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Motivation

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What is motivation? As you read this chapter, you may have your own ideas about what constitutes motivation and motivated behavior in the classroom. While definitions vary, a working definition consistent with the theoretical frameworks described in this chapter is that motivation refers to the processes of both *initiating* and *sustaining behavior* (Schunk, Meece, & Pintrich, 2014). Moreover, the study of motivation in educational psychology goes beyond thinking of students as motivated or unmotivated to examine how their self-related beliefs, cognitions, goals, and experiences shape engagement and learning. Importantly, these self-related motivational beliefs are thought to be “cognitive, conscious, affective, and often under control of the individual” (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006, p. 933).

We begin this chapter with a focus on six major theoretical frameworks from which much of the motivation research in education is currently conducted. Our aim in describing these theories is to provide a short introduction and description of how motivation relates to learning and engagement within each theory, noting recent theoretical and empirical advances since the publication of the last *Handbook of Educational Psychology*. Next, we consider recent empirical and theoretical work that integrates across theoretical perspectives. We close by suggesting several avenues for future research.

Major Theoretical Approaches to the Study of Motivation in Education

Social Cognitive Theory

Theoretical overview. Bandura’s (1986) social cognitive theory is one of the major modern theories of motivation, both because it has contributed broad ideas about social cognition and for its theorizing regarding academic self-efficacy. Indeed, the major motivational theories reviewed in this

chapter all emphasize reciprocal determinism or the interplay among the person, behavior, and the environment, a key concept within social cognitive theory. Moreover, the concept of agency, that individuals are “self-organizing, proactive, self-regulating, and self-reflecting” (Bandura, 2006, p. 164), underlies modern research on motivation.

Within social cognitive theory, the construct of self-efficacy is most relevant to the current chapter. Self-efficacy refers to individuals’ beliefs about their capacity to execute behaviors at particular levels (Bandura, 1997). Applied to education, academic self-efficacy refers to students’ beliefs about their ability to learn, develop skills, or master material. Self-efficacy is distinct from outcome expectations (e.g., belief that a given behavior will lead to a certain outcome) and self-concept (e.g., cognitive evaluations of ability: Bong & Skaalvik, 2003; Schunk & Pajares, 2005). Below, we briefly describe the construct of self-efficacy and current trends regarding its relations with academic outcomes (see Chapter 11, this volume, for more on self-efficacy).

-Research related to engagement, learning, and achievement.

Self-efficacy beliefs are related to students’ course and career choices, putting forth greater effort and task persistence even in the face of failure, increased use of adaptive self-regulatory strategies, more positive and less negative emotions, and enhanced academic achievement (Bandura, 1986, 1997; Pajares, 1996; see also Klassen & Usher, 2010; Schunk & Pajares, 2005; and Chapter 11, this volume). In the past decade, many studies have further documented how students’ self-efficacy beliefs shape affective, behavioral, and cognitive engagement as well as noted group differences based on gender and ethnicity (see Klassen & Usher, 2010; and Chapter 11, this volume). At the intersection of self-regulation and self-efficacy, researchers have also considered calibration (e.g., the congruency between efficacy judgments and actual performance), although this remains understudied.

For instance, Chen (2003) found that both calibration and self-efficacy had independent, positive effects on adolescents' math performance. Klassen (2007) found that learning-disabled students had lower self-efficacy, as expected, but that they were also less calibrated (more overconfident) than non-learning-disabled students, which may partially explain achievement differences between these groups.

There is also a growing body of research focused on collective self-efficacy beliefs. Research on the collective efficacy of teachers for supporting students' learning suggests that this construct is predictive of school-wide achievement and student behavior (see Chapter 30, this volume; Klassen, Tze, Betts, & Gordon, 2011). There is also emerging research on students' collective efficacy in small groups, indicating that it too predicts performance (Klassen & Krawchuk, 2009). Researchers have also sought to clarify how self-efficacy is supported in educational settings (see Usher & Pajares, 2008). For instance, using latent profile analysis, Chen and Usher (2013) found that adolescents who drew from multiple sources of self-efficacy (mastery experience, vicarious experience, social persuasion, and affective/physiological states) simultaneously had the highest science self-efficacy and achievement, which was significantly higher than students who derived their self-efficacy primarily from mastery experiences alone. Those most at risk appeared particularly sensitive to physiological arousal information.

Expectancy-Value Theory

Theoretical overview. Expectancy-value conceptualizations of behavior have a long history in psychology (e.g., Atkinson, 1964). Similar to predecessors, modern expectancy-value theory (Eccles et al., 1983) assumes that individuals' expectations for success and subjective value for tasks are the most proximal predictors of their academic choices, achievement-related behaviors, and ultimately, learning and achievement, and are themselves predicted by a variety of psychological, social, and cultural influences (for recent reviews, see Eccles, 2005; Wigfield, Tonks, & Klauda, 2009). *Expectancies* refer to individuals' beliefs about how well they will do on upcoming tasks and are distinct conceptually, but not empirically, from *beliefs about ability* (evaluations of competence, Eccles & Wigfield, 1995; see Chapter 11, this volume). Four categories of task value exist: *utility value* (task perceived as useful to other aspects of the person's life), *attainment value* (personal importance or self-relevance of doing well on a task), *intrinsic value* (perceiving the task as interesting, enjoyable, or fun), and *cost* (negative aspects of engaging in the task). Research indicates that students can distinguish between competence and value beliefs in early elementary school and can differentiate among types of value by fifth grade (e.g., Eccles & Wigfield, 1995).

Research related to engagement, learning, and achievement. Much research within the United States and across countries suggests that expectancies and value¹ predict achievement outcomes, including persistence, performance, and choice of activities (e.g., Chow, Eccles, & Salmela-Aro,

2012; Durik, Vida, & Eccles, 2006; Nagengast et al., 2011) among children as young as first grade, and the relations gain strength with age (Denissen, Zarrett, & Eccles, 2007; Eccles et al., 1983). Expectancies for success most strongly predict performance, even when previous performance is controlled, and generally precede and predict students' values (e.g., Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002), though possibly less so for females (Denissen et al., 2007). In contrast, students' task values most strongly predict activity choices and enrollment decisions, even having long-term consequences. For example, values in elementary years predict activity choice and course enrollment in high school (e.g., Durik et al., 2006). Interestingly, expectancies and values may not simply work to additively and independently predict academic outcomes. Rather, recent research conducted with adolescents suggests that the effect of expectancies on academic choices and achievement is stronger when value is higher and vice versa, but neither high expectancies nor values can compensate for when the other is low (Nagengast et al., 2011; Trautwein et al., 2012).

Given the clear links of expectancies and task value to important academic outcomes, research demonstrating that students experience age-related declines in expectancies (see Chapter 11, this volume) and values in the United States (e.g., Archambault, Eccles, & Vida, 2010; Jacobs et al., 2002) and other countries (e.g., Henderson, Marx, & Kim, 1999; Watt, 2004) is of great concern to educators. Recent advances in this area include the use of growth mixture modeling and other sophisticated techniques to investigate heterogeneity in developmental trajectories across individuals and domains over time (e.g., Archambault et al., 2010). Declines seem to occur particularly for language arts in early elementary years and for math during high school. Likewise, gender-stereotypic differences in competence beliefs and task values are of particular practical interest, given links between these beliefs and career trajectories. For instance, girls express higher expectancies and task value for language arts domains and boys express higher beliefs for math, sports, science, and engineering (e.g., Durik et al., 2006; Jacobs et al., 2002; Watt, 2004; see Chapter 11, this volume; Wigfield, Battle Keller, & Eccles, 2002 for reviews).

One area of research with particular growth in the last decade is the cost component of task value. Though most empirical examinations of task values have overlooked cost, recent research suggests that cost may help to differentiate levels of academic success. For example, cost negatively predicted undergraduates' intentions to enter graduate school controlling for other forms of value (Battle & Wigfield, 2003). Similarly, cost differentiated individuals in terms of their motivational profiles, affect, and achievement outcomes, with students in high-cost profiles experiencing lower adaptive outcomes overall (Conley, 2012). Recent research further suggests that cost, like other forms of value, is multidimensional. Perez, Cromley, and Kaplan (2014) reported varying results based on type of cost, with effort cost lowered by opportunity cost as the strongest predictors of students' intentions to leave science, technology, engineering and mathematics majors; psychological cost was unrelated

to intentions. Finally, there is some limited evidence that costs may be a particularly powerful predictor of women's occupational choices. For example, concerns about job flexibility and high time demands in the context of balancing work and family life, along with lower intrinsic value of physical science, were the best predictors of women changing their occupational aspirations out of male-dominated fields (Frome, Alfeld, Eccles, & Barber, 2006).

Interest

Theoretical overview. Psychologists have been studying interest for more than a century (e.g., Dewey, 1913; James, 1890). Despite such strong roots, it has been relatively neglected, but has benefited from a surge of research in the past few decades. While there are varying views on interest, much of the current research differentiates between two forms: individual and situational (see Renninger, Hidi, & Krapp, 1992; Renninger & Hidi, 2011). Individual interest (a.k.a. personal interest) is relatively stable and resides within the individual; it includes a deep personal connection to the domain and a willingness to re-engage in the domain over time (Schiefele, 2009). Individual interest is characterized by positive feelings (e.g., enjoyment) as well as value for and personal importance of the domain. Additionally, Renninger and colleagues (Hidi & Renninger, 2006) propose that knowledge is a key component and that individual interest can be differentiated into emerging and well-developed forms, with deeper levels of stored knowledge serving as a catalyst for shifts from emerging to well-developed individual interest. Situational interest refers to interest that emerges from and is supported by the context (Schiefele, 2009). As with individual interest, there are several different views of situational interest (see Hidi & Renninger, 2006; Krapp, 2002; Krapp & Prenzel, 2011; Mitchell, 1993; Schiefele, 2009; Silvia, 2005), but most of them include at least two primary forms. One form, triggered situational interest,² is a relatively short, heightened affective state that is initiated by contextual supports. The other form, maintained situational interest,³ refers to situational support of more focused involvement, attention, and persistence in a domain, including finding meaning and personal connections to the domain content. With maintained situational interest, students are likely to experience positive feelings (e.g., enjoyment), but are also developing deeper value for and knowledge of the content.

Research related to engagement, learning, and achievement. Much research focused on text-based interest suggests that situational interest or actualized individual interest supports increased attention, cognitive processing, and persistence on reading tasks (Hidi, 2001; Schiefele, 2009; Schraw & Lehman, 2001). Recently, researchers have extended beyond text-based work to examine the role of interest in predicting engagement and learning more broadly. For instance, using multiple assessments within a single daylong problem-based learning session for undergraduates, Rotgans and Schmidt (2011) found that situational interest predicted academic engagement and in turn achievement. In several

classroom and lab-based correlational and experimental studies conducted by Harackiewicz and colleagues, situational interest was positively related to task involvement (Durik & Harackiewicz, 2007) and course grades (e.g., Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008; Hulleman & Harackiewicz, 2009), but was a stronger predictor of course choice than achievement several years later (e.g., Harackiewicz et al., 2008). Notably, the observed effects are not always straightforward and at times vary based on perceived competence, initial interest, prior achievement, or type of situational interest. For instance, Durik and Harackiewicz (2007) found that triggered situational interest supported task involvement for undergraduates with low individual interest, but undermined involvement for those with high interest; maintained situational interest was related to higher task involvement for undergraduates with high initial individual interest only.

In the past decade, interest researchers have also developed more detailed theoretical accounts regarding the development of interest (Hidi & Renninger, 2006) and provided empirical evidence documenting shifts from situational to individual interest (e.g., Harackiewicz et al., 2008; Linnenbrink-Garcia, Patall, & Messersmith, 2013; Renninger & Hidi, 2002). Relatedly, there is a growing body of research aimed at understanding contextual supports for situational interest. This work suggests that several contextual factors, including autonomy support, instructor approachability and friendliness, opportunities for involvement, and relevance of course material, support situational interest and may in turn support individual interest (e.g., Hulleman & Harackiewicz, 2009; Linnenbrink-Garcia et al., 2013; Palmer, 2009; Rotgans & Schmidt, 2011).

Self-determination Theory

Theoretical overview. Self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2000) is a macro theory of motivation and development that has particular relevance to education. Self-determination theory distinguishes among types of motivation based on reasons for action. In line with a long history in psychology (Berlyne, 1960; White, 1959), the most basic distinction is between intrinsic motivation, doing something for the inherent satisfaction that engaging in the activity provides, and extrinsic motivation, doing something because it leads to a separable outcome (e.g., praise or money; Ryan & Deci, 2000). Further, extrinsic motivation may itself vary in the degree to which it is internalized and experienced as autonomous versus controlled (Ryan & Connell, 1989). In addition to fully extrinsic versus intrinsic forms, motivation for action may emerge from feelings of obligation, guilt, or pride (*introjected*), because a behavior is perceived to have utility or importance for accomplishing personal goals (*identified*), or because it is fully internalized and representative of one's central values (*integrated*).

Self-determination theory proposes that innate psychological needs for autonomy (e.g., feeling that actions emanate from the self), competence, and relatedness underlie people's natural growth tendencies, optimal psychological functioning, and productivity (e.g., Jang, Reeve, Ryan, &

Kim, 2009; Ryan & Deci, 2000). Satisfaction of or support for these needs enhances intrinsic motivation as well as *internalization* (e.g., moving from more external to internal forms of regulation: Ryan & Deci, 2000). Further, a growing body of evidence has demonstrated the importance of these basic needs for supporting psychological functioning across individualistic (Western) and collectivistic (Eastern) cultures (e.g., Ferguson, Kasser, & Jahng, 2010; Jang et al., 2009).

Research related to engagement, learning, and achievement.

Extensive research relates students' intrinsic motivation and other autonomous forms of motivation to adaptive academic outcomes, including creativity, academic engagement, deep conceptual learning strategies, and academic achievement (e.g., Corpus, McClintic-Gilbert, & Hayenga, 2009; Lepper, Corpus, & Iyengar, 2005; Otis, Grouzet, & Pelletier, 2005; Walker, Greene, & Mansell, 2006). In contrast, many studies suggest that more extrinsic forms of motivation predict negative outcomes, such as maladaptive learning strategies and attitudes, anxiety, poorer ability to cope with challenges, poor academic achievement, and even school dropout (e.g., Lepper et al., 2005; Ryan & Connell, 1989; Vansteenkiste, Zhou, Lens, & Soenens, 2005; Walker et al., 2006), though a few studies suggest that extrinsic motivation may at times be beneficial for outcomes such as self-regulation and academic adjustment (Miller, Greene, Montalvo, Ravindran, & Nichols, 1996; Otis et al., 2005). Given these patterns, documented declines in both intrinsic and extrinsic motivation within and across school years (e.g., Corpus et al., 2009; Lepper et al., 2005) are a concern. For example, in a longitudinal study with third- through eighth-graders, intrinsic motivation and classroom grades mutually influenced one another positively and reciprocally over the academic year (Corpus et al., 2009). In contrast, extrinsic motivation was unrelated to grades, but poor academic performance predicted higher extrinsic motivation. Both extrinsic and intrinsic motivation declined within the school year and across grade levels.

Person-centered approaches exploring profiles of intrinsic and extrinsic motivation have led to similar conclusions, with some studies suggesting that high autonomous motivation and low controlled motivation are most adaptive (e.g., Hayenga & Corpus, 2010; Ratelle, Guay, Vallerand, Larose, & Senecal, 2007; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009), and other studies suggesting that high levels of both forms of motivation can also be beneficial (Wormington, Corpus, & Anderson, 2012). Some of this debate may be resolved by assessing the differential effects of various forms of motivation across outcomes. For example, in one study with elementary-school students, intrinsic motivation was most strongly linked with psychological well-being, while identified motivation was most strongly linked with academic achievement (e.g., Burton, Lydon, D'Allessandro, & Koestner, 2006).

Within the past decade, extensive research suggests that psychological needs, and in turn engagement and achievement, can be supported by the environment through teaching practices such as providing meaningful choices, emphasizing

personal relevance, using non-controlling informational language, allowing students to express opinions and negative affect, and providing feedback and structure (see Reeve, 2009; Reeve & Jang, 2006; Stroet, Opdenakker, & Minnaert, 2013 for reviews). Conversely, directly controlling teacher behaviors (e.g., intentional suppression of perspectives, commands, and surveillance) may have maladaptive consequences for motivation, engagement, and learning (e.g., Assor, Kaplan, Kanat-Maymon, & Roth, 2005; Reeve & Jang, 2006). However, the effects of these practices are complex; they seem to interact with one another and with a variety of personal and situational factors to shape students' outcomes. For example, the strategy of providing choices in the classroom may be optimally effective when choices are administered without pressure and allow students to self-regulate, are not overwhelming in number or complexity, and are administered to individuals who feel competent or interested in the task or who ascribe to an upper-class Western cultural sensibility (Patall, 2013; Patall, Dacy, & Han, 2014; see Patall, 2012 for review). Along similar lines, research suggests that competence and autonomy work synergistically such that motivation and learning are optimized when both are supported, despite lay views that autonomy-support and competence-support (i.e., structure) are incompatible (e.g., Jang, Reeve & Deci, 2010; Reeve, 2009; Vansteenkiste et al., 2012). Finally, recent research focuses on the previously neglected need of relatedness, showing that non-controlling relatedness support and satisfaction are linked with engagement, learning, and achievement (e.g., Furrer & Skinner, 2003; Roorda, Koomen, Spilt, & Ooart, 2011; Ryan & Patrick, 2001).

Achievement Goal Theory

Theoretical overview. Achievement goal theory remains one of the most prominent motivation theories in educational psychology. Achievement goal theory [proposes that there are two primary reasons or underlying purposes related to individuals' engagement in achievement-related activities: *mastery*, with a focus on developing competence, and *performance*, with a focus on demonstrating competence] (Ames, 1992; Dweck & Leggett, 1988; Maehr & Midgley, 1991; Nicholls, 1984). The trichotomous model (Elliot, 1999) further differentiates performance goals into approach goals, with a focus on appearing competent, and avoidance goals, with a focus on avoiding appearing incompetent. The 2 × 2 model (Elliot & McGregor, 2001) extends the approach-avoidance distinction to mastery, such that one can approach the goal to develop competence (mastery-approach) or avoid declining competence or not fulfilling one's potential (mastery-avoidance), although mastery-avoidance goals have not been widely studied.

Goal orientations represent a general framework through which students interpret and react to achievement settings, resulting in varying patterns of affect, cognitions, and behaviors (Dweck & Leggett, 1988). Goal orientations are shaped both by the context, such as underlying goal structure of the classroom or school (Ames, 1992; Maehr & Midgley, 1991;

see Urdan, 2010 for a review), as well as by personal antecedents, such as motives (Elliot, 1999) and theories of intelligence (Cury, Elliot, Da Fonseca, & Moller, 2006; Dweck, 1999).

Research related to engagement, learning, and achievement. Research has established the benefits of mastery-approach goals and detriments of performance-avoidance goals across educational outcomes, whereas the findings for performance-approach goals remain mixed and controversial (see Anderman & Wolters, 2006). While still relatively understudied, research on mastery-avoidance has increased. Mastery-avoidance goals are related to negative outcomes such as negative affect, poor study strategies, avoidant behaviors, and lower achievement (e.g., Bong, 2009; Elliot & McGregor, 2001; Lovejoy & Durik, 2010; see Huang, 2011, 2012; Hulleman, Schrager, Bodmann, & Harackiewicz, 2010 for meta-analyses), though some studies suggest null or adaptive links to learning strategies (Bong, 2009; Elliot & McGregor, 2001; Madjar, Kaplan, & Weinstock, 2011). Meta-analyses indicate that mastery-avoidance goals are unrelated to positive affect and interest (Huang, 2011; Hulleman et al., 2010).

An ongoing controversy remains regarding how achievement goals relate to achievement, especially mastery-approach and performance-approach goals. Several recent reviews and meta-analyses sought to clarify this pattern (Huang, 2012; Hulleman et al., 2010; Linnenbrink-Garcia, Tyson, & Patall, 2008). For example, Hulleman and colleagues (2010) found small significant positive correlations with achievement for mastery-approach ($\hat{r} = 0.11$) and performance-approach ($\hat{r} = 0.06$) goals and negative correlations for mastery-avoidance ($\hat{r} = -0.12$) and performance-avoidance ($\hat{r} = -0.13$) goals. These results were qualified by several significant moderators. For instance, when primarily normative items (e.g., outperforming others) were used to measure performance-approach goals, the correlation was larger and positive ($\hat{r} = 0.14$); however, when the majority of items focused on appearance (e.g., looking smart) and/or evaluation (e.g., demonstrating ability), the correlation was negative ($\hat{r} = -0.14$). This suggests that framing performance goals as normative standards (see Elliot, Murayama, & Pekrun, 2011; Elliot & Thrash, 2001; Senko, Hulleman, & Harackiewicz, 2011) versus broader orientations related to demonstrating competence (Dweck & Leggett, 1988; Kaplan & Maehr, 2007) may yield very different patterns, especially for performance goals. Indeed, this distinction between standards and orientations is part of a larger ongoing discussion of what constitutes a performance goal, how it should be measured, whether approach and avoidance forms are distinct, and how likely performance goals are to emerge in classrooms (see Brophy, 2005; Linnenbrink-Garcia et al., 2012; Senko et al., 2011; Urdan & Mestas, 2006).

Moving beyond variable-centered approaches, recent research has utilized a person-centered approach (e.g., Daniels et al., 2008; Luo, Paris, Hogan, & Luo, 2011; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2012). This extends earlier work examining interactions among multiple goals (e.g., Pintrich, 2000) to identify naturally occurring combinations of goals and their relations to achievement. For

instance, Luo and colleagues (2011) found that a profile with at least moderate mastery, high performance-approach, but low performance-avoidance goals was most beneficial across a variety of outcomes. This research suggests that it is critical to consider the relative levels of multiple goals, as doing so may help to further clarify the observed complexity in findings, especially for performance-approach goals.

There is also research examining how the educational context shapes students' goals (see Urdan, 2010, for a review). Recent work seeks to clarify the interplay between goal structures and social-relational components (e.g., Patrick, Kaplan, & Ryan, 2011; Turner, Gray, Anderman, Dawson, & Anderman, 2013), interactions between goal structures and personal goals in shaping academic outcomes (Lau & Nie, 2008; Linnenbrink, 2005; Murayama & Elliot, 2009; Wolters, 2004), the role of teachers' motivation in shaping the goal structures they create (Butler, 2012), the relative influence of individual versus shared perceptions of goal structures on academic outcomes (Karabenick, 2004; Urdan, 2004), as well as goal stability and change both within a single context (Fryer & Elliot, 2007; Muis & Edwards, 2009; Senko & Harackiewicz, 2005) and across contexts, particularly school transitions (e.g., Paulick, Watermann, & Nückles, 2013; Tuominen-Soini et al., 2012). This research highlights the importance of considering personal goal orientations embedded in classroom contexts and the need to examine how personal goal orientations change based on both objective features of the classroom as well as students' perceptions of these features. For instance, while personal goals are generally stable over time, they may shift as a function of feedback or exam performance (Muis & Edwards, 2009; Senko & Harackiewicz, 2005). Moreover, there is some evidence that the goal context may magnify the relations between personal goals and academic outcomes (Lau & Nie, 2008; Murayama & Elliot, 2009), although this is not consistent across all studies (Linnenbrink, 2005; Wolters, 2004).

Finally, researchers have expanded achievement goals to focus on the social domain, examining how social goal orientations relate to both social and academic outcomes (e.g., Rodkin, Ryan, Jamieson & Wilson, 2013; Ryan & Shim, 2006, 2008). For instance, Ryan and Shim (2006) developed and validated measures of social goals focused on developing versus demonstrating social competence and found that social development goals were associated with social adjustment while social demonstration-avoidance goals were associated with maladjustment. Social demonstration-approach goals were generally unrelated to social adjustment, although more recent research suggests that there may be both benefits and detriments of these goals (e.g., Rodkin et al., 2013). This expansion to the social realm is one potential way to more fully capture the nature and function of goals in school settings.

Attribution Theory

Theoretical overview. Building on early expectancy-value theories and conceptualizations of attributions (e.g., Atkinson,

1964; Heider, 1958; Rotter, 1966), Weiner's attribution theory of achievement (e.g., Weiner, 1985, 2011; for a review see Graham & Williams, 2009) assumes that people are motivated to understand outcomes they experience, especially when outcomes are unexpected or negative. In their search to explain an outcome, students may arrive at many possible causal attributions (i.e., ability, effort, luck, or task difficulty) that are themselves influenced by a variety of factors. These attributions are organized along three underlying dimensions: locus or the extent to which the cause is internal to the individual (e.g., ability, effort) or external (e.g., luck, task difficulty); stability or the extent that the cause will persist in the future (e.g., aptitude) or is transient (e.g., effort); and controllability or the extent of perceived influence an individual has on the cause (e.g., effort is controllable, luck is uncontrollable). These dimensions are theorized to have differential implications for expectancies, values and emotions, and subsequent achievement behavior, with stability relating most directly to expectancies for success and failure, a more internal locus to affective reactions to success and failure (i.e., pride or self-esteem), and controllability to hopefulness, social emotions (i.e., shame, guilt) and help giving (Weiner, 2011).

Research related to engagement, learning, and achievement.

Research is generally consistent with hypothesized patterns such that attributions are associated with varying emotions, expectancies, and academic functioning (e.g., Liu, Cheng, Chen, & Wu, 2009; Perry, Stupnisky, Daniels, & Haynes, 2008; Shell & Husman, 2008; Wolters, Fan, & Daugherty, 2013), though effort attributions are not consistently more beneficial relative to ability attributions, as attribution theorists often predict (e.g., Hsieh & Schallert, 2008; Vispoel & Austin, 1995). Current research integrates causal attributions, particularly ability and effort attributions, into various theoretical explanations of motivation and achievement. Attributions have an important place in achievement goal theory and implicit theories about the nature of intelligence (e.g., Blackwell, Trzesniewski, & Dweck, 2007; Haynes, Daniels, Stupnisky, Perry, & Hladkyj, 2008; Shell & Husman, 2008; Wolters et al., 2013). This research generally suggests a bidirectional relation between adopting performance goals or a fixed view of intelligence and using more helpless attributions (i.e., more internal, stable, and uncontrollable causes after failure), versus endorsing mastery goals or a malleable view of intelligence and using more adaptive attributions (i.e., controllable causes of success and unstable causes for failure). Current research also focuses on the links between causal attributions and constructs prominent in other motivation theories such as interest and self-regulation (e.g., Fulmer & Fritjers, 2011; Soric & Palekčic, 2009; Wolters et al., 2013). For example, Fulmer and Fritjers (2011) found that high topic interest for a reading passage buffered adolescents from the negative effects of excessive challenge, sustaining engagement and preventing attributions regarding the source of difficulty.

An additional focus of current attribution research is on how attribution training interventions may be used to promote

a variety of student outcomes, with many intervention studies demonstrating that training students to think about academic successes as controllable and academic failures as unstable has beneficial effects (e.g., Good, Aronson, & Inzlicht, 2003; Haynes et al., 2008; Perry, Stupnisky, Hall, Chipperfield, & Weiner, 2010). Given links between implicit theories of intelligence and attributions, interventions that train students to adopt a mindset emphasizing the malleable or controllable nature of intelligence seem to have similar beneficial effects (e.g., Blackwell et al., 2007; Good et al., 2003).

Finally, research on attributions has taken several new directions. Current research explores multiple attributions (e.g., Perry et al., 2008, 2010), attributions with a social focus (e.g., Liu et al., 2009; McClure et al., 2011), and the correlates of attributions in new educational contexts or previously unexamined domains (e.g., Hsieh & Schallert, 2008; Perry et al., 2008, 2010), including interpersonal interactions (e.g., Natale, Viljaranta, Lerkkanen, Poikkeus, & Nurmi, 2009; Peterson & Schreiber, 2006, 2012). For example, Peterson and Schreiber (2006) found that college students' outcome expectations and emotions were more strongly related to effort than ability attributions in the context of a collaborative project. Using a person-centered approach, Perry and colleagues (2008) found that compared to students who used other combinations of attributions for poor performance in college, students using a combination of modifiable internal controllable attributions (low effort, bad strategy) and external uncontrollable attributions that protect self-worth (test difficulty, poor teaching) demonstrated the most adaptive motivation and goal striving when transitioning from high school to college.

Other Theoretical Perspectives

We end this overview of key theories by noting that there are a number of important and influential constructs and theories that are not given adequate attention in our review. While we could not possibly review the tenets and findings of every fruitful motivation theory applicable to achievement contexts, there are many additional theories that make meaningful contributions to our understanding of students' motivation, engagement, and achievement. Many of these theories share and extend ideas and constructs central to those theories summarized above. For example, a number of theories related to personal control (e.g., Connell & Wellborn, 1991; Perry, 2003; Skinner, 1995) share commonalities with social cognitive theory, self-determination theory, and attribution theory. Control-value theory (Pekrun, 2006) focuses on the role of perceived control and value appraisals in achievement emotions and performance, highlighting constructs and ideas that overlap with expectancy-value theory, attribution theory, and achievement goal theory.

Many researchers study self-processes, including possible selves (e.g., Oyserman, Bybee, & Terry, 2006), self-concept (e.g., Harter, 1998; Marsh & O'Mara, 2008), self-worth (e.g., Covington, 1992), and beliefs about ability and intelligence (e.g., Dweck, 2006), that guide, direct, and motivate behaviors in achievement contexts and overlap with competence,

control, and goal-related concepts central to many of the theories described in this chapter. In particular, and as alluded to previously, a great deal of research on self-theories or mind-sets (see Dweck & Grant, 2008 for a review) suggests that self-theories about the malleability of personal attributes, including personality and intelligence, may underlie several of the motivation constructs previously discussed. Research suggests that those with a more malleable versus fixed theory of self-attributes are more likely to adopt mastery goals, maintain intrinsic interest, persist in the face of challenge, demonstrate higher academic performance, make more adaptive attributions for outcomes, and have greater overall psychological well-being.

Some theorists have studied similar constructs from different time perspectives. For example, flow theory (Shernoff & Csikszentmihalyi, 2009) focuses on in-the-moment or transient subjective flow experiences that are much like the intrinsic motivation or interest constructs. Research on future time perspectives (e.g., Husman & Lens, 1999) focuses on value for educational activities in the future rather than in the present.

Finally, while the theories we reviewed assume people consciously engage in goal-directed action and then evaluate subsequent affective, cognitive, and performance consequences, there is substantial evidence that much motivation is unconscious and people are often unaware of what guides their moods, thoughts, and behavior (see Aarts & Custers, 2012; Chartrand & Bargh, 2002). For example, Bargh, Gollwitzer, Lee Chai, Barndollar, and Trötschel (2001) found participants who were primed with an achievement goal by being unobtrusively exposed to words such as "strive" and "succeed" outperformed and persisted longer on an anagram task compared to those not primed with achievement words. While educational research has not typically included unconscious motivation, the last two decades of psychological research suggest it may provide powerful explanations in educational contexts.

Integrating Across Theoretical Perspectives

A clear strength of the theory-driven research conducted in the second half of the twentieth century is that it provided the groundwork for many advances in our understanding of motivational functioning in the classroom. However, with this emphasis on theory building came a tendency to conduct research based within a single theoretical tradition. For more than the past decade, however, this trend has been changing. Researchers are now considering, both empirically and theoretically, how multiple forms of motivation from multiple theories combine to shape engagement and learning. This shift is quite important and reflects the common understanding that educational outcomes, including achievement, may be multiply determined. Below, we highlight three complementary approaches to theory integration.

First, researchers have examined the contribution of multiple motivational constructs to students' engagement and learning using a traditional variable-centered approach (e.g., Ciani, Sheldon, Hilpert, & Easter, 2011; Hulleman, Durik,

Schweigert, & Harackiewicz, 2008; Liem, Lau, & Nie, 2008; Wolters et al., 2013). In these studies, researchers often explore the relative or unique contribution of each variable, after controlling for other forms of motivation, and consider interactions among personal and contextual motivational variables in relation to educational outcomes. For example, Ciani and colleagues (2011) explored concepts from self-determination and achievement goal theories; they found that psychological need satisfaction in life was linked with adopting academic mastery goals via autonomous motivation in class, and autonomy support slowed the decline in mastery goals over the course of a semester among undergraduate students. In an integration of expectancy-value, interest, and goal orientation theories, Hulleman and colleagues (2008) found that college and high-school students' intrinsic and utility value for a course or activity mediated the effects of mastery-approach goals on both subsequent interest in the course and final grade; performance-approach goals and utility value also predicted final grades, though values did not mediate these effects.

Going further, researchers also consider the joint and interactive effects of motivation, emotion, and cognitive variables in a multidisciplinary fashion to create more complete models of learning and engagement. For example, in their model of domain learning, Alexander and colleagues (e.g., Alexander, Murphy, Woods, Duhon, & Parker, 1997; Murphy & Alexander, 2002) explored the interplay between knowledge, interest, and strategic processing in students' paths to developing domain expertise. Likewise, research conducted by Pekrun and others (see Pekrun & Perry, 2014) has examined the links among emotion, motivation, self-regulation and learning strategies, cognitive resources, and academic achievement. In general, this variable-centered approach is useful for providing a more complete picture of the function of motivation in school, sometimes in the context of non-motivational factors.

Second, in the past decade, researchers have attempted to integrate motivation theories by examining motivational profiles of individuals across multiple forms of motivation (e.g., Braten & Olaussen, 2005; Conley, 2012; Lau & Roeser, 2008; Shell & Husman, 2008). Rather than focusing on how one particular variable functions, presumably across all individuals and in isolation, this person-centered approach allows researchers to identify particularly adaptive (or maladaptive) combinations of motivation and explore how these profiles function in the classroom. For instance, Conley (2012) created motivational profiles using constructs from achievement goal and expectancy-value theories. She found that combining variables from multiple theories in seven profiles was critical for predicting affect and achievement; neither achievement goals nor subjective task value explained the pattern of findings alone.

In one of the most comprehensive approaches to date, Shell and Husman (2008) examined constructs from social cognitive, expectancy-value, attribution, and achievement goal theories, as well as affect and self-regulatory behaviors, to identify five distinct groupings of variables along three canonical dimensions. For instance, they identified a highly

motivated and strategic learner dimension. The motivation coefficients included high competence beliefs, positive affect, attributions to effort, and mastery and performance-approach goals and were linked with highly strategic self-regulatory behavior coefficients. Another dimension reflected more of an intrinsically motivated, mastery, high-competency focus tied with the use of knowledge-building strategies, but not general cognitive and metacognitive strategies or high study effort. These dimensions, along with others they identified, suggest that there may be multiple adaptive and maladaptive groupings of motivational and self-regulatory behaviors.

Third, motivation researchers are integrating across theories to consider how multiple forms of motivation emerge from and are supported by the educational context (e.g., Guthrie, Klauda, & Ho, 2013; Nolen, 2007; Turner, Warzon, & Christensen, 2011). For instance, Turner and colleagues (2011) synthesized motivation theories to identify and implement "best practices" designed to support multiple forms of adaptive motivation. The concept-oriented reading program developed by Guthrie and Wigfield goes further by examining how an intervention based on multiple motivational theories shapes patterns of motivation and engagement (e.g., Guthrie et al., 2013). Other research takes a more situated approach to investigate how multiple forms of motivation develop. For example, Nolen (2007) used a grounded-theory approach to examine the development of elementary students' motivation to read and write in a mixed-methods longitudinal study. While Nolen's primary focus was interest development, she identified shifts in multiple forms of reading and writing motivation (e.g., interest, mastery, ego concerns, reading to learn) and considered how the educational context related to varying motivational patterns. Integrated approaches such as these are critical in the translation of motivation research into coherent and useful recommendations for classroom practice.

Future Directions

We close this chapter by highlighting several important and promising avenues for future research. First, our overview of the major theoretical models highlights the breadth of motivation constructs; however there is also a great deal of similarity among constructs such as those related to value (e.g., intrinsic motivation, task value, interest) and competence (e.g., self-concept, self-efficacy, expectancies), and the field suffers from the variety of terms used for seemingly similar constructs (Murphy & Alexander, 2000). Thus, it is critical that researchers not only carefully align conceptual definitions with measurement instruments, but also assess where constructs can be combined and where nuanced differences are needed. Likewise, readers should pay special attention to conceptual and operational definitions when interpreting results.

Second, current research integrating motivation perspectives is particularly promising, both for understanding how motivation relates to engagement and learning and for supporting multiple adaptive forms of motivation in school settings (see also Chapter 12, this volume). In pursuing this work, we urge researchers to reflect upon what it means

theoretically to integrate constructs and whether a more unified, cohesive theoretical approach is possible (see Ford, 1992). However, in doing so, there is a need for parsimony, as complex theories will be unlikely to be widely adopted and have limited utility for informing practice.

Third, we urge researchers to continue to investigate underlying psychological processes and mechanisms and to more carefully consider how and why classroom contexts shape motivation. For instance, while research on situational interest has progressed in understanding contextual supports for situational interest and in using situational interest to predict individual interest, we know very little about the processes through which situational interest develops into individual interest. Similarly, within achievement goal theory, a clearer understanding of the psychological processes that shift as a function of goal structures is needed (see O'Keefe, Ben-Eliyahu, & Linnenbrink-Garcia, 2013). Similar suggestions can be made regarding the role of psychological needs in research on the links between external events and academic outcomes or the mechanisms by which attribution retraining influences achievement.

Fourth, motivation researchers may need to look beyond social cognitive theories to consider sociocultural and situated approaches, which place a greater emphasis on understanding the person in the context (for reviews, see Nolen & Ward, 2008; Perry, Turner, & Meyer, 2006). Sociocultural and situated approaches may be especially useful in understanding how motivation develops and functions in educational settings (see Nolen, 2007) and for investigating the role of culture in motivation (Zusho & Clayton, 2011). Moreover, these approaches may help motivational researchers work with educators to provide guidelines that are more realistic and useful for supporting motivation in classrooms by acknowledging the complexities of classrooms and better representing how multiple contextual components synergistically support motivation.

Fifth, we urge researchers to more carefully consider culture in the study of motivation. While this call is not new (Graham, 1994), it remains understudied. There are a number of recent theoretical reviews that thoughtfully discuss issues of culture, race, and ethnicity within the context of motivation research (e.g., Graham & Hudley, 2005; Kumar & Maehr, 2010; Zusho & Clayton, 2011). As these authors articulate, research on culture must move beyond simply identifying racial/ethnic or country-level differences to examine how meaningful conceptualizations of culture shape the nature of and variations in motivational phenomena.

Finally, while a variety of methods are used to study motivation, there is a heavy reliance on self-report instruments. Self-reports are useful for gaining access to social cognitive constructs like motivational self-beliefs; however, they have a number of drawbacks. Indeed, several studies suggest that students may not be interpreting items as intended (Karabenick et al., 2007; Koskey, Karabenick, Woolley, Bonney, & Dever, 2010; Urdan & Mestas, 2006). Thus, we urge researchers to continue to refine self-report measures while also employing other possible assessment techniques. Behavioral, observational, neuroimaging, facial recognition,

and implicit techniques are among many methods that could be used to study motivation. For instance, Zhou and Winne (2012) employed goal traces (behavioral indicators operationalized as tags participants applied to selections of text and hyperlinks they clicked in an article) to collect in-the-moment goal orientations while students studied a passage. The goal traces and self-reported goals were correlated, but only goal traces significantly predicted test performance. Classroom observations are effectively employed to examine teachers' motivating practices and students' engagement (e.g., Jang et al., 2010; Turner et al., 1998), but are still relatively underutilized. Finally, recent efforts demonstrate that complex human motivational constructs can be understood through neuroscience methods (see Reeve & Lee, 2012, for a review).

Conclusion

Research on motivation in educational settings continues to be a vibrant and productive area of study. As we have noted in this chapter, a great deal of progress in the study of motivation has occurred within the last decade. Researchers have continued to refine and advance our theoretical understanding of motivation, examined how motivation relates to engagement and learning, and explored how classroom contexts support it. One noteworthy advance we observed is the move beyond variable-centered analyses to consider how multiple forms of motivation function synergistically within individuals. We see this as quite fruitful, especially as researchers attempt to develop integrative approaches that move beyond the major theories outlined in this chapter. Relatedly, the use of situated or sociocultural perspectives may be particularly useful for understanding how motivation develops and is supported by educational contexts. Moreover, the increased use of diverse methods such as behavioral indicators of motivation and experience sampling designs may further clarify the processes by which motivation shapes academic outcomes. We are encouraged that the research on motivation continues to evolve and look forward to many more decades of productive motivational research.

Notes

1. We refer to task value or value rather than individual components when various components of value were examined across similar studies or the primary research assessed the construct as a whole.
2. Also known as "catch" (Mitchell, 1993) and "emerging situational interest" (Krapp & Prenzel, 2011).
3. Also known as "hold" (Mitchell, 1993) or "stabilized situational interest" (Krapp & Prenzel, 2011).

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