. (1988), consistent with findings concerning a high-ability group identified by Ainley's (1993) study. However, Ziegler, Heller, and Broome (1996) found no difference on goal orientation measures between gifted and nongifted students.

There are several possible reasons for the inconsistency of these findings. It is possible that high-ability students may react to both performance and learning goal incentives more strongly than regular students, depending on which contextual incentive cues are more salient (Clinkenbeard, 1994). It is also possible that gender and individual differences exist among high-ability students as to what incentives are preferred (Li & Adamson, 1992). Mixed findings could also be the result of different operationalizations of high-ability or "gifted" students.

In line with Nicholls's (Nicholls, Patashnick, & Nolen, 1985) research, Thorkildsen (1988) framed her study of goal orientations of academically talented adolescents around their theories of school goals. She found that task (or learning goal) orientation, but not ego (competitive goal) orientation, was associated with beliefs that school should facilitate social commitment, understanding of the world, and achievement motivation (creativity and persistence); task orientation was also associated with the causal belief that effort and cooperation lead to success and satisfaction with school learning. On the other hand, ego orientation was slightly but significantly correlated with the belief that school should help students gain wealth and status in the future but not with satisfaction with school learning.

This study was unique in that it illuminated the nature of goal orientations in light of broader personal incentives, value systems, or worldviews (Nicholls, 1989). It revealed the relation between task orientation and a healthy intellectual and social orientation. However, the interpretation of these data as indicating the undesirable motivational consequences of extrinsic incentive orientations does not seem warranted. In this study, perceived extrinsic incentives such as wealth and status were also correlated with a sense of social commitment, the need for understanding the world, and achievement motivation, suggesting that the coexistence of different but related sets of incentive beliefs or values, within a "multiform" hierarchical incentive system (Bandura, 1986; also see Wigfield & Eccles, 1992) give rise to different (but not necessarily incompatible) sets of goal orientations, attributions, and motivational patterns. It is almost inconceivable that so many talented people opt to undertake many years of hard, sometimes tedious, work in professional training programs without some prospect of financial and status rewards in mind. The incidence of individuals who work purely for intrinsic satisfaction but never care about extrinsic rewards is rare (Bandura, 1986). From a talent development point of

view, perhaps both immediate, intrinsic interests and long-term, extrinsic incentives are needed to sustain motivation (Subotnik, 1988; Wong & Csikszentmihalyi, 1991).

Research on intrinsic motivation.   Task (or learning goal) orientation represents a general intention to learn and improve, and *intrinsic motivation* (or intrinsic interest) refers to one's fascination with certain objects, tasks, or phenomena (Bandura, 1986), hence, the tendency to sustain engagement for its own sake (Deci & Ryan, 1985). Although these two constructs are reciprocally related, they are not synonymous. As the previous research suggests, both a learning goal orientation and a performance goal orientation can lead to intrinsic motivation. Intrinsic motivation should also be conceptually distinguished from *self-motivation,* which is characterized by self-initiative, self-evaluative reaction, and self-influence (Bandura, 1986; Zimmerman, 1994).

In a longitudinal study of 99 infants followed until early adolescence, A. E. Gottfried and Gottfried (1996) found that, compared to moderate- to low-IQ children, children who scored at 130 or above on IQ tests at the age of 8 years old reported higher intrinsic motivation across various academic subjects. Furthermore, this group difference remained stable from ages 9 years old through 13 years old. A. E. Gottfried and Gottfried (1996) consider intrinsic motivation as a developmental process associated with the development of giftedness, thus departing from a view of intrinsic motivation as an innate attribute. Their findings suggest that, at least for gifted students, task (learning goal) orientation could be the result of an intrinsic intellectual interest in tasks, rather than engendered by the school contexts and classroom conditions (Nicholls, 1984) or beliefs that intelligence is malleable and can be improved (Dweck & Leggett, 1988). From a social cognitive perspective, the logical and empirical follow-up would be to determine how aptitudes, task experiences and other personal and contextual factors (e.g. temperament, achievement, social reinforcement, cultural values) are cognitively mediated to develop these intrinsic interests and related talents (see Figure 1). The findings of the Fullerton longitudinal project (A. E. Gottfried & Gottfried, 1996; A. W. Gottfried et al., 1994) seem to suggest that cognitive potential, intrinsic motivation, and enriched environments reciprocally interact with one another to foster the precocious intellectual development of these children.

Summary

Goal theorists have identified two incentive conditions that differentially affect motivational processes in the school context. They point out that attributions, perceived competence, and self-worth can be influenced by social incentive conditions that make different aspects of the self salient. However, research on the effects of goal conditions on gifted students and their goal orientations has resulted in mixed findings,

partly because of different theoretical foci and methodologies and partly because of moderating effects of gender, self-perceptions, and the elusive subjectivity of goal orientations. Social contexts are replete with various incentive motivators, such as relationships with significant others, prestige, money, power, social welfare, or ultimate salvation. All of them may have an impact, to a certain extent, on the strength and direction of achievement motivation of individuals, including gifted and talented students. Although intrinsic motivation seems to play the most prominent role in talent development, except for extreme cases, achievement behaviors are regulated by the perceptions of multiple incentives in achievement settings, both intrinsic and extrinsic, short term and long term.

MOTIVATIONAL ISSUES OF GIFTED SUBPOPULATIONS

In this section, we focus on theoretical and methodological issues raised by research on the motivation of two subpopulations of gifted students: gifted underachievers and gifted girls. As in the main review, a social cognitive perspective is utilized.

Gifted but Underachieving

There are diverse views of what constitutes underachievement in gifted students (Dowdall & Colangelo, 1982). Generally speaking, underachieving gifted students are those whose current achievement levels are far below their demonstrated high intellectual potential and for whom specific learning disabilities are not present (VanTassel-Baska, 1991). It has long been suggested that lack of motivation to learn and do well in school causes underachievement in gifted students (Whitmore, 1980). Yet, the question still remains as to why motivation is lacking in these students. Some researchers have examined patterns of perceived academic competence and attribution for an answer. The underlying assumption was that underachieving gifted students might have low self-concepts and failure-oriented attribution patterns that led to underachievement. However, findings about the attributions of underachieving gifted students have been mixed. In one study, gifted underachievers were found to have a tendency to take credit for success but shun responsibility for failure (Laffoon, Jenkins-Friedman, & Tollefson, 1989); yet, in another study, underachieving gifted students were aware of lack of effort as being responsible for their academic failures (Davis & Connell, 1985). Seeking a single answer to underachievement through searching the deficits of academic-related self-perceptions may be doomed to failure because the underachieving pattern may derive from different sources in different students, some of which are not academic in nature.

There are many boundary conditions under which perceived competence, self-efficacy, and attributions become less important, or even irrelevant for academic achievement

behaviors (Schunk, 1991). For example, establishing personal relevance of school learning was found to be critical for the reversal of underachievement of gifted students (Emerick, 1992). It is not unusual that some gifted students channel their intellectual energy outside of school and do not perceive school work as an integral part of their education because they feel it is too restrictive or irrelevant (Emerick, 1992). In light of Csikszentmihalyi's (1975) theory of the optimal zone of motivation, with anxiety on the one end and boredom on the other, gifted students are more likely to be underchallenged (bored), particularly when curricula are designed for average students (Emerick, 1992; Feldhusen, Wood, & Dai, 1997; M. A. Ford, 1989; Reis, Hebert, Diaz, Maxfield, & Ratley, 1995). Students who are easily bored and do not care about doing well in school are likely to get poor grades. In addition, high intellectual ability as traditionally defined does not guarantee high school performance because the latter entails other skills, such as self-regulation and self-discipline (Reis et al., 1995) and what Sternberg (1991) calls practical intelligence, the ability to figure out what needs to be done to succeed in a given setting. Also, family dysfunction and social–emotional problems, which have been found in some underachieving gifted students (Reis et al., 1995; VanTassel-Baska, 1991), have little to do with self-perceptions of intellectual and academic competence or task value but often severely disrupt learning and achievement. Achievement–affiliation conflicts (Clasen & Clasen, 1995; Gross, 1989) and achievement–ethnic identity conflicts (D. Y. Ford, Harris, & Schuerger, 1993), which have social origins, further complicate the phenomenon of undermotivation and underachievement in gifted students.

With these constraints in mind, one may properly trace the problem of underachievement in gifted students to potential personal deficits in achievement motivation, for example, unrealistic high self-expectations and harsh self-criticism (Reis et al., 1995; Whitmore, 1980), low self-confidence (Purkey, 1970), self-defeating attribution styles and beliefs (Dweck, 1986), lack of proper self-focus and integration of goals (Carver & Scheier, 1981; Terman & Oden, 1959), lack of high personal standards (Bandura, 1986), and so on. Again, evaluations by socializing others as well as personal attributes (e.g., negative emotionality, poor physical condition) may contribute to these deficits. In short, the complexity of the issue of underachievement among gifted students defies any single answer and simple solution. Our social cognitive model could prove an especially helpful framework for research on the etiology or various sources of underachievement (see Figure 1).

Gender Differences and Gifted Girls

Although gifted underachievement is generally considered a male problem (VanTassel-Baska, 1991), concerns have been raised about the unique motivational problems facing gifted females as well. Some of these problems are presumably due to either biologically based or environmentally induced gender differences (Meece, Parsons, Kaczala, Goff, & Futterman, 1982) and are not specific to gifted girls; others are considered a unique function of the interaction of gender and ability (e.g., Dweck, 1986, in press). Research has been focused on (a) whether gifted girls and boys differ in perceived competence, self-efficacy, self-esteem, attribution patterns, and goal orientations; (b) whether these differences are due to differences in ability and achievement or gender stereotypes, gender role socialization, and sex-typing of different school subjects, all of which have a salient component of socialization.

Differences between gifted girls and boys seem nonexistent or negligible when general academic self-concept is assessed (Chan, 1988; Kelly & Jordan, 1990). However, when more domain- or task-specific measures are involved, boys have been found to have higher self-perceptions of their mathematics and physics ability than girls (Terwilliger & Titus, 1995; Ziegler et al., 1996) and higher math self-efficacy appraisals (Ewers & Wood, 1993; Junge & Dretzke, 1995). Compared to gifted boys, gifted girls tend to underpredict their success in math problem solving (Ewers & Wood, 1993; Pajares, 1996b). On the other hand, gifted girls reported higher confidence in English than gifted boys (Li & Adamson, 1995). These findings are in keeping with the research literature on the general population but suggest that the differences are more acute at high-ability levels (Pajares, 1996a).

Attribution research has also found significant differences between high-ability boys and girls. For example, gifted girls seem more likely to attribute successes to effort and strategy, whereas gifted boys tend to attribute success to ability (Cramer & Oshima, 1992; Eccles, 1985; Li & Adamson, 1995). There is evidence that bright girls are more likely to take failure (particularly in math) to mean that they have low ability (Dweck, 1986, in press) and to believe that gifted boys are smarter than they are (Kramer, 1991). This problem has been found most acute for gifted adolescent females (Cramer & Oshima, 1992). This attribution tendency also explains why, under the performance goal condition, gifted girls' self-perception of ability, but not gifted boys', has been shown to diminish after failure feedback (Shucard & Hillman, 1990).

Some studies, however, have failed to confirm the postulated gender differences in attribution patterns among gifted students (Li & Adamson, 1995; Ziegler et al., 1996). This inconsistency of findings may be explained by sampling biases (e.g., attending vs. not attending special programs at the time of testing) and different methodologies used to investigate the issue (e.g., experiment vs. self-report). Although vast individual differences may exist among gifted girls, the incidence of maladaptive attribution beliefs may be greater for gifted girls than gifted boys, particularly for math and science.

What causes these gender differences in the self-beliefs of gifted students? The most simple explanation is different levels of aptitude and achievement. For example, the incidence of self-defeating beliefs is mostly documented in math

performance. There is evidence that, at seventh and eighth grades, gifted boys' mathematical achievement is higher than gifted girls, and gifted boys are much overrepresented at the extreme upper end of the SAT–Math score distribution (Benbow & Stanley, 1980; Benbow & Wolins, 1996). However, it is possible that the relation between achievement and self-perceptions of competence and task value is reciprocal and follows a downward developmental spiral for girls. If gifted girls do experience more difficulties and spend more time learning math than gifted boys, then lower perceived competence and self-efficacy would be expected to follow (Schunk, 1991). However, if there are forces of social persuasion that sex-type math and science as male domains, perpetuate a stereotype of females as poor at math and science, and impute ability attributions after failure, then the effects of socializing others (teachers, parents) may explain the differences in motivational profiles, especially when girls are found to be more likely to view others' evaluative feedback as accurate and be influenced by such feedback (Roberts, 1991). Although the possibility of biologically based gender differences in math aptitude or ease of learning cannot be excluded, socialization processes have been well documented as contributing factors to low self-perceptions of ability among high-ability girls (see Eccles, 1985, for a review). Not only do gender stereotypes and sex-typing of school subjects contribute to self-beliefs of ability, gender role socialization also influences the value gifted girls attach to academic tasks (Hollinger & Fleming, 1984; Kramer, 1991). If gifted girls perceived math competence to be unimportant, then it is less likely that they will select math courses (Wilson, Stocking, & Goldstein, 1994), invest large amounts of effort, and persist in the face of difficulties (Eccles, 1985).

Summary

From a social cognitive point of view, achievement behaviors are determined by various personal and environmental factors, high intellectual potential being one of them. To understand the problem of underachievement among gifted (particularly male) students, one needs to look at a variety of boundary conditions for specific motivation theories and models as explanatory tools.

Gifted girls represent a quite different story because they usually are diligent students in school. Thus, their motivational deficits seem more explainable from the mainline motivation models and theories introduced in this review. Some of gifted girls' inadequate self-perceptions may be related to their own enactive and vicarious learning experiences. However, influences of more subtle cultural subscription of gender role stereotypes on the development of their self-concepts and self-schemas have also been well documented. If we take a reciprocal view of environmental and personal influences, however, levels of self-confidence and self-worth of individual gifted girls may determine the extent to which traditional

gender role socialization will exert its restrictive influence on development. Although socialization researchers tend to be preoccupied with possible negative socialization effects on gifted girls, a neglected issue is why some gifted girls seem quite resilient to such effects. Thus, the reciprocal interplay of personal and environmental determinants warrants more attention.

GENERAL THEORETICAL ISSUES AND FUTURE RESEARCH DIRECTIONS

The purpose of this review was to integrate research on achievement motivation and giftedness in light of mainstream motivation theories and from a social cognitive perspective. In the following section, we summarize several major issues derived from our review and suggest directions for future research.

Social Cognitive Approach to Achievement Motivation of Gifted Students

In this review, we demonstrate how gifted students form self-perceptions through their transactions with the environment and how these perceptions influence their achievement behavior. We also demonstrate that both personal and contextual factors are mediated by these self-perceptions and self-concepts to influence achievement behavior. This emphasis on the self as the centerpiece of achievement motivation is what distinguishes a social cognitive perspective from the traditional theory of achievement motivation that postulates a subconscious, omnibus achievement motive that can only be tapped by projective measures (McClelland, Atkinson, Clark, & Lowell, 1953). Our review of literature suggests that a social cognitive approach provides a more detailed account of motivational processes. Because it focuses on proximal cognitive and affective mediators of motivation such as self-efficacy, perceived intrinsic and extrinsic task values, and goals (forethought) rather than inferring some remote, intangible motive, hypotheses derived from a social cognitive approach are more testable.

A social cognitive model can also bridge the traditional and more cognitive-based theories of achievement motivation in that affect, which is considered central to motivation in the traditional theory, is also seen as an important determinant of achievement-related cognitions (see Hoffman, 1986, for a discussion of the interplay of affect and cognition). Achievement behavior may have its early roots in individual differences in activity level, attention span, and emotionality (Buss & Plomin, 1975; Thomas & Chess, 1977). The self-defeating beliefs and the helpless motivational pattern studied extensively by Dweck and her colleagues seem to be partly attributable to temperamental differences (Lewis, 1995) as well as influences of socializing others (Hokoda & Fincham, 1995).

However, rather than seeing socially engendered and personally instigated achievement behaviors as belonging to two separate motivation systems (Weinberg & McClelland, 1990), a social cognitive perspective views both as cognitively mediated and integrated through the development of the self (self-perceptions, goals, multiform incentives, and values), which itself is a generative source rather than a passive conduit (Bandura, 1989).

Conceptual Issues Concerning Motivation and Gifted Students

Although showing a promising trend, current research on achievement motivation of gifted students has yet to make a major contribution to the understanding of how aptitudes translate into full-blown talent and ultimate personal accomplishments. Most research has used a status definition of giftedness, that is, gifted students are those who are identified as such. This is appropriate and understandable from a pragmatic point of view but problematic by rigorous research standards. Also, by using intelligence or other standardized test scores as the only tools for defining and operationalizing giftedness and including only one data point, as has been the case with many studies, we run the risk of reification, seeing these test scores as indicating an entity that permanently resides within the person and that will never change, forgetting that these tests are only diagnostic tools and far from perfect indicators of intellectual potential (Tannenbaum, 1996). By so doing, we may also miss those who may not be good test takers but who may otherwise demonstrate high intellectual and creative potential. In other words, even if false positives are not a big concern, possible false negatives may bias our identification and sample selection in favor of certain types of gifted students or to the exclusion of other types of intellectually gifted students.

As for the conceptualization of achievement motivation, most research still sticks to a gifted–nongifted mean comparison mode, with the assumption that gifted students may (or may not) possess motivational characteristics or attributes more favorable for their development than nongifted students. This assumption can be easily translated into a trait interpretation of achievement motivation for gifted students (e.g., see Mischel, 1968). The main thrust of a social cognitive approach lies in its emphasis that self-processes are engendered in specific personal and social contexts and, therefore, dynamic in nature. A decontextualized analysis of group differences in motivational characteristics may convey the notion that these processes are trait-like, invariant dispositions. From our point of view, static conceptions of both giftedness and achievement motivation have hampered advances in research using constructs from social cognitive theories of motivation.

A social cognitive perspective focuses on how a person in a state of the flux of personal and contextual influences becomes the person he or she has become (Bandura, 1986).

This emphasis on "becoming" is reflected in a shift of focus toward a talent development paradigm in the field of gifted education (Treffinger & Feldhusen, 1996). A growth-oriented, process-oriented conception of giftedness and motivation should direct future research. The developmental nature of giftedness should be emphasized (A. W. Gottfried et al., 1994), and its active membership depends on continuing motivation to exercise and cultivate intellectual power, to seek meaningful integration of human knowledge and wisdom. Innovative research that conceptualizes the motivational issues concerning gifted students in a way that illuminates talent development processes is needed. The Fullerton longitudinal study (A. W. Gottfried et al., 1994) represents an important step in this direction.

Methodological Issues

As noted earlier, most research on gifted students has compared gifted and nongifted students. When identified gifted students are compared with their average ability peers on academic motivation measures, statistically significant differences can be easily obtained. However, within-group individual differences are masked in between-group comparisons. If the gifted population is not homogeneous in terms of personal dispositions, social environments, and phenomenal experiences, then within-group individual differences are as important as, or even more important than, between-group differences; this is particularly true if our purpose is to advance the cause of maximal talent development in gifted students rather than to merely identify motivational characteristics distinguishing gifted students from regular students.

This is not to say that group comparison studies cannot yield illuminating findings. By comparing gifted and regular students' online self-regulation on a concept-formation task, Bouffard-Bouchard et al. (1993) were able to show giftedness "in action," explicating how cognitive, metacognitive, and motivational components were orchestrated to produce a superior performance. This microlevel analysis of the operation of giftedness demystifies the construct of giftedness as well as revealing motivational processes integral to high levels of cognitive functioning (Bandura, 1993).

Studying within-group variability in achievement motivation poses new methodological challenges. For example, although the factorial and structural invariance of self-concept and self-perception measures across levels of intellectual ability is generally well established (e.g., Byrne & Schneider, 1988; Williams & Montgomery, 1995; Zhang et al., 1997), factors such as ceiling effects, limited variability inherent to giftedness, attenuated correlations, and relatively small sample sizes set constraints on our effort to discern individual differences and changes in motivational processes with the gifted population. Researchers need to be more sensitive to these potential measurement problems when adopting existing instruments from the general motivation literature and, if possible, design their own instruments and use procedures

that are more discriminating but at the same time psychologically valid.

As our review has illustrated, most research has used self-report instruments to elicit information about what motivates gifted students. Although appropriate for studies of perceived competence and self-esteem, such studies are less effective for assessing more situation-dependent processes such as self-efficacy appraisals, outcome expectancies, and attributions. When performance conditions are simulated rather than real, participants may inflate their self-competence ratings (Bandura, 1986), thus yielding inaccurate information about students' self-perceptions and self-appraisals. In addition, using handy self-report instruments can create blind spots in that real critical issues may be outside of the scope of the existing measures. For example, most studies have adopted self-concept instruments widely used with the general population. However, there are very few, if any, studies using more dynamic constructs like "possible selves" (Markus & Nurius, 1986) and "life tasks" (Cantor, 1990), which seem more pertinent to the development of goal focus and goal commitment in gifted students. As another example, although the constructs examined in this review seem to capture some important aspects of achievement motivation of gifted students as they do with the general population, there is a possibility, as we have suggested, that exogenous situational deficiencies, such as unchallenging educational environments, rather than self-deficiencies, such as inefficacy beliefs or anxiety, may underlie problems of undermotivation among gifted students.

To deal with these methodological problems, researchers might use more performance-based assessment strategies, anchoring self-appraisals on task conditions that maximally resemble what occurs in students' actual educational contexts (e.g., Ewers & Wood, 1993; Pajares, 1996b). Qualitative methods (e.g., unstructured or semistructured interviews) could be used to draw "thick" descriptions of gifted students' achievement-related goals, concerns, thoughts, and actions. After all, many constructs we have reviewed are phenomenological in nature. Quantitative researchers tend to impose a priori structures on their data. Emergent qualitative designs might discover additional motivational constructs or relations (Bernard, 1988). Finally, longitudinal designs could be used to study motivational patterns over time. Motivation research has tended to take snapshots of motivational behaviors at one point in time. However, talent development is a prolonged process. Sustaining achievement strivings is as important as, or even more important than, instigating these strivings. Understanding long-term motivational patterns is critical for understanding the ultimate success or failure of talent development processes.

Research Questions and New Agenda

Going beyond description of group differences means asking research questions of theoretical importance to the popula-

tion. For example, Eccles (1985) suggested that the tendency for gifted girls to attribute their math success to effort, diligence, and skill rather than natural talent may have negative motivational consequences in that they may perceive prospective math courses and math-related careers as demanding a level of effort that is beyond their reach or not worthwhile. However, Dweck (1986, in press) argued the opposite, that is, that attributing success to effort nurtures an incremental view of ability, whereas attributing success to natural talent makes students more vulnerable under failure. Why do gifted girls tend to give an effort account of their success? Is that good or bad for subsequent motivation? Research evidence shows less likelihood for gifted girls to enroll in math courses in a special program as compared to gifted boys (Wilson et al., 1994). Is that the result of differing attribution patterns? The same questions can be asked about the tendency for gifted girls to underpredict their math performance (Ewers & Wood, 1993; Pajares, 1996b). Does this reflect a conservative strategy that serves them well, as in the case of defensive pessimism (Norem & Cantor, 1986) or, conversely, a self-appraisal bias that will have a negative impact on their effort investment and choice in future math-related course work and careers when tasks become increasingly challenging (Pajares, 1996b)? Answering these questions will require a detailed empirical account of the origins and consequences of math-related self-perceptions.

As another example, goal theories typically treat task (learning) goals and ego (performance) goals in an either–or fashion. Yet, in real educational settings, teacher feedback that emphasizes effort may come side-by-side with learning and peer comparison that raises self-awareness of one's ability; situations that heighten the concern for the future consequences of doing well or poorly may parallel situations that produce immediate self-satisfaction and enjoyment. Vallerand (in press) proposes a hierarchical model of motivation in which motivational processes operate at three levels of generality: global, contextual, and situational. This model may help researchers tease apart situationally (e.g., an upcoming exam or contest) induced goal states, contextually (e.g., school) based goal orientations, and global social-cultural influences (e.g., competitive ethos in society) and see how three levels of motivational processes interact and impact achievement behavior of students, including the gifted.

It is equally important to investigate individual differences and developmental changes in the salience and significance (valence) of various intrinsic and extrinsic, selfish, and altruistic incentives in the talent development process. For example, there seem to be wide individual differences in terms of the salience and valence of competition among gifted students (Subotnik, Kassan, Summers, & Wasser, 1993). Gifted girls seem particularly vulnerable to competitive goal conditions (Shucard & Hillman, 1990), which is consistent with the general motivation literature (e.g., Solmon, 1996). Is competitiveness a necessary condition for maximal talent development in the academic domains? What kinds of coping strate-

gies do individual students develop for the stress produced by competition? What are the benefits and costs of competition for short-term and long-term motivation? What kinds of students will benefit most or suffer most in terms of motivation in competitive situations? Based on extant self-theories, one would hypothesize that for those who have high public self-consciousness (Carver & Scheier, 1981), or are highly concerned with their public self (Baumeister, 1986), interference with motivation to learn or distraction from a task focus is more likely to occur. Motivation may also suffer under competition for those who are perfectionistic (Parker, 1997), who have brittle self-efficacy, and who are sensitive or vulnerable to external evaluative pressure. However, for success-oriented students, competition may enhance intrinsic motivation and task involvement (A. J. Elliot & Harackiewicz, 1996; Harackiewicz et al., 1992). Incidentally, researchers on goal orientations tend to define performance goals as self-presentational in nature (e.g., Dweck & Leggett, 1988; Nicholls, 1984). However, competitiveness, which has been conceptualized as a component of performance goal orientation, does not necessarily mean public self-presentation but could be associated with high personal standards, high self-expectations, and skill improvement motives. A finer grained analysis of performance goals is needed (e.g., A. J. Elliot & Harackiewicz, 1996).

A related issue is how students adopt and regulate incentive motivators in the course of talent development. Motivation theorists (e.g., Bandura, 1986; Deci & Ryan, 1985) suggest an internalization process by which initially other-motivated behavior (e.g., pleasing others) becomes self-motivated (e.g., pleasing self). Are intrinsic interests and self-motivation a precondition for the development of the gifted cognitive competence, as seems to be suggested by A. W. Gottfried et al. (1994)? What is the role of long-term extrinsic incentives in talent development? Researchers have the formidable task of empirically answering the question of whether certain developmental patterns of intrinsic and extrinsic motivation are particularly predictive of extraordinary career achievement and whether intellectual talent development involves a distinct pattern of motivational processes compared to talent development in artistic, psychomotor, and other areas (see Bloom, 1985; Csikszentmihalyi, Rathune, & Whalen, 1993).

Beyond the ego and task and intrinsic and extrinsic frameworks, new educational theories may be integrated into motivation research on gifted and talented students. For example, different curricular approaches may have a direct bearing on the development of situational and individual interests in school subjects. Yet, there is little research that examines the motivational effects of various curricular and instructional approaches for gifted students. New theoretical frameworks such as social-constructive perspectives (Hickey, 1997) may help researchers achieve new insights in their research on the relations among instruction, motivation, and learning in gifted education.

Although education-oriented researchers are mainly concerned with diagnosing possible problems and designing proper interventions within school contexts, psychology-oriented researchers have a more ambitious agenda. N. M. Robinson (1987) suggested that studies of the origins of commitment and high achievement motivation of gifted children be extended to infancy and preschool. A. W. Gottfried, A. E. Gottfried, and their colleagues (1994) have partially filled this gap in the research literature, although more remains to be done. Gruber (1986) advocated a life-span approach to the creative lives of gifted individuals with an emphasis on self-mobilization and the development of a self-concept adequate for creative work. Dai and Kelly (1996) proposed primary dispositions (aptitudes and temperaments), intrinsic interests, self-identity, and self-regulatory processes as four main components of the evolving self. From a social cognitive perspective, how children self-regulate their cognition and emotion in the service of goal pursuits may be an early indicator of high achievement motivation. "Delay of gratification," which has been intensively studied by Mischel and his colleagues (see Mischel, Shoda, & Rodriguez, 1989), provides an example of early goal-directedness in which children forsake immediate rewards for the prospect of long-term gains. The cognitive and volitional components of such behavior may also underlie high achievement motivation, which is associated with self-imposed high performance standards (Bandura, 1986). It will also be interesting to know how gifted students conceive their "possible selves," set their short-term and long-term goals, behaviorally commit themselves to pursuing these goals, and how these achievement behaviors are reinforced and nurtured in their social environments. Although self-initiative was not found to be particularly associated with crystallizing experiences in the academic domain (Cameron et al., 1995), it may be very important in the process of pursuing goals. In other words, if the instigation of an achievement-related action entails certain forms of the crystallized self, sustaining this action may demand high self-initiative and self-motivation, such as enlisting personal and environmental resources in the service of achievement strivings (also see Kuhl, 1985, for his version of the self-regulation theory).

Last, but not least, what are the personal benefits and costs of high achievement strivings? How do gifted youth negotiate and renegotiate their achievement and relational goals? Maslow (1970) described self-actualizing individuals as mentally more healthy. On the other hand, high achievement motivation can also be a source of dysfunctional perfectionism, discontent, stress, self-criticism, frustration, alienation, and depression (Parker, 1997; Parker & Adkins, 1994; Simonton, 1994). How do gifted students maintain their achievement strivings while coping with these emotional problems when they do occur? Are these coping mechanisms an integral part of the talent development process? Clearly, many more questions are yet to be raised and answered.

Final Words

Research on achievement motivation and giftedness from a social cognitive perspective has proved to be a promising line of inquiry. Central to this perspective is the evolving self as a result of various educational, social, and self-engendered influences. From this perspective, the journey from giftedness to fully developed talents and productive and creative life accomplishments is made possible by gifted individuals' achievement-related cognitions, affect, and actions. It is under this broad framework that various motivational constructs, models, and theories have made or will make their unique contributions to the understanding of the development of gifted and talented individuals. More research is needed to untangle the intricate relations of giftedness, achievement motivation, and talent development.

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