

# Motivation: A Literature Review

## Research Report

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### **Abstract**

Motivation refers to reasons that underlie behavior that is characterized by willingness and volition. Intrinsic motivation is animated by personal enjoyment, interest, or pleasure, whereas extrinsic motivation is governed by reinforcement contingencies. Motivation involves a constellation of closely related beliefs, perceptions, values, interests, and actions. Motivation within individuals tends to vary across subject areas, and this domain specificity increases with age. Motivation in children predicts motivation later in life, and the stability of this relationship strengthens with age. Traditionally, educators consider intrinsic motivation to be more desirable and to result in better learning outcomes than extrinsic motivation. In general, children appear to enter school with high levels of intrinsic motivation, although motivation tends to decline as children progress through school. Research suggests that motivation can be manipulated through certain instructional practices, although studies demonstrate both positive and negative effects. The use of rewards may either encourage or diminish motivation, depending on the type of rewards and the context in which they are given. Teachers should attempt to give students more autonomy or control over their own learning by allowing them to make choices and use collaborative or cooperative learning approaches. In addition, teachers should create a supportive classroom environment with respect to goal structures, attributions, and external evaluation. There are several challenges to assessing motivation, especially in children. Recommendations for eliciting evidence of motivation for assessment purposes are made.

*Keywords:* motivation, intrinsic, extrinsic, self-efficacy, values, interests, goals, attributions

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### Motivation: A literature review

Educational psychologists have long recognized the importance of motivation for supporting student learning. More recently, the Partnership for 21st Century Skills has identified *initiative* as one of the life and career skills necessary to prepare students for post-secondary education and the workforce. However, many educators may be unfamiliar with methods for evaluating and encouraging motivation, particularly at the elementary level. The purpose of this literature review is fourfold: (a) to explore the ways in which motivation has been defined by researchers, (b) to investigate how motivation develops, (c) to learn how teachers can encourage development of motivation in their students, and (d) to review best practices in assessing motivation.

#### **Definition of Motivation**

Motivation refers to “the reasons underlying behavior” (Guay et al., 2010, p. 712). Paraphrasing Gredler, Broussard and Garrison (2004) broadly define motivation as “the attribute that moves us to do or not to do something” (p. 106). Intrinsic motivation is motivation that is animated by personal enjoyment, interest, or pleasure. As Deci et al. (1999) observe, “intrinsic motivation energizes and sustains activities through the spontaneous satisfactions inherent in effective volitional action. It is manifest in behaviors such as play, exploration, and challenge seeking that people often do for external rewards” (p. 658). Researchers often contrast intrinsic motivation with extrinsic motivation, which is motivation governed by reinforcement contingencies. Traditionally, educators consider intrinsic motivation to be more desirable and to result in better learning outcomes than extrinsic motivation (Deci et al., 1999).

Motivation involves a constellation of beliefs, perceptions, values, interests, and actions that are all closely related. As a result, various approaches to motivation can focus on cognitive behaviors (such as monitoring and strategy use), non-cognitive aspects (such as perceptions, beliefs, and attitudes), or both. For example, Gottfried (1990) defines academic motivation as “enjoyment of school learning characterized by a mastery orientation; curiosity; persistence; task-endogeny; and the learning of challenging, difficult, and novel tasks” (p. 525). On the other hand, Turner (1995) considers motivation to be synonymous with cognitive engagement, which he defines as “voluntary uses of high-level self-regulated learning strategies, such as paying attention, connection, planning, and monitoring” (p. 413).

### **Theoretical Approaches**

According to Stipek (1996), early approaches to the study of motivation were rooted in the literature on extrinsic reinforcement. Within this literature, all behavior, including achievement, was believed to be governed by reinforcement contingencies. Proponents of this approach included B.F. Skinner, who identified different types of reinforcers. Positive reinforcers, or rewards, are consequences that increase the probability of a given behavior they were made contingent on, whereas negative reinforcers are consequences that increase the probability of a given behavior by removing or reducing some negative external stimulus. Punishment, on the other hand, refers to unpleasant consequences that decrease the probability of a given behavior. Under this framework, the teacher’s job is clear: to use good grades and praise to reward desired behavior and bad grades or loss of privileges as punishment. As Stipek notes, this approach is limited to the extent that rewards and punishments are not equally effective for all students, and desired behaviors (such as paying attention) are difficult to reinforce. Moreover, the benefits of extrinsic rewards tend to decay over time (Stipek, 1996).

As Stipek (1996) explains, the limitations of extrinsic reinforcement led to the development of new approaches to motivate people, including cognitive behavior modification (CBM). This approach recognizes that the effects of reward contingencies are mediated by cognitive variables, such as verbal ability. Thus, the goal of CBM is to change overt behavior by manipulating cognitive processes. Under this approach, students take more responsibility for their own learning by monitoring their behavior, setting goals, deploying metacognitive strategies, and administering their own rewards. Giving students such control over their own learning is believed to result in maintenance of learning behaviors over time, the transfer of learning behaviors to new contexts, and more independence in the exercise of such behaviors. There are, however, several disadvantages to this approach, including the fact that in empirical studies, researchers observed children “cheating,” either by setting low performance standards for themselves or rewarding themselves undeservedly (Speidel & Tharp, 1980; Wall, 1983, as cited in Stipek, 1996).

These limitations, coupled with changing perspectives on motivation, ultimately led to yet another transformation of the literature on motivation emerging in the late 1960s and 1970s. This third-wave literature is characterized by the belief that behavior is affected by cognition rather than the consequences of one’s actions (Stipek, 1996). Broussard and Garrison (2004) observe that contemporary motivation research tends to be organized around three questions:

- Can I do this task?
- Do I want to do this task and why?
- What do I have to do to succeed in this task?

### **Can I do this task?**

As Broussard and Garrison note, those pursuing the first question developed a range of new theories regarding self-efficacy, attributions, and self-worth. Bandura (1982) defines perceived self-efficacy as “judgments of how well one can execute courses of action required to deal with prospective situations” (p. 122). Eccles and Wigfield (2002) elaborate on Bandura’s description, defining self-efficacy as an individual’s confidence in his or her “ability to organize and execute a given course of action to solve a problem or accomplish a task” (p. 110).

According to Bandura’s (1982) self-efficacy theory, efficacy is the major determinant of effort, persistence, and goal setting. Empirical research supports this notion, suggesting that individuals with higher self-efficacy tend to be more motivated and successful on a given task (Pintrich & DeGroot, 1990). Self-efficacy has also been associated with the use of cognitive strategies, and self-efficacy perceptions predict achievement over and above actual ability levels (Pintrich & DeGroot, 1990).

Another line of inquiry in the field of motivation explores the issue of locus of control. According to this theory, individuals should be more motivated to the extent that they feel they are in control of their own successes and failures (Eccles & Wigfield, 2002). In fact, in one formulation of control theory, autonomy is one of three basic psychological needs, along with competence and relatedness. Within this framework, individual differences in the extent to which these basic needs are fulfilled correspond to variation in levels of motivation (Connell & Wellborn, 1991, as cited in Eccles & Wigfield, 2002). Locus of control is closely related to the concept of attributions. Attributions refer to an individual’s beliefs regarding causes of successful or failing performance. There are several types of attributions, including ability, effort, task, and luck. According to attribution theory, the types of attributions a person holds



determine his or her level of motivation according to whether the cause is perceived as something that is changeable and within the person's control (Weiner, 1985, as cited in Eccles & Wigfield, 2002). For example, native ability is a relatively stable characteristic that is difficult to affect. On the other hand, effort is within a person's control and entirely manipulable. Both task characteristics and luck are outside one's control and tend to be variable. Thus, poor performance on a task is more likely to contribute to reduced effort and motivation for those holding ability attributions than for those holding effort attributions because failing performance for the former group communicates a lack of ability that may be difficult to change, whereas failure for the latter group communicates that success is within reach if more effort is expended. Empirical research suggests that those holding effort attributions tend to exhibit more positive learning behaviors, such as goal-setting that focuses on learning rather than performance (Miller & Meece, 1997), use of strategies, and persistence at difficult or challenging tasks (Stipek, 1996). However, teachers should frame successful performances in terms of ability rather than effort because success communicates positive information about competency to students (Schunk, 1983).

Finally, self-worth theory is somewhat related to both self-efficacy and locus of control. According to this theory, students need to believe they are competent in academic domains to feel they have self-worth in the school context (Covington, 1992, as cited in Eccles & Wigfield, 2002). This line of research suggests that students attempt to maximize their self-worth and will protect a sense of competence by making causal attributions that enhance their sense of competence and control. For example, empirical research suggests that the most common attributions among both college-level and younger students are ability and effort, and the most preferred attribution for failed performance is a lack of effort. According to this theory, students

may also engage in negative learning behaviors, such as procrastination, making excuses, avoiding challenging tasks, and not trying, in an attempt to avoid negative ability attributions for tasks they are not confident they can perform (Covington & Omelich, 1979, as cited in Eccles & Wigfield, 2002).

### **Do I want to do this task and why?**

A separate body of research within the study of motivation has focused on answering the question, Do I want to do this task and why? Under this category, Broussard and Garrison (2004) include expectancy-value theories, intrinsic motivation theories, and self-determination theory.

One strand of this literature focuses on the values individuals hold for participating in various types of activities (Eccles & Wigfield, 2002). Values are incentives or reasons for engaging in an activity. The value of a given task or activity has four components: attainment value, which refers to the personal value of doing well on a task; intrinsic value, which refers to subjective interest or enjoyment of performing a task; utility value, which refers to the extent to which task completion is perceived to facilitate current or future goals; and cost, which refers to the negative aspects of engaging in a given task, such as anxiety and fear of failure (Eccles & Wigfield, 2002; Stipek, 1996).

The notion of intrinsic motivation is closely related to intrinsic value. Intrinsic motivation refers to motivation that is animated by personal enjoyment, interest, or pleasure, and is usually contrasted with extrinsic motivation, which is manipulated by reinforcement contingencies (Guay et al., 2010). Typically, manipulation of extrinsic motivation is effected by the provision of rewards, which can be either tangible (e.g., money, grades, privileges, etc.) or intangible (e.g., praise). However, extrinsic motivation can come about by other means. For example, self-

determination theory distinguishes several different types of regulatory mechanisms that can act as reinforcement. External regulation corresponds to the lowest level of self-determination, where behavior is motivated by a desire for reward or punishment avoidance. Introjected regulation occurs when behavior is driven by internal pressures such as obligation or guilt. Under identified regulation, individuals identify with or find personally important the reasons for performing an activity. Finally, under integrated regulation, the regulator is actually consistent with an individual's other values and needs and becomes part of one's self-identity. This latter type of regulation is the closest to intrinsic motivation (Guay et al., 2010). Educators typically consider intrinsic motivation to be more desirable than extrinsic motivation, and some research suggests that the learning outcomes of intrinsic motivation are better than those obtained under extrinsic motivation (Ryan, Connell, & Plant, 1990).

Closely related to values are interests, which refer to an “interactive relation between an individual and certain aspects of his or her environment” (Hidi & Harackiewicz, 2000, p. 152). Interests are content-specific, can be viewed as both a state and a trait, and entail both cognitive and affective components. There is a wealth of empirical evidence that connects interest with performance or achievement (Hidi & Harackiewicz, 2000). The literature on interests distinguishes between individual, or personal, interest and situational interest. Individual interest refers to a relatively stable trait developed with respect to a particular subject or topic. This type of interest leads to persistence at a task over long periods of time, closer attention, ability to focus, and increased learning and enjoyment, even among young children. Situational interest, on the other hand, is more immediate, affective, and transitory, depending on the task environment (Hidi & Harackiewicz, 2000). Thus, some have used the metaphor of “catch” to refer to situational interest and “hold” to refer to individual interest. Task features likely to encourage

greater interest include personal relevance, novelty, activity level, and comprehensibility (Hidi & Baird, 1986, as cited in Eccles & Wigfield, 2002).

Finally, an individual's goals are related to his or her reasons for engaging with tasks. Goals can be subdivided into mastery goals (which can be compared with intrinsic values) and performance goals (which can be compared with extrinsic motivation) (Broussard & Garrison, 2004). Mastery goals focus on learning for the sake of learning, whereas performance goals emphasize high achievement. Mastery goals are associated with high perceived ability, task analysis and planning, and the belief that effort improves one's ability. On the other hand, performance goals are associated with judgments about achieving, grades, or external rewards. An alternative framework for categorizing goals is to compare ego-involved goals (similar to performance goals) with task-involved goals (similar to mastery goals). Ego-involved goals focus on maximizing favorable impressions of competence. Those with ego-involved goals are preoccupied with questions like, Will I look smart? or Will I outperform others? Ames (1992) argues that students with ego-involved goals are more likely to select tasks they know they can complete. In contrast, task-involved goals focus on task mastery and increased competence. Students with task-involved goals are preoccupied with the questions, How can I do this task? and What will I learn? Such students are more likely to choose challenging tasks. As Eccles & Wigfield (2002) observe, mastery goals are associated with the strongest empirical evidence to date and have been linked to self-competence, self-concept, effort attributions, increased persistence at difficult tasks, and use of cognitive strategies related to monitoring, problem-solving, deep processing of information, and self-regulation.

**What do I have to do to succeed in this task?**

A third strand of contemporary motivation research has focused on the question, What do I have to do to succeed in this task? Broussard and Garrison (2004) argue that this strand of research led to the development of self-regulation and volition theories, which both share an attempt to connect motivation with cognition. For example, self-regulated learners have been shown to use a variety of strategies, have high self-efficacy, and set goals for themselves. Self-regulated learners also monitor their own activities, evaluate their performance, and experience reactions to evaluation outcomes. The valence of a person's reaction to evaluation depends on the way that successes and failures are framed, with positive reactions more likely to spur increased motivation than negative ones. Thus, self-regulation theory postulates that individuals can fortify their own motivation by engaging in a number of self-regulatory strategies, such as setting appropriate and achievable goals, applying learning strategies, and monitoring and evaluating progress toward goals (Schunk & Zimmerman, 2007).

Similarly, Linnenbrink and Pintrich (2002) offer a model of the relationship between motivation and cognition that incorporates students' prior achievement, social aspects of the learning setting, motivational variables (e.g., expectancies and values), and cognitive variables (background knowledge, learning strategies, metacognition, and self-regulation). This model depicts motivation as both affecting and being affected by cognition, and both of these are, in turn, affected by social context. The model also portrays cognition and motivation as affecting academic engagement and achievement.

Finally, Corno (1993) proposes volition theory, defining volition as strength of will, akin to conscientiousness, discipline, self-direction, resourcefulness, and striving. Corno argues that

the effect of motivation on behavior is mediated by volition. In other words, motivation may lead to a decision to act, but volition is what determines whether those decisions are implemented.

Whereas motivation helps to determine goals, volition supports management and execution of those goals.

### **Empirical Evidence**

A wealth of empirical evidence on motivation exists, including research substantiating basic characteristics of the trait (such as domain specificity and the existence of gender differences), as well as research linking motivation to other types of learning outcomes. First, although it seems reasonable to suppose that an individual's levels of motivation will vary across domains depending on his or her specific interests, there is some evidence that motivation in one domain may generalize to other domains. For example, Gottfried (1990) found that motivation in reading predicted later motivation in reading, science, and social studies. At the same time, motivation in math appeared to relate more strongly to other math constructs (e.g., students' perceptions of math competence and teachers' ratings of math achievement) than to motivation in other subject areas, suggesting that motivation to learn math among lower elementary students may be less generalizable to other subjects. In general, research suggests that the domain specificity of motivation and self-concept tends to increase with age, particularly as students accrue more educational experiences and as the curriculum begins to reflect departmentalization of academic subjects (Gottfried, et al., 2001). Some evidence also supports the presence of gender differences. For example, Lange and Adler (1997) report that teachers rated girls significantly higher than boys on intrinsic motivation and mastery-oriented behaviors, although achievement and class grades for these two groups were the same. Guay et al. (2010) found girls

to have higher intrinsic motivation for reading and writing than boys did. However, boys had higher intrinsic motivation for math than girls did.

Those working in the field of motivation argue that its importance as an educational outcome stems from its relationship to achievement and performance in a variety of domains. First, researchers argue that encouraging motivation in children is critical because it predicts motivation later in life (Broussard & Garrison, 2004; Gottfried, 1990). Gottfried (1990) found that academic intrinsic motivation at ages 7 and 8 predicts subsequent motivation, even after controlling for IQ, achievement, and socioeconomic status. Further, the stability of this relationship increases from ages 8 to 9. Thus, highly motivated 7- and 8-year-olds tend to grow into highly motivated 9-year-olds.

Motivation is also related to achievement and IQ. Research demonstrates a relatively consistent relationship between motivation and achievement in reading and math (Broussard & Garrison, 2004; Gottfried, 1990; Lange & Adler, 1997). Intrinsically motivated first-grade students tend to have higher achievement in these subjects than extrinsically motivated students, and mastery (or intrinsic) motivation predicts reading and math achievement, whereas judgment (or extrinsic) motivation does not. In third grade, both types of motivation predict reading achievement, whereas intrinsic motivation alone predicts math achievement. Moreover, the relationship between motivation and achievement appears to strengthen with age. By age 9, students with high levels of motivation consistently exhibit higher achievement and class grades than students with low motivation (Broussard & Garrison, 2004). Similarly, Lange and Adler (1997) report that intrinsically motivated students in third grade through fifth grade tend to have higher academic self-efficacy, exhibit higher levels of mastery behavior, and have higher reading and math achievement. Indeed, Lange and Adler found that motivation contributes to the

prediction of achievement over and above the effects of ability. Typically, researchers have used such findings to support the conclusion that motivation leads to achievement.

Gottfried (1990) also found a relationship between motivation and achievement, but she maintains that the causal relationship works in the opposite direction. Similar to results from other studies, Gottfried found that elementary-age children with higher academic intrinsic motivation tend to have higher achievement and IQ, more positive perceptions of their academic competence, and lower academic anxiety. However, in Gottfried's study, early achievement more strongly predicted later motivation than the reverse. Whereas motivation was mildly correlated with later achievement, the strongest correlations were between achievement at ages 7 and 8 and motivation at age 9, such that high achievement at an early age was associated with high motivation at a later age. Similarly, high IQ at ages 7 and 8 is predictive of high motivation at age 9. However, Gottfried speculates that motivation may be predictive of achievement in the longer-term through one of two possible mechanisms. First, motivation is strongly related to contemporaneous achievement, which is highly predictive of later achievement. Second, early motivation is predictive of later motivation, which is strongly related to contemporaneous achievement.

### **Relationships to Other Concepts**

Motivation is related to a number of other academic factors, including several so-called 21st century skills identified as important in preparing students for college, the workforce, and lifelong learning. For example, motivation has been linked to critical thinking. Definitions of critical thinking vary widely, but common elements of most definitions include the following component skills:



- analyzing arguments (Ennis, 1985; Facione, 1990; Halpern, 1998; Paul, 1992),
- making inferences using inductive or deductive reasoning (Ennis, 1985; Facione, 1990; Paul, 1992; Willingham, 2007),
- judging or evaluating (Case, 2005; Ennis, 1985, Facione, 1990; Lipman, 1988; Tindal & Nolet, 1995), and
- making decisions or solving problems (Ennis, 1985; Halpern, 1998; Willingham, 2007).

In addition to skills or abilities, critical thinking also entails dispositions. These dispositions, which can be seen as attitudes or habits of mind, include factors such as open- and fair-mindedness, a propensity to seek reason, inquisitiveness, a desire to be well-informed, flexibility, and respect for and willingness to entertain diverse viewpoints (Bailin et al., 1999; Ennis, 1985; Facione, 1990; Halpern, 1998; Paul, 1992). The disposition to think critically has been defined as the “consistent internal motivation to engage problems and make decisions by using critical thinking” (Facione, 2000, p. 65). Thus, student motivation is viewed as a necessary precondition for the exercise of critical thinking skills and abilities. Similarly, Halonen (1995) notes that a person’s propensity or disposition to demonstrate higher-order thinking relates to his or her motivation. Halpern (1998) argues that effort and persistence are two of the principle dispositions that support critical thinking, and Paul (1992) maintains that perseverance is one of the “traits of mind” that render someone a critical thinker. Thus, motivation appears to be a supporting condition for critical thinking in that unmotivated individuals are unlikely to exhibit critical thought.

On the other hand, a few motivation researchers have suggested the causal link goes the other way. In particular, motivation research suggests that difficult or challenging tasks,

particularly those emphasizing higher-order thinking skills, may be more motivating to students than easy tasks that can be solved through rote application of a predetermined algorithm (Turner, 1995). Pintrich's framework holds that cognition and motivation affect one another, that both affect academic achievement, and that both, in turn, are affected by the social context of learning (Linnenbrink & Pintrich, 2002; Pintrich, 2003).

Motivation is also related to metacognition, which is defined most simply as "thinking about thinking." Other definitions include the following:

- "The knowledge and control children have over their own thinking and learning activities" (Cross & Paris, 1988, p. 131).
- "Awareness of one's own thinking, awareness of the content of one's conceptions, an active monitoring of one's cognitive processes, an attempt to regulate one's cognitive processes in relationship to further learning, and an application of a set of heuristics as an effective device for helping people organize their methods of attack on problems in general" (Hennessey, 1999, p. 3).
- "The monitoring and control of thought" (Martinez, 2006, p. 696).

Metacognition entails two components: metacognitive knowledge and metacognitive regulation. Metacognitive knowledge includes knowledge about oneself as a learner and about the factors that might impact performance (declarative), knowledge about strategies (procedural), and knowledge about when and why to use strategies (conditional). Metacognitive regulation is the monitoring of one's cognition and includes planning activities, monitoring or awareness of comprehension and task performance, and evaluation of the efficacy of monitoring processes and strategies. Insights experienced while monitoring and regulating cognition play a role in the

development and refinement of metacognitive knowledge. In turn, cognitive knowledge appears to facilitate the ability to regulate cognition. The two are empirically related and may be integrated in the form of metacognitive theories, which are formal or informal frameworks for representing and organizing beliefs about knowledge.

In the context of metacognition, motivation is defined as “beliefs and attitudes that affect the use and development of cognitive and metacognitive skills” (Schraw et al., 2006, p. 112). Metacognition entails the management of affective and motivational states, and metacognitive strategies can improve persistence at challenging tasks (Cross & Paris, 1988; Martinez, 2006). As Turner (1995) observes, “because strategy use is effortful and time-consuming and because it requires active monitoring and evaluation, it is an indicator of students’ cognitive engagement in literacy” (p. 419). Effortful control, which refers to the ability to monitor and regulate the impact of emotions and motivational states on one’s performance, is one aspect of the executive functioning inherent in metacognition. Research suggests that effortful control among preschool- and elementary-age children is associated with better social relationships at school, higher academic engagement, and improved achievement (Eisenberg, 2010).

### **Development of Motivation**

This section reviews the empirical literature on the motivation levels of elementary-age children, followed by an investigation of how motivation develops and fluctuates over time with age.

#### **Appearance of Motivation**

Conducting research in 1990, Gottfried concluded that little was yet known about the intrinsic motivation of elementary-age children. Subsequent research has uncovered a few

insights concerning the development of motivation over time. First, researchers generally appear to agree that intrinsic motivation in children is initially quite high (Broussard & Garrison, 2004; Stipek, 1996). For example, Entwisle et al. (1986) found that first-grade children have very positive self-concept and high academic expectations for themselves. However, research suggests that motivation tends to decline over time once children leave elementary school (Broussard & Garrison, 2004; Guthrie, 2000). For example, Miller & Meece (1997) observe that students' interest in reading and writing for pleasure declines with age. There are a few apparent exceptions to this line of thought. First, Guthrie (2000) found no differences in terms of intrinsic motivation between third and fifth graders. Second, Gottfried (1990) found that students' preference for difficult tasks (an indicator of motivation) appears to increase between 7 and 8 years of age, and domain-general motivation increases between third and fourth grade.

### **Differentiation of Motivation**

Some research suggests that motivation becomes increasingly differentiated both within and across school subjects with age. For example, Eccles & Wigfield (2002) note that children attach more value to activities at which they excel over time, suggesting they will increasingly be more motivated to learn in subjects in which they experience success. In a longitudinal study of children's motivation and achievement in reading and math, motivation for learning math was found to be almost uniquely predicted by prior math achievement and prior math motivation (Gottfried, 1990). Guay et al. (2010) reviewed the literature on differentiation of motivation, concluding that children aged 5–7 typically do not differentiate between subject areas, whereas children age 8–11 tend to have more accurate self-perceptions of their relative strengths and weaknesses across subject areas. In a study of the development of motivation in 425 students in first grade through third grade, Guay et al. found that differentiation between school subjects did

increase with age, with intrinsic motivation especially likely to vary between subjects for older students. In addition, motivation was found to become increasingly differentiated within reading over time. In particular, students appear to distinguish multiple types of motivation within reading as they progress through school, including intrinsic, identified, and regulated motivation. In other words, although young children may not be able to distinguish between engaging in an activity because they enjoy it and performing a task because they have been told to do so, older students appear to make this distinction (Guay et al., 2010).

### **Instructional Implications**

This section reviews the empirical evidence on whether motivation is teachable, followed by a summary of specific instructional recommendations for fostering the development of motivation.

#### **Empirical Evidence on Fostering Motivation**

A wealth of empirical evidence on the manipulability of motivation exists. However, these studies demonstrate positive and negative effects, suggesting that instructional strategies and classroom contexts can either increase or decrease students' motivation.

Guthrie et al. (2000) describe an intervention that attempted to enhance the intrinsic motivation for reading of students in third and fifth grade. Instruction included autonomy support through self-directed learning, competence support in the form of strategy instruction, relatedness support in the form of student collaboration, learning goals, and the use of hands-on science activities like observation and data collection. Teachers emphasized learning goals and provided evaluative feedback on student work, but performance was not emphasized as a goal of learning. Students exposed to this instruction scored significantly higher with respect to curiosity

and strategy use than students receiving traditional reading instruction, but did not significantly differ in terms of extrinsic motivation indicators.

Miller and Meece (1997) report the results of a study in which 187 students in third grade were exposed to instruction focused on providing students more opportunities to write, collaborate with peers, and monitor their own progress. Teachers were observed and categorized as “high” implementers and “low” implementers depending on the fidelity with which they delivered the intervention. Students in both high- and low-implementing classrooms scored uniformly high on task mastery goals and low on work avoidance. Similarly, students in high- and low-implementation classrooms did not vary in terms of their use of general cognitive strategies. However, students in high-implementation classrooms exhibited decreased ego-social goals relative to students in the low-implementation group. Thus, the intervention is believed to have decreased students’ tendency toward extrinsic reinforcers.

Stipek et al. (1995) examined the impact of preschool and kindergarten instruction that is didactic (i.e., a structured program with a focus on basic skills) compared to a more child-centered approach on students’ motivation and achievement. Classroom types were distinguished along six dimensions: (a) child initiative (reflecting the degree of child autonomy and independence), (b) teacher warmth (reflecting teacher acceptance and nurturance), (c) positive control (reflecting the extent to which teachers used positive rather than negative reinforcement or punishment to establish control), (d) basic skills focus, (e) performance pressure (reflecting the extent to which the classroom featured performance goal orientations), and (f) evaluation stress (reflecting the extent to which teachers made normative comparisons). Child-centered classrooms scored significantly higher than didactic classrooms on measures of program quality and developmental appropriateness. Further, although there were no differences between

program types in terms of students' enjoyment of school, children in child-centered programs rated their own abilities significantly higher and had higher expectations for success on a particular task than children in didactic programs. Moreover, children in child-centered programs were more likely to select challenging tasks, took more pride in academic accomplishments, and had less academic anxiety than their peers in didactic classrooms.

Deci et al. (1999) meta-analyzed 128 studies that documented the effects of extrinsic rewards on intrinsic motivation represented by free-choice behavior and self-reported interest in the activity or task. The authors found that the use of extrinsic rewards significantly affected free-choice behavior, with an effect size of -0.24. There was no significant effect on students' self-reported interest. Thus, when students received extrinsic rewards in exchange for task participation, they were less likely to persist in the task once the reward conditions were removed, although their levels of self-reported interest did not decline. Overall, the authors concluded that the negative effects of tangible rewards were more dramatic for children than they were for college students. The effect of such rewards varied depending on the type of reward (i.e., whether it was tangible or intangible) and the context in which the reward was given. Such moderators have implications for the types of rewards that should (or should not) be used in schools, as well as the instructional contexts in which they should (or should not) be provided.

### **Specific Instructional Strategies**

Researchers have made several recommendations for educators interested in supporting students' motivation, including the limited use of rewards, using rewards to provide information about competence, increasing student autonomy and choice, using collaborative or cooperative learning methods, and creating a supportive classroom environment with respect to goal

structures, attributions, and external evaluation (Deci et al., 1999; Guthrie, 2000; Hidi and Harackiewicz, 2000; Pintrich, 2003; Stipek, 1996; Turner, 1995).

For example, the empirical literature on the effects of extrinsic rewards on student motivation suggests that teachers should sparingly and carefully use these types of rewards in the classroom (Deci et al., 1999). In particular, tangible rewards (such as grades, candy, cash, or special privileges) have significant negative effects on both free-choice behavior and self-reported interest compared to intangible rewards (such as verbal feedback), although when rewards are unexpected, they tend not to have this dampening effect. When rewards are contingent on engagement or participation in the activity, regardless of whether the student completes or excels at the task, the negative effect of tangible rewards on free-choice behavior is significantly greater for children than for college students. Verbal rewards (such as praise or performance feedback) enhance the free-choice behavior of college students, but not children. However, negative performance feedback significantly attenuates intrinsic motivation for both groups of students. Moreover, even positive feedback, if administered in a controlling tone, can diminish intrinsic motivation. Thus, a comment such as “keep up the good work,” can be experienced as controlling, which can attenuate students’ sense of autonomy and negatively impact intrinsic motivation. The negative effect of rewards on intrinsic motivation was observed for tasks that were interesting or novel only. In other words, the use of extrinsic rewards has no effect on motivation for participating in “boring” tasks (Deci et al., 1999).

Although results such as these suggest that rewards should be avoided whenever possible, other researchers argue that extrinsic rewards may have a place in the classroom, particularly for certain types of students. Hidi and Harackiewicz (2000) dispute the claim that extrinsic rewards always damage intrinsic motivation. They argue that the value of intrinsic versus extrinsic



motivation may depend on the length of involvement and complexity of the task. For very long and complex tasks, a combination of intrinsic motivation and extrinsic rewards (particularly in the form of performance feedback) may be most effective. In addition, although intrinsic motivation is highly desirable, not all students will find school to be intrinsically motivating and even motivated students will feel unmotivated some of the time. In such cases, a combination of extrinsic rewards and environmental factors spurring situational interest may be most successful in engaging academically challenged students who tend to have low academic motivation.

The context in which rewards are made may also affect how they are experienced by students. In particular, rewards can be administered controllingly or informationally. Rewards used to control people's behavior tend to reduce their sense of self-determination (Deci et al., 1999). On the other hand, rewards used to convey information about competence can serve a valuable function. Deci et al. (1999) maintain that rewards should minimize authoritarian and controlling tones, acknowledge good performance, provide choice about how to complete the task, and emphasize the interesting or challenging aspects of the task. Stipek (1996) notes that task-contingent rewards, which include rewards for task participation or completion, are almost always experienced as controlling. On the other hand, performance-contingent rewards, which are based on the quality of performance, vary in their effects depending on whether the student performed well, students' personal histories with rewards, and whether the reward is experienced as controlling or informational with respect to competence (Deci & Ryan, 1985, as cited in Stipek, 1996). Deci et al. (1999) argue that teachers can use unexpected rewards on occasion with little harm, although they should not be given so frequently that students come to expect them.

Another strategy for increasing student motivation in the classroom is to give students more autonomy (Guthrie, 2000; Hidi & Harackiewicz, 2000; Pintrich, 2003; Stipek et al., 1995; Stipek, 1996; Turner, 1995). Hidi and Harackiewicz (2000) argue that providing students with more control over their own learning can be a way of enhancing situational interest that may develop into more long-term and stable interest. Similarly, Turner (1995) notes that when teachers allow students to make decisions about their own work, students are more likely to be interested in the work. Students who are given choices tend to exhibit more persistence, goal-setting, and other self-regulated learning behaviors. Stipek et al. (1995) compared didactic preschool and kindergarten programs with those based on more child-centered approaches emphasizing self-directed learning. Children in the child-centered programs rated their own abilities significantly higher and had higher expectations for success than children in didactic programs. In addition, children in self-directed learning programs selected more difficult tasks, took more pride in their academic accomplishments, were less dependent on authority figures, and had less academic anxiety than their peers in didactic programs. These results suggest that instructional approaches emphasizing student choice in the learning process may be especially effective in spurring motivation.

As Stipek (1996) argues, increased student choice can come in many forms, including devolving responsibility for determining when students will complete assignments, allowing students to score their own work and chart their progress over time, establishing “work contracts” with students that negotiate deadlines and deliverables for long-term assignments, setting up independent learning centers, and allowing students to select the particular task they will perform. Similarly, Guthrie (2000) recommends giving students autonomy in selecting texts to read, subtopics to pursue, and modes of expressing their learning. Turner (1995) identifies a

number of dimensions on which students can exercise their autonomy, such as sequencing the task to be accomplished, selecting their own partners during group work, deciding which books to read and what topics to write about, and identifying which personal interests to pursue when given opportunities in the classroom.

Another strategy for fortifying student motivation is the use of collaborative or cooperative learning methods (Guthrie, 2000; Hidi & Harackiewicz, 2000; Pintrich, 2003; Stipek, 1996; Turner, 1995). In fact, Bossert (1988) argues that motivation is one of the potential mediating processes whereby cooperative learning affects achievement. According to Bossert, peer encouragement may improve task engagement, and the novelty of collaborative learning tasks causes students to shift attentional resources. Hidi and Harackiewicz (2000) frame the issue in terms of situational interest. According to this perspective, working with others is a way of enhancing situational interest that can ultimately trigger personal or individual interest. As Turner (1995) notes, collaboration provides opportunities for students to experience disequilibrium, which can spur curiosity and interest. Second, collaboration provides opportunities for peer modeling, and models of successful student performance can be more motivating to students than models of teacher performance. Finally, working with others promotes academic engagement through the added responsibility of group performance, which causes individuals to persist at difficult tasks longer than they normally would.

Although generally a proponent of collaborative or cooperative learning methods, Stipek (1996) observes that certain types of student groupings may attenuate motivation to the extent that they disclose information about student competence. For example, one common instructional method is to group by student ability, both within and between classrooms. The effect of tracking or grouping by ability depends on the frame of reference used for making

performance comparisons. Of particular importance is whether homogeneous ability groups are formed within the classroom or students are pulled out and blended with other students of similar ability to form homogeneous ability classes. For example, high-ability students may benefit more from the former arrangement, because they can compare their performance to lower-ability groups, which enhances their own sense of competence. On the other hand, low-ability students may benefit more from being placed in a special “pull-out” class because their performance will compare more favorably in this context than in a classroom where they are compared with other higher-ability groups (Stipek, 1996).

Possibly because of the complexities associated with homogeneous ability grouping, Stipek (1996) recommends the use of mixed-ability groupings, with the goal of creating groups that are roughly equivalent in terms of mean ability. Moreover, tasks should be structured so that each student’s reward is contingent on the success of all other group members. These practices help to focus students’ attention on effort and reward for group and individual accomplishments. Competitive learning environments are sometimes contrasted disparagingly with cooperative learning settings, and to the extent that competition focuses attention on external control, it can diminish motivation (Deci et al., 1981, as cited in Stipek, 1996). However, creating mixed-ability groups that are able to compete (on roughly equal footing) against one another can actually improve student motivation. The important point is that all teams have an equal likelihood of succeeding (Stipek, 1996).

The literature on collaborative learning tends to support the value of mixed-ability groups over homogeneous groups. For example, Webb (1991) found that in homogeneous high-ability groups, students often assumed they all knew how to solve the problem, tended to provide fewer explanations, and performed worse than high-ability students placed in mixed-ability groups.

Similarly, in homogeneous low-ability groups, students could not give correct explanations to one another because they lacked sufficient skills, and they performed worse than their counterparts in mixed-ability groups. The only homogenous ability grouping found to enhance student motivation was the homogeneous moderate-ability group, in which moderate-ability students participated more actively, gave and received more explanations, and demonstrated higher achievement than moderate-ability students in heterogeneous groups. When mixed groups featured a wide ability range, comprising high-, moderate-, and low-ability students, high- and low-ability students tended to form teacher-student relationships and leave the moderate-ability students out. Thus, Webb recommends using mixed groups that represent a narrow range of ability, pairing high-ability students with moderate-ability students, or moderate-ability students with low-ability students.

Another method for improving students' motivation is through the classroom environment, which includes goal orientations and attributions. Researchers have argued that when teachers embrace mastery or learning goals as opposed to performance or achievement goals for their students, students may appropriate and internalize these goals. Ames (1992) summarized the research on goal orientations, concluding that learning goals are associated with moderate risk-taking, willingness to engage in difficult tasks, desirable attributions, higher effort, effective problem-solving strategies, and more enjoyment of learning activities. Performance goals, on the other hand, can lead people to challenge-avoidance behaviors, and the negative effects of such goals may be especially severe for individuals with low self-efficacy.

Summarizing across several studies, Stipek (1996) observes that classroom environments likely to stimulate students to hold mastery or learning goals tend to do the following: define success in terms of improvement and progress; emphasize effort, learning, and working hard on challenging

tasks; focus on how students are learning rather than on how they perform; and treat errors and mistakes as a natural part of learning. In addition, the criteria for success in the classroom communicate goal structures to students. For example, in competitive classrooms, success is defined as performing better than classmates, whereas in classrooms that foster individual or mastery goal structures, success is defined as personal improvement or reaching a predetermined standard. These criteria affect students' attributions. Under competitive goal structures, for example, students are more likely to emphasize ability and luck attributions, whereas under mastery or individual goal structures, students prefer effort attributions (Ames, 1992).

Finally, the use of external evaluation in the classroom may impact students' motivation. For example, when classroom assignments are used for grades rather than providing evaluative feedback, motivation tends to diminish (Ames, 1992). Moreover, this effect may be strongest for very difficult tasks (Hughes, Sullivan, & Mosley, 1985, as cited in Stipek, 1996). In fact, Stipek (1996) argues that challenging tasks will only stimulate intrinsic motivation to continue if the threat of external evaluation is minimized. Similarly, the more information is provided by an evaluation, the less likely it will be perceived as controlling. Research tends to support this view, as students assigned to "comments only" grading categories report more interest, hold more desirable attributions, and exhibit higher performance on subsequent tasks than students who receive grades (Butler & Nisan, 1986, as cited in Stipek, 1996). The effect of external evaluation also depends on the criteria used to judge performance. For example, Stipek (1996) notes that criterion-referenced comparisons tend to support motivation, whereas normative comparisons decrease motivation. There is also an indirect effect, as children are more likely to select easy tasks under threat of evaluation, and tasks that are too easy can undermine motivation (Harter, 1978, as cited in Stipek, 1996).

### **Assessment Implications**

This section reviews challenges in evaluating motivation, describes extant methods of assessing or measuring motivation, and identifies specific recommendations from the literature for measuring motivation.

#### **Challenges in Assessing Motivation**

Turner (1995) has noted several challenges in assessing motivation, particularly in children. First, cognitive aspects of motivation, such as achievement affect, interests, and goals, are not directly observable. Second, self-report measures of motivation tend to produce generalized responses rather than responses relating to specific instructional events or tasks. For example, children may be asked to respond to a statement such as I like work that is hard. Children often have difficulty providing the type of generalized response that is commonly sought in self-report instruments. Children tend to instead interpret just-experienced events rather than summarize across a range of situations and content areas. Third, self-report measures may be developmentally inappropriate for children, who have a tendency toward positive response bias because they are more inclined than older students to be optimistic. As Turner explains, children have difficulty separating their efforts and intentions from their actual behavior. Thus, children who intend to exert a lot of effort may mistakenly believe that they have actually done so. Children are also highly susceptible to social desirability, another source of positive response bias.

**Extant Assessment Methods**

Motivation is frequently assessed using either self-report measures or rating scales completed by teachers or parents (Broussard & Garrison, 2004; Deci et al., 1999; Gottfried, 1990; Lange & Adler, 1997; Miller & Meece, 1997). Such instruments usually include questions organized under several subscales, such as interest, attributions, self-perception and self-efficacy, preference for challenge, curiosity, mastery orientation, persistence, and enjoyment of learning. Examples of published instruments include Harter's Scale of Intrinsic Versus Extrinsic Motivational Orientation in the Classroom (1981), the Children's Academic Intrinsic Motivation Inventory (Gottfried, 1986), and the Instrumental Competence Scale for Children (Lange & MacKinnon, 1987). When using these instruments with early elementary-age children, researchers have made modifications to the instruments, such as reducing the language load, simplifying rating scales, and reading items aloud to students.

Other researchers use behavioral indicators of motivation. For example, most of the empirical studies included in the Deci et al. (1999) meta-analysis used free-choice persistence, which is typically a measure of the amount of time spent on the activity once reward conditions have been suspended. Turner (1995) constructed a behavioral measure that included aspects related to effective strategy use, persistence, and volitional acts. Turner defines strategies as "intentional, deliberate actions that learners invoke to solve a specific problem or meet a particular goal" (p. 419). Effective strategy use behaviors include the use of general strategies, such as rehearsal, elaboration, and organization, and task-specific strategies, such as decoding and comprehension during reading. Behavioral indicators of persistence include asking for help, asking oneself questions, or talking oneself through a task. Students who are highly motivated will persist at even difficult or challenging tasks, whereas low-motivation students will tend to



decrease their effort or engagement with tasks when presented with unexpected challenges.

Finally, behavioral indicators of volition are acts that students perform to control their own or others' intentions or impulses during learning. Examples include spontaneous talk, inner speech, asking others in the room to be quiet, moving to a less distracting place so as to more fully concentrate, and changing the challenge level of a task to make it either more manageable or more interesting.

### **General Suggestions for Assessing Motivation**

Educators interested in assessing motivation in the context of classroom learning will need to identify or design tasks with characteristics designed to optimize the likelihood of observing students' motivation. An important point to note is that because the expression of motivation is so strongly related to the classroom assessment environment (through self-efficacy, goals, attributions, and the effect of evaluation on students' willingness to approach challenging tasks), suggestions for measuring or assessing student motivation tend to mirror the suggestions for fostering motivation in the classroom. In other words, many of the recommendations for assessing motivation described below are intended to help remove the perceived threat of evaluation and to maximize the likelihood of actually observing students' real motivation levels. Thus, in large part, methods for encouraging the expression of motivation in the classroom overlap with methods for measuring it.

A number of researchers note task characteristics that help to elicit student motivation (Hidi & Harackiewicz, 2000; Lange & Adler, 1997; Stipek, 1996; Turner, 1995). First, task difficulty level affects students' engagement, with most researchers arguing that difficulty or challenge level impacts motivation through students' sense of competence. That is, tasks that are

perceived as too easy can diminish students' engagement because completion of the task does not promote a sense of competence (Lange & Adler, 1997). On the other hand, tasks that are perceived as too challenging may prompt challenge-avoidance behaviors, such as disengagement and low effort, if students are not confident that they can excel at the task (Covington, 1992, as cited in Stipek, 1996). Thus, several researchers recommend using tasks of moderate difficulty (Stipek, 1996; Turner, 1995). Tasks of moderate difficulty have been associated with increased student persistence, more varied strategy usage, greater task interest, and increased task performance (Turner, 1995). Tasks that are appropriately calibrated will be within reach of most students, but only with some effort. As Stipek (1996) notes, however, tasks that are achievable for most students in a classroom will be too challenging for a small proportion of the lowest-ability students. Thus, instructional approaches concerned with observing student motivation suggest using tasks that can be differentiated according to student ability and student interest. Differentiation means that the difficulty level of the task can be manipulated, either by tailoring student goals to ability level or by changing the nature of the task (Turner, 1995). Differentiation also suggests that students may work on several different types of tasks during the course of instruction, and at any given moment, not all students will complete the same tasks (Stipek, 1996).

Other characteristics of tasks believed to elicit evidence of student motivation include task novelty, structure, and authenticity. First, people tend to perceive novel tasks as more interesting. For example, Lepper and Cordova (1992) note that even minor tasks embellishments, such as providing a fantasy context, can increase task engagement. However, the authors caution that novelty for the sake of novelty is not valuable, and novelty that distracts from the learning goals should be avoided. Turner (1995) points to level of task structure as a source of motivation,

with students more likely to engage in open-ended tasks than highly structured tasks. According to Turner, “open” or ill-structured tasks allow students to decide what relevant information to use or how to use the information to solve the problem. These types of tasks require more metacognition and decision-making. In contrast, “closed” tasks are characterized by more teacher control and structure. With closed tasks, teachers indicate both the information to be used and what the expected solution will look like, and tasks typically emphasize a single, correct solution. Finally, Hidi and Harackiewicz (2000) recommend the use of “authentic” tasks or tasks that have personal meaningfulness and relevance to students. As Turner (1995) points out, authentic tasks tend to be more extended, more complex, and more student-directed or individualized, and require integration of multiple skills, feature student autonomy and choice, and “make deliberate use of real-world social and physical contexts” (p. 416).

### **Summary**

Motivation refers to those reasons that underlie behavior that is characterized by willingness and volition. Intrinsic motivation is motivation that is animated by personal enjoyment, interest, or pleasure. Researchers often contrast intrinsic motivation with extrinsic motivation, which is motivation governed by reinforcement contingencies. Traditionally, educators consider intrinsic motivation to be more desirable and to result in better learning outcomes than extrinsic motivation.

Motivation involves a constellation of closely related beliefs, perceptions, values, interests, and actions. For example, self-efficacy is an individual’s perceived competence in a given area, and people tend to be more motivated to participate in activities at which they excel. A person’s perceptions of control over their own successes and failures are known as

attributions, with certain types of attributions more likely to stimulate motivation than others. In particular, attributing failure to lack of effort is more motivating than attributing failure to lack of ability, whereas the opposite is true for successful performance. Values are incentives or reasons for engaging in certain activities, with intrinsic values more likely to foster persistence and effort than attainment values or values focusing on costs. Interests are “interactions between an individual and certain aspects of his or her environment.” Interests are content-specific and come in two forms: individual interest and situational interest. Individual interest is a relatively stable trait developed with respect to a particular topic or subject. Situational interest, on the other hand, is immediate, affective, and transitory, and reflects certain environmental factors, such as task characteristics. Individual interest is believed to foster greater long-term persistence than situational interest. Finally, a person’s goals are related to his or her reasons for engaging with a task. Mastery goals focus on learning for the sake of learning, whereas performance goals are concerned with excelling in relation to others. Students holding mastery goals are more likely than those holding performance goals to have high self-efficacy, to prefer effort attributions, to persist at challenging tasks, and to use cognitive strategies associated with self-regulated learning. Such strategies involve setting achievable goals, monitoring one’s performance, evaluating progress, and framing successes and failures with respect to effort and ability.

A wealth of empirical evidence on motivation exists, suggesting several conclusions. First, motivation within individuals tends to vary across subject areas, with this domain specificity increasing with age. At the same time, however, motivation in reading may predict later motivation in other subjects. Second, there may be gender differences in motivation, although evidence is mixed regarding the direction of such differences. Third, motivation in children predicts motivation later in life, and the stability of this relationship strengthens with

age. Similarly, early achievement and IQ predict later motivation, and these relationships also tend to stabilize with age as motivation is consolidated. Finally, motivation is related to a number of other important educational outcomes, including critical thinking and metacognition. Metacognition and motivation both reinforce critical thinking skills in that students who are motivated and/or possess strong metacognitive abilities are more likely to think critically. Learning activities and assessment tasks that call for critical thinking may, in turn, improve student motivation. Moreover, motivation underlies the development and expression of metacognition. Self-regulation includes the ability to manage and regulate affective states, and its effect on academic success is mediated by motivation. Children with better self-regulation of emotion experience more positive social relationships at school, which in turn increases their level of engagement and academic motivation.

In general, children appear to enter school with high levels of intrinsic motivation, although motivation tends to decline as children progress through school. Motivation also becomes increasingly differentiated over time, both within and between school subjects. Thus, as students grow older, they are increasingly capable of accurately perceiving relative strengths and weaknesses across subject areas. In addition, children increasingly develop a more nuanced perception of different types of motivation so that by the age of 8 or 9, children can distinguish between engaging in an activity for enjoyment and performing a task because they have been told to do so.

Empirical research suggests that motivation is subject to manipulation through certain instructional practices, although studies demonstrate both positive and negative effects. In particular, extrinsic rewards should be used sparingly and cautiously, especially with elementary-age children. Tangible rewards can be especially damaging to intrinsic motivation, as can

negative performance feedback and positive feedback when it is administered controllingly. Educators should administer any rewards informationally and unexpectedly, as these types of rewards do not appear to diminish motivation. Teachers should also attempt to give students more autonomy or control over their own learning by allowing them to make choices regarding learning and assessment activities.

Collaborative or cooperative learning methods may increase student motivation and task engagement. Teachers interested in using such approaches should form mixed-ability groups that represent a narrow range of ability and structure tasks so that student roles are interdependent. Another method for affecting students' motivation is through the classroom environment, particularly with the use of goal-oriented classroom structures, promotion of appropriate attributions, and the use of external evaluation for informational purposes, rather than to control behavior or compare students to one another.

There are several challenges to assessing motivation, especially in children, who may not be capable of providing unbiased, generalized responses regarding their goals, values, interests, and effort. In addition, cognitive aspects of motivation are not directly observable. Motivation is most commonly assessed using self-report measures or rating scales completed by teachers or parents. Several published instruments exist, but these typically have to be modified for administration to young children. Other researchers have used behavioral indicators, such as free-choice persistence, use of strategies, persistence at challenging tasks, and acts of volition. Because of the link between the classroom evaluation environment and the expression of motivation, recommendations for designing assessments of motivation tend to overlap with recommendations for fostering motivation in the classroom. Several task characteristics are likely to elicit evidence of student motivation. In general, researchers recommend using tasks of

moderate difficulty that can be differentiated according to student ability and interest. In addition, novel and authentic tasks stimulate engagement and interest, and tasks that are open-ended, as opposed to tightly structured, are more likely to promote motivation.

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