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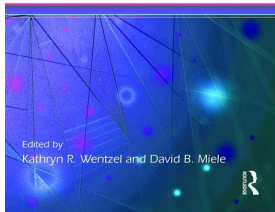
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Handbook of  
Motivation at  
School



## **Handbook of Motivation at School**

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## **Self-Regulation of Motivation**

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# Section III

## New Directions in the Field

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## SELF-REGULATION OF MOTIVATION

*David B. Miele and Abigail A. Scholer*

Although educators often complain that their students “lack motivation,” they also see it as their responsibility to create classroom contexts that keep students focused and engaged. However, one problem with teachers assuming primary responsibility for student motivation is that, as we have seen throughout this handbook, students vary considerably in terms of what they find motivating. For instance, expectancy-value theory (see Wigfield, Tonks, & Lauda, this volume) suggests that a considerable source of student motivation is the utility and importance that students associate with different educational outcomes. For one student, the importance of learning science may be associated with the desire to become an engineer, whereas for another student in the same class, this importance may instead be associated with the desire to understand more about the environmental impact of global warming. In this case, asking teachers to try to understand the individual values and interests of each of their students may be a less efficient means of fostering motivation than asking them to teach their students how to connect what they are learning about in school to their own values and interests. In other words, teachers might be more effective at motivating students if they can teach them how to motivate themselves.

From this perspective, the ways in which students regulate their own motivation is an essential, though understudied, aspect of self-regulated learning. In this chapter, we explore research on motivation regulation by drawing on existing models of motivation regulation (Sansone & Thoman, 2005, 2006; Schwinger & Stiensmeier-Pelster, 2012; Wolters, 2003, 2011), as well as theoretical frameworks that have previously been applied to other aspects of self-regulated learning, particularly metacognition and emotion regulation. First, borrowing from the metacognitive literature, we explore the ways in which students assess their own motivational states (i.e., monitoring) and use various strategies to boost or change their own motivation when they deem it to be insufficient (i.e., control). We also explore the idea (related to the emotion regulation literature) that motivation regulation is not only about increasing the level or amount of one’s motivation, but also about ensuring that the *type* of motivation one is experiencing (e.g., controlled vs. autonomous) fits with the performance demands of a given task (i.e., positively influences those aspects of performance that are crucial for success in a particular context;

see Miele & Wigfield, 2014). Finally, the remainder of the chapter is devoted to reviewing research on the strategies that students use to enhance or reactivate specific components of their motivation.

### A METAMOTIVATIONAL MODEL OF MOTIVATION REGULATION

Metacognition, which consists of cognitions about one's own mental states and processes, is often divided into two reciprocal components: metacognitive monitoring and control (see Dunlosky & Metcalfe, 2009). Monitoring typically involves assessing one's cognitive activity with respect to a particular learning goal (e.g., "how well do I understand the text that I am reading?"), while control involves taking strategic actions to direct this activity (e.g., "I should go back and reread the previous paragraph"). These components are considered reciprocal to the extent that the output of monitoring serves as the input of control (e.g., control processes are initiated once monitoring determines that existing learning is insufficient), and the output of control serves as the input of monitoring (e.g., once learning has been redirected, it must be monitored again to ensure that progress is being made toward one's goal).

Studies have shown that students do well on academic tasks when they accurately assess their learning and then use these assessments as the basis of strategic decisions about what they should study and how to study it (e.g., Thiede, Anderson, & Therriault, 2003). In order to make accurate assessments and strategic decisions regarding a particular task, students must possess at least three types of metacognitive knowledge: (1) knowledge about the cognitive demands of the task, (2) knowledge about strategies that can be used to meet these demands, and (3) knowledge about themselves as learners (Flavell, 1979; Pintrich, 2002). For instance, a student who is studying a chapter of a textbook for an upcoming exam needs to know the level of comprehension expected by the teacher (task knowledge) in order to assess whether she has sufficiently understood it. If the student concludes that she is lacking adequate comprehension, then she also needs to know what kinds of strategies she can employ to improve her comprehension (strategy knowledge), as well as which of these she is most effective at implementing (self-knowledge).

Just as metacognition has been shown to play a critical role in students' effective regulation of their cognitive states, we propose that students also possess a capacity for *metamotivation*, which is essential to the effective regulation of their motivational states. Our conception of metamotivation includes components that parallel both metacognitive monitoring and control. That is, we believe that metamotivation involves (a) assessing whether one is sufficiently or appropriately motivated to complete a particular task or pursue a specific goal and (b) taking strategic actions to adjust or change one's motivation (cf. Boekaerts, 1993, 1995; Corno, 1993; Pintrich, 2004; Sansone & Thoman, 2005, 2006; Schwinger & Stiensmeier-Pelster, 2012; Wolters, 2003, 2011). As with metacognition, both of these components involve three types of knowledge (Wolters, 2003, 2011). In order for an individual to accurately monitor and effectively control her current motivational state, she must have a sense of how motivated she needs to be and in what ways she needs to be motivated (e.g., motivated to pursue a performance vs. mastery goal) in order to perform optimally on a given task (task knowledge), as well as what strategies she can use to increase her level of motivation or change her motivational orientation (strategy knowledge) and which of the strategies she is most effective at implementing (self-knowledge). Importantly, the effects of this knowledge on metamotivational monitoring and control can be either explicit or implicit (e.g., a student may *intuitively* sense that adopting a performance goal at this point in the semester will lead to optimal

outcomes). That is, although (for the sake of clarity) we sometimes use language that implies that these metamotivational processes are consciously controlled, we maintain that they can occur implicitly or automatically, just like metacognitive processes (Reder & Schunn, 1996).

Another parallel between metacognition and metamotivation pertains to the specificity of the knowledge that underlies self-regulation. Just as metacognitive knowledge varies depending on the underlying components of learning being regulated (e.g., knowledge about how to regulate memory differs from knowledge about how to regulate comprehension), so too does metamotivational knowledge vary depending on the underlying components of motivation (e.g., knowledge of how to regulate the perceived importance of a task differs from knowledge about how to regulate interest or intrinsic motivation). In identifying these components, we draw in part on expectancy-value models, which specify expectancies and values as the most proximal determinants of achievement motivation (see Wigfield, Tonks, & Lauda, this volume; cf. Sansone & Thoman, 2005, 2006; Wolters, 1998; Wolters & Benzon, 2013). With respect to expectancies, a distinction has been made (Bandura, 1977) between two components: students' *outcome expectancies* (i.e., their confidence that a given behavior or set of behaviors will result in a particular outcome) and perceived *self-efficacy* (i.e., their confidence in their ability to successfully execute these behaviors). With respect to value, four major components have been posited (Eccles, 2005; Wigfield et al., this volume): *utility value* or the usefulness of a task for achieving long-term goals or external rewards, *attainment value* or "the value an activity has because engaging in it is consistent with one's self-image" (Eccles, 2005, p. 109), *intrinsic value* (which is similar to notions of intrinsic motivation and interest), and *cost* (which includes what the student sacrifices by engaging in a task).

Note that utility and attainment value can be considered overlapping constructs (Eccles, 2005) insofar as successful task performance is sometimes useful for achieving long-term goals that have been internalized as part of one's self-concept. For instance, studying for an exam in order to earn a good grade has both utility and attainment value to the extent that maintaining a high GPA is important for preserving one's self-image as a "good student." Thus, for the purposes of this paper, we disentangle these concepts by using the term "utility value" only when referring to tasks that are useful for achieving a goal or reward that is low in attainment value (i.e., not part of one's self-concept). Consequently, from a self-determination perspective (Deci & Ryan, 2000), utility value (which we associate with introjected regulation; see Eccles, 2005) can be considered a less-internalized (more external) determinant of motivation than attainment value (which we associate with integrated regulation; see Eccles, 2005). Making this kind of fine-grained distinction is necessary because our model posits that students possess unique means of assessing and enhancing each of the six expectancy and value components of motivation just described.

In identifying components of motivation, we also draw from Higgins's theory of regulatory focus (Higgins, 1997, 2012), which concerns the different types of attainment value that are associated with people's fundamental motivations for growth versus security. When people are primarily concerned with fulfilling their need for growth and advancement, they derive attainment value from their ideals (i.e., the aspects of their self-concept that specify who they *hope* to be). The "promotion" motivation that results from this type of value leads them to pursue goals using eager, gain-oriented information processing strategies (e.g., generating multiple hypotheses in order to maximize one's chances of being correct). However, when people are instead concerned with fulfilling their need for safety and security, they derive attainment value from their duties and

responsibilities (i.e., the aspects of their self-concept that specify who they *ought* to be). The “prevention” motivation that results from this type of value leads them to pursue their goals using vigilant, loss-oriented information processing strategies (e.g., focusing on a single hypothesis in order to minimize one’s chances of being wrong; for a review, see Molden & Miele, 2008; Molden & Rosenzweig, this volume).

Related to Higgins’s theory of regulatory focus is the concept of regulatory *fit* (Higgins, 2000, 2005). When individuals use strategies that fit with their preferences for a particular type of strategy (whether because the context affords it or because they are told to do so), they experience motivational benefits, such as valuing the task more, being more engaged in it, and performing better on it (Cesario, Grant, & Higgins, 2004; Higgins, Idson, Freitas, Spiegel, & Molden, 2003; Higgins, 2005, 2006). That is, a promotion-focused individual will value a task more and be more engaged in it when assigned to use an eager strategy (compared to a vigilant strategy), whereas a prevention-focused individual will value it more when assigned to use a vigilant strategy (Higgins, 2006). The interaction between value and regulatory fit (such that the effects of value on motivation are intensified under conditions of fit) is not unlike the interaction between value and expectancies posited by early expectancy-value theories (such that the effects of value are stronger when expectancies are high; Feather, 1959; see also Higgins, 2005; Trautwein et al., 2012). We therefore include regulatory fit in our model as a seventh component of motivation that can be metamotivationally assessed and enhanced.

Our model of motivation regulation is not limited to specifying how students monitor and control individual components of motivation; it also attempts to explain how students shift between these components (either implicitly or explicitly) in order to ensure that they are optimally motivated to meet the cognitive and affective demands of a given task or situation (see Wolters, 2011). Although our model is based in part on expectancy-value theories of motivation, it does *not* claim that all forms of value have similar effects on motivation and behavior and, thus, can be combined in an additive manner (cf. Eccles, 2005). Instead, our model draws from self-determination theory (Deci & Ryan, 2000) in positing that internalized/autonomous forms of value (i.e., intrinsic and attainment value) typically lead to higher levels of engagement, greater persistence, and deeper processing than do forms of value that are relatively external or controlled (i.e., utility value). Furthermore, external forms of value can in some cases undermine the effects of internalized forms of value on motivation. In contexts where this is the case, students may selectively enhance the intrinsic or attainment value of a task over its utility value in order to maximize engagement and persistence. For instance, as opposed to simply monitoring whether she has enhanced the perceived usefulness of the task (i.e., utility value) enough to sustain her engagement in it, a student may assess whether the extrinsic motivation that results from utility value will have *as* positive an influence on task performance as will the intrinsic motivation that results from finding the task to be interesting (i.e., intrinsically valuable). If a student weighs the potential tradeoffs between utility value and intrinsic value and decides that being intrinsically motivated (without the undermining effects of any additional extrinsic motivation) gives her the best chance of achieving this particular goal (e.g., deeply understanding the material), she may then draw on her strategy knowledge and engage in actions that she has previously found to be useful for enhancing interest (see Sansone & Thoman, 2005).

Another way in which students can optimize their motivation is to shift between types of attainment value, such as their ideals versus responsibilities. Consider, for example, a student whose goal is to perform well on a brainstorming task that requires eager and flexible information processing. The student may recognize that, although

she is currently concerned with fulfilling her responsibilities and, thus, in a prevention focus, she is more likely to engage in this type of processing if she approaches the task with a promotion focus (Scholer & Miele, 2015). This metamotivational assessment may lead her to implement a strategy that involves activating her ideals (i.e., growth concerns).

In what follows, we use the model just outlined as a framework for reviewing existing empirical research on students' motivation regulation. Where little research exists, we engage in speculation and point to directions for future research. Because the vast majority of existing research on motivation regulation has examined the strategies students use to control their motivation, this is the primary focus of our review.

## THE PURPOSE OF MOTIVATION REGULATION STRATEGIES

When thinking about the ways in which students increase their motivation to pursue a particular goal, we are immediately faced with what appears to be a circular proposition. Assuming that any act of self-regulation requires goal-directed motivation, how can a student increase her motivation to achieve a particular goal without already being highly motivated to achieve it? For example, how can a student take steps to increase her motivation to begin studying for an upcoming exam if she is not already motivated to do well on it? The way out of this dilemma involves making a distinction between our distal goals and the proximal goals we set for ourselves in order to achieve these distal goals (see Schwinger & Stiensmeier-Pelster, 2012). In the case of our example, we actually have two goals: the distal, high-level goal of doing well on the exam (which may serve the even higher-level goal of doing well in the course, or maintaining a certain GPA) and the proximal, low-level goal of studying for the exam at this particular moment. Although the student is strongly motivated to do well on the exam, she may face other competing goals *in the moment* (e.g., wanting to focus on something she finds more interesting; wanting to hang out with her friends) that interfere with her motivation to pursue the proximal goal of studying for the exam. In our model, the high-level goal (and the value associated with it) serves as the impetus for the student to regulate her motivation to pursue the low-level goal. This means that she will find ways to increase her current motivation to study (i.e., to overcome the feeling that she would rather be hanging out with friends right now) because she is aware, at a more general level, of how much she wants to get a good grade in the class. In the remainder of this chapter, we explore the strategies students use to enhance their motivation to pursue a proximal, low-level goal based on their desire to achieve a more distal, high-level goal.

## KNOWLEDGE OF MOTIVATION REGULATION STRATEGIES

Students' metamotivational knowledge of such strategies can be divided into the three categories initially proposed by Paris and colleagues (Paris, Cross, & Lipson, 1984; Paris, Lipson, & Wixson, 1983) to describe metacognitive strategy knowledge: declarative, procedural, and conditional (see Wolters, 2011). Declarative knowledge, in this case, refers to the factual information that a student possesses about a particular strategy, such as what its purpose is and what steps it involves (e.g., knowing that one can approach an academic task as a game in order to make it more interesting). Procedural knowledge refers to the skills involved in putting the strategy into practice (e.g., knowing *how* to approach the task as a game). Finally, conditional strategy knowledge (which combines elements of both declarative and procedural knowledge, as well as knowledge about the



person and the task), refers to information about when and where to enact the strategy (e.g., realizing at the moment one feels bored that it would be helpful to approach the task as a game). This conditional knowledge is essential for connecting the two fundamental processes involved in motivation regulation; that is, for controlling the use of metamotivational strategies based on the output of one's monitoring.

The first study to examine students' knowledge of motivation regulation strategies in a comprehensive manner was conducted by Wolters (1998). The college students who participated in the study were presented with 12 scenarios that described common academic tasks (e.g. attending a lecture, studying for an exam, reading a textbook chapter, and writing a paper). For each of the scenarios, they were asked to imagine experiencing three motivational problems (the material seemed unimportant, boring, or difficult). The students then reported what they would do to keep themselves motivated in each situation (i.e., for each combination of task and problem). The results of the study revealed that the type of motivation strategy students reported using varied in accordance with the type of motivational problem described. For instance, participants were more likely to use interest-enhancing strategies when dealing with boredom, compared to when the material seemed unimportant.

Based on participants' responses to the scenarios in this study, Wolters (1999) subsequently created a questionnaire measuring students' engagement in 28 motivation-regulation behaviors. The questionnaire asked participants to think about situations in which they did not feel like "working hard" or "finishing their school assignments" and to then rate each behavior in terms of how likely they would be to engage in it. A factor analysis of responses from a sample of ninth- and tenth-grade students grouped these behaviors into five types of strategies. A revised version of the questionnaire (Wolters & Benzon, 2013) later extended this to six types of strategies, which were labeled in terms of the aspect of motivation targeted by the strategy ("mastery goals," "performance goals," "value," "situational interest") or in terms of the actions executed as part of the strategy itself ("self-consequating," "environmental structuring"). This basic taxonomy was validated and extended by Schwinger, von der Laden, and Spinath (2007) with three samples of German college students. By adding several new items to Wolters' questionnaire, these authors identified two additional factors, which they labeled "performance-avoidance goals" and "proximal goal setting." The eight subscales of this revised questionnaire have shown good reliability and predictive validity across a number of recent studies (Schwinger, Steinmayr, & Spinath, 2009, 2012; Schwinger & Stiensmeier-Pelster, 2012).

Although the eight types of strategies assessed in the questionnaires by Wolters and Schwinger were identified from students' open-ended responses, they do not necessarily represent a comprehensive list of the steps students take to regulate their motivation. It is important to keep in mind that the open-ended responses were elicited by prompts that described a limited set of learning scenarios and contexts. In particular, the prompts used by Wolters (1998) asked students to consider how they would address a motivational problem *while* they were engaged in a particular learning activity. However, as Wolters (2003) and others have noted, it is not uncommon for students to also address motivational problems before or after they engage in an activity (i.e., during the forethought or self-reflection phases of self-regulation, in addition to the performance phase; see Kitsantas & Cleary, this volume). Furthermore, because motivation may function differently at different phases of the self-regulation cycle, the motivation regulation strategies that students use before, during, and after an activity may not always be the same.

As argued by researchers who approach self-regulation from a volitional perspective (see Boekaerts, 2006; Corno, 1993), there is a distinction between the motivational

processes that establish students' commitment to a specific goal and the processes that sustain this commitment once they have crossed the metaphorical Rubicon (Heckhausen & Gollwitzer, 1987) and are currently pursuing the goal. The strategies assessed by the previously described questionnaires mostly involve the latter (though some, such as self-consequating, can also involve the former); that is, they are generally aimed at maintaining a high level of engagement in a task that one is already committed to completing, but there also exist strategies that are primarily aimed at increasing the likelihood that this engagement is initiated at all. For instance, a student who is having trouble “finding” the motivation to start studying for an exam because she would rather pursue a salient social goal may be able to resolve this motivational conflict (see Hofer & Fries, this volume) by choosing to study in the library *with* friends. This strategy of identifying activities that can satisfy more than one goal at the same time (that are “multifinal”; see Riediger & Freund, 2004; Riediger, Freund, & Baltes, 2005; cf. Orehek, Mauro, Kruglanski, & van der Bles, 2012) is likely to be implemented during the forethought phase of self-regulation. In addition, strategies targeting goal initiation can also be implemented during the self-reflection phase (i.e., *after* an activity has been completed). For example, a student who performed poorly on an exam in a particular domain may respond by strategically attributing her failure to controllable factors (such as insufficient effort), rather than uncontrollable factors (such as lack of innate ability; Wolters, 2003). By doing so, she may be more likely to maintain a high level of self-efficacy in that domain (Wood & Bandura, 1989) and to adopt the goal of studying even harder for the next exam (Dweck & Master, 2009).

Another reason why the existing questionnaires assessing motivation regulation are not comprehensive may be because the open-ended responses originally used to identify regulation strategies primarily reflect students' declarative and conditional metamotivational knowledge (which tends to be explicit), as opposed to their procedural knowledge (which tends to be implicit). That is, by focusing on what students are retrospectively aware of having done to regulate their motivation instead of observing what they actually do in the moment, previous studies may not have accounted for certain strategies that students may automatically implement based in part on their procedural knowledge (such as the attributional control strategy just described). Thus, studies of metamotivational strategy performance are needed in order to identify additional strategies and to determine whether certain ways of executing these strategies are more effective than others. Such studies would also be useful in assessing the accuracy of students' self-reported strategy use; for instance, students may actually use some strategies less often than they think they do, and perhaps they are unaware of using other strategies.

## TYPES OF MOTIVATION REGULATION STRATEGIES

In this section, we categorize the various strategies identified in the motivation regulation literature (including the eight assessed in the questionnaires by Wolters and Schwinger) in terms of the seven components of motivation we proposed as part of our model. By categorizing strategies in this manner, as opposed to relying primarily on statistical methods (such as factor analysis), we can generate a number of novel, testable hypotheses. First, strategies that target qualitatively distinct components of motivation should have distinct effects on students' task engagement and behavior. For instance, in accordance with self-determination theory (Ryan & Deci, this volume), the strategies that students use to enhance intrinsic and attainment value should generally lead to higher levels of task engagement and persistence and greater depth of processing than the strategies

they use to enhance utility value (Sansone, 2009; Skinner, Furrer, Marchand, & Kindermann, 2008; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004).

Second, strategies that appear unrelated in terms of how and when they are used (and, thus, tend to load onto separate factors) may actually have similar effects on task engagement and behavior if they target the same component of motivation. For instance, both self-consequating strategies and certain strategies for activating performance goals appear to target the utility value component of motivation and, thus, may influence task engagement in a similar manner. Finally, what appears on the surface to be a single strategy may actually have different effects on task engagement and behavior depending on what component of motivation it targets. Self-talk, which we assign to multiple categories below, is particularly interesting in this regard.

Students employ self-talk strategies by reminding themselves of (or elaborating on) their reasons for engaging in the task. Although research on self-talk has primarily focused on self-talk related to enhancing utility or attainment value (described in more detail in the following sections), self-talk can be involved in the enhancement, maintenance, or even the instantiation of many different motivational components. In fact, self-talk may sometimes serve as a precursor to motivation regulation in addition to serving as a regulation strategy in its own right. Given that the motivation to regulate a low-level task goal (such as studying for an exam) is typically derived from a broader high-level goal (such as maintaining a high GPA), the activation of this high-level goal via self-talk may sometimes spur students to engage in a variety of different motivation regulation strategies. For example, consider a student who is studying for an important exam but finds herself bored and daydreaming about hanging out with her friends. If she then remembers that getting a good grade on the exam is very important for doing well in the course and eventually getting into law school, this may prompt her to engage in a variety of motivational strategies (such as enhancing intrinsic value or minimizing costs; see below).

Although this act of remembering the attainment value associated with the task may be a deliberate or automated strategy for responding to boredom, it may also be a simple byproduct of thinking about the task that is not meant to enhance motivation. In either case, it provides the impetus to engage in strategies aimed at enhancing components of motivation other than utility or attainment value (e.g., self-efficacy, intrinsic value). To the extent that self-talk is used both on its own and in conjunction with numerous other strategies, it may be particularly salient to students who are reflecting on their motivation regulation. This may explain why, in many studies, self-talk (particularly performance self-talk) is the motivation regulation strategy that students report being the most likely to employ (Schwinger et al., 2009, 2012; Schwinger & Stiensmeier-Pelster, 2012; Wolters, 1998, 1999; Wolter & Benzon, 2013).

### *Utility Value*

Within the motivation and self-regulation literatures, the most frequently mentioned strategy for enhancing the perceived usefulness or utility value of a task is self-consequating. This strategy typically involves the student promising to administer some self-relevant consequence (either a reward or punishment) if she does or does not adequately complete the task by a given deadline. For instance, the student may promise to indulge in her favorite junk food at the end of the night if she can just get through two more chapters of the textbook, or she may promise *not* to go out with her friends the next night if she does not finish enough of her homework by

tomorrow afternoon. Evidence that students engage in self-consequating comes from a number of studies that employed the Self-Regulated Learning Interview Schedule (SRLIS) developed by Zimmerman and Martinez-Pons (1986, 1988). As part of this interview protocol, students are asked to report what kinds of strategies they would use to overcome typical academic problems, including a problem that involves having to complete a relatively uninteresting task. Students from the United States (Ablard & Lipschultz, 1998; Zimmerman & Martinez-Pons, 1986, 1990), as well as from Italy, Australia, Japan, and Belgium (Nota, Soresi, & Zimmerman, 2004; Purdie & Hattie, 1996; Vandavelde, Van Keer, & De Wever, 2011), reported that they would address these problems, in part, by providing themselves with added incentives to complete the given task. In terms of the effects of self-consequating on motivation and behavior, studies have shown that this strategy is positively associated with the intention to further one's education (Nota et al., 2004), self-reported academic effort (Schwinger et al., 2009, 2012; Schwinger & Stiensmeier-Pelster, 2012), and grades (Nota et al., 2004; Schwinger et al., 2012; Schwinger & Stiensmeier-Pelster, 2012).

In addition to self-consequating, two types of self-talk typically specified in the literature have the potential to target utility value: performance self-talk, which involves focusing on one's performance goals as reasons for working hard on the task (e.g., wanting to maintain a high GPA or to demonstrate one's intelligence to others), and mastery self-talk, which involves focusing on one's mastery goals (e.g., wanting to develop one's skills in a particular domain). This type of self-talk may be related to increasing not only utility value but also attainment value. To the extent that these goals have been internalized as part of one's self-concept, self-talk likely activates the attainment value associated with a task. For mastery goals, this would seem to be a common occurrence, as possessing a high level of skill or competence is believed to satisfy a fundamental human need (Deci & Ryan, 2000) and is thus a central aspect of most students' self-concepts. However, for performance goals, this may not always be the case. Although performance goals sometimes represent personal or autonomous reasons for engaging in a task (e.g., when students strive to outperform others because they genuinely enjoy competition or because being successful academically is central to how they define themselves), they often represent reasons that involve some form of external control (e.g., when students strive for good grades so that their parents will not be upset, or so that their classmates will be impressed; see Senko, this volume; Vansteenkiste, Lens, Elliot, Soenens, & Mouratidis, 2014). Thus, self-talk that highlights or activates one's performance goals should have different effects on task motivation and engagement depending on whether these goals are pursued for internalized reasons (thus providing attainment value) or extrinsic reasons (providing only utility value).

No studies that we know of have directly examined performance self-talk in this manner, though studies by Schwinger and colleagues (Schwinger et al., 2009, 2012; Schwinger & Stiensmeier-Pelster, 2012) have separated the effects of performance-*approach* self-talk on effort and academic performance from the effects of performance-*avoidance* self-talk. Although the measure of performance-approach self-talk used in these studies can be construed by participants in terms of attainment *or* utility value (e.g., "I call attention to the fact of how important it is to obtain good grades"), the measure of performance-avoidance self-talk seems unlikely to be construed in terms of attainment value (e.g., I imagine that my classmates make fun of my poor performance). This interpretation of the subscales is in line with research from the broader motivational literature, suggesting that avoidance is frequently associated with controlled forms of motivation (see Deci &

Ryan, 2000) and tends to undermine intrinsic motivation (Elliott & Harackiewicz, 1996; Rawsthorne & Elliot, 1999).

If we accept this interpretation, then the fact that performance-avoidance self-talk was, in some cases, associated with less positive outcomes compared to performance-approach self-talk (e.g., Schwinger et al., 2012, Study 2), is at least consistent with the idea that performance self-talk highlighting only the utility value of a goal may lead to more controlled forms of motivation (and less engagement) than self-talk highlighting attainment value. However, because there are other explanations for why self-talk aimed at avoidance goals may undermine engagement and performance, a stronger test of this idea would be to compare performance-approach self-talk that is clearly aimed at internalized goals (that have attainment value) with performance-approach self-talk aimed at more external goals (that have only utility value; see Assor, Vansteenkiste, & Kaplan, 2009).

### *Attainment Value*

As previously discussed, our model of motivation regulation posits that there are multiple types of attainment value and that each type leads to different ways of engaging in a task or activity.

### *Mastery versus Performance*

In the last section, we argued that both mastery and performance goals can have attainment value (see Eccles, 2005). Research from the general motivation literature suggests that when students value what they can learn from an activity (i.e., mastery) they use deep information processing strategies (such as elaboration) more often than when they value the possibility of outperforming others (i.e., performance; see Senko, Hulleman, & Harackiewicz, 2011, for a review). One explanation for this finding is that students who value performance outcomes may only use deep processing strategies when studying the content on which they will be evaluated (i.e., that is part of the teacher's "learning agenda"; Senko, Hama, & Belmonte, 2013).

Little research has specifically examined the relation between students' use of motivation regulation strategies and their use of different cognitive and metacognitive strategies. However, the results from a study by Wolters (1999) that did measure both constructs were somewhat consistent with the finding just described. Specifically, mastery self-talk, but not performance-approach self-talk, was significantly correlated with the self-reported use of deep processing strategies such as elaboration and organization (though none of the metamotivation strategies assessed by Wolters significantly predicted deep processing when entered into a simultaneous regression). Note that an alternate explanation for these results is that the mastery self-talk subscale was more likely to be interpreted by participants in terms of attainment value than was the performance self-talk subscale and thus was more likely to be associated with autonomous forms of motivation, which predict the use of deep processing strategies. A stronger test of the mastery-performance distinction posited here would be to assess mastery and performance self-talk strategies that are clearly aimed at internalized goals (that have attainment value).

### *Ideals versus Responsibilities*

As previously discussed, regulatory focus theory (Higgins, 1997, 2012) differentiates between the attainment value associated with people's ideals (i.e., the aspects of their

self-concept that specify who they *hope* to be) and the value associated with their responsibilities (i.e., the aspects of their self-concept that specify who they *ought* to be). Importantly, what constitutes an ideal or responsibility is subjective. That is, even though two students may have the same goal of getting an “A” in their class, one student may consider this to be the ideal grade that she hopes to earn, while the other student may instead consider it to be the grade she is obligated to earn.

Numerous studies have shown that the promotion motivation people experience when pursuing their ideals and the prevention motivation they experience when pursuing their responsibilities lead them to use different types of information processing strategies. When promotion-focused, people are generally concerned with making gains that will move them closer to their ideals (e.g., scoring extra points on an exam in order to earn the maximum grade possible). This concern leads them to prefer eager processing strategies that involve broadly considering all information that might help them to achieve their goal, even at the expense of making mistakes. As a result, people with a promotion focus may in certain contexts excel at tasks that reward this type of divergent, associative, flexible processing (such as brainstorming; e.g., Baas, De Dreu, & Nijstad, 2011).

In contrast, when people are prevention-focused, they are more concerned with protecting against losses that will keep them from upholding their responsibilities (e.g., not losing points on an exam so as to earn the minimum acceptable grade or better). This concern leads them to prefer vigilant strategies that involve guarding against incorrect information that might keep them from meeting their goals, even if that means ignoring potentially useful information (see Molden & Miele, 2008; Molden & Rosenzweig, this volume). Consequently, people with a prevention focus may perform best on tasks that reward this type of convergent, careful processing (such as an untimed math test; e.g., Rosenzweig & Miele, in press).

Although there are no studies examining the strategies students may use to enhance their own promotion or prevention motivations, a number of studies have successfully employed experimental methods for inducing these motivations in college student participants. These methods are fairly straightforward and may already be employed (either implicitly or explicitly) by some students as self-regulatory strategies. Even if not currently employed, they could perhaps be taught to students as part of a motivation curriculum or intervention. The first method of inducing promotion and prevention motivations, which could be considered a form of self-talk, involves asking students to think about their current ideals or responsibilities (respectively) and then having them write about how these goals may have changed since childhood. When people’s attainment values are activated in this manner, the resulting motivations tend to carry over to their performance on subsequent tasks, even when these tasks are unrelated to the ideals or responsibilities they previously wrote about.

The second method of inducing promotion and prevention motivations involves framing a task or activity in terms of gain- or loss-focused incentives. For instance, researchers might tell participants in the promotion condition that they will *gain* a point for every problem they solve correctly, but tell participants in the prevention condition that they will *lose* a point for every problem they solve incorrectly. Although this might seem like an approach/avoidance induction, both task framings can be applied to an approach or avoidance goal. If the researchers set an approach goal for the task (e.g., earning a score of 90% or better), they might tell participants in the promotion condition that they can achieve this goal by gaining as many points as possible, while they would tell participants in the prevention condition that they can achieve the same goal by losing as few points as possible (see Molden & Miele, 2008; Molden & Rosenzweig, this volume, for more on the distinction between the promotion-prevention and approach-avoidance

dimensions of motivation). Although this method may be effective at inducing a promotion or prevention focus, the use of external incentives may also foster the type of utility value associated with more controlled forms of motivation, potentially undermining the autonomous motivation that can accompany a promotion or prevention focus.

### *Strategies for Providing Additional Attainment Value*

Many of the motivation regulation strategies that students use to activate or highlight the attainment value associated with a task (e.g., mastery or performance self-talk) focus on the student's primary reasons for engaging in it. However, self-talk can also be used as a means of providing additional attainment value, beyond what was associated with the task to begin with. For example, students may attempt to relate what they are learning to their interests and personal experiences outside of school. In the questionnaires developed by Wolters (Wolter & Benzon, 2013) and Schwinger (Schwinger et al., 2009), these types of self-talk strategies are labeled "regulation of value" and "enhancement of personal significance" (respectively). By using these strategies to *enhance* the attainment value of a task (as opposed to simply highlighting its existing value), students may be able to increase (and not just maintain) their level of task engagement. This possibility is consistent with the results of a recent intervention study in which students in the experimental condition were asked to write about the relevance of the course material to their personal lives. Among students who did not expect to perform well in the course, those in the experimental condition expressed more interest in the topic and received higher grades at the end of the semester than did those in the control condition (Hulleman & Harackiewicz, 2009; see also Hulleman, Godes, Hendricks, & Harackiewicz, 2010; Shechter, Durik, Miyamoto, & Harackiewicz, 2011).

### *Intrinsic Value*

Intrinsic value refers to the enjoyment or situational interest one experiences (or expects to experience) while engaging in a task (Eccles, 2005). In some cases, it may be possible to indirectly bolster this type of value by using strategies (e.g., mastery or performance self-talk) that activate the attainment value associated with one's achievement goals (Rawsthorne & Elliot, 1999). However, there also exist more direct means for increasing one's own enjoyment of a task or activity, such as varying the way in which one performs a particular behavior. For instance, Sansone, Wiebe, and Morgan (1999) found that some college students increased their interest during a boring task, which involved repetitively copying letters from a matrix, by varying the type of lettering or script they used. Importantly, students who used this strategy persisted longer (i.e., copied more letters) than students who did not. Other strategies for enhancing the intrinsic value of a task include "turning it into a game" and simply "focusing on something about it that is fun" (Schwinger et al., 2009; Wolters & Benzon, 2013). Although these strategies may increase effort or persistence in certain contexts (e.g., Schwinger & Stiensmeier-Pelster, 2012), they have occasionally been found to negatively predict academic performance (though these effects are relatively weak; Schwinger et al., 2009, 2012; Schwinger & Stiensmeier-Pelster, 2012).

One explanation for this surprising finding, proposed by Sansone (2009), is that trade-offs between maintaining interest during a task (intrinsic value) and maintaining a high level of performance can emerge when the strategy used to regulate interest is not aligned with the criteria used to evaluate performance. For instance, when given a fixed amount

of time to perform the previously described copying task, participants who varied their handwriting (a relatively inefficient but interesting way of completing the task) actually copied fewer letters than participants who did not, despite exhibiting a greater preference for repeating the task (Sansone, Weir, Harpster, & Morgan, 1992). That is, the strategy of varying one's handwriting resulted in better performance when performance was assessed in terms of persistence (as in the previous study) but not when it was assessed in terms of speed.

Another example of this kind of tradeoff comes from a study conducted with undergraduates enrolled in an online psychology course (Sansone, Smith, Thoman, & McNamara, 2012). After taking the first exam, participants completed a questionnaire assessing the motivation regulation strategies they used while studying for the exam as well as how interesting they found the class up to that point. The results showed that using the strategy of exploring links on the class web page to make studying more enjoyable was positively correlated with interest but negatively correlated with performance on the exam. Sansone and colleagues suggested that a possible reason that this strategy was associated with poor performance is that it involved pursuing “seductive details” (i.e., interesting but irrelevant information; Harp & Mayer, 1998) as opposed to focusing on important material that was covered on the exam (see also Senko, Hama, & Belmonte, 2013; Senko & Miles, 2008).

### *Perceived Cost*

Perhaps the most understudied component of contemporary expectancy-value models is cost, or what a student believes she will have to endure or sacrifice by engaging in a task. Eccles et al. (1983) proposed three types of cost that have largely been confirmed in more recent empirical work (Perez, Cromley, & Kaplan, 2014; cf. Flake, Barron, Hulleman, McCoach, & Welsh, 2015): *opportunity cost*, or valued alternatives that can no longer be pursued if one engages in the task, *psychological/emotional cost*, or the psychological discomfort one experiences (or expects to experience) by engaging in the task, and *effort cost*, or the amount of effort required by the task. Our model proposes that students regulate each of these types using different sets of strategies.

### *Opportunity Cost*

When attractive alternatives exist (e.g., hanging out with friends) that are likely to pull motivation away from the focal task (e.g., studying for an exam), students may choose to structure their environment in a manner that minimizes the salience of these alternatives (e.g., by studying in a secluded corner of the library where they are unlikely to encounter any friends). Research on this kind of “environmental control” strategy dates back to early studies of delayed gratification (see Mischel, Shoda, & Rodriguez, 1989, for a review; see also Bembenuddy & Karabenick, 1998), in which children were observed covering their eyes or resting their head in their arms in order to resist the temptation of eating a marshmallow on the table in front of them (and thus earn the chance to eat two marshmallows). More recent studies (Schwinger & Stiensmeier-Pelster, 2012; Wolters, 1999) found that high school and college students' self-reported use of environmental control strategies (e.g., “I make sure that distractions occur as seldom as possible”) was positively correlated with the effort they reported investing in their schoolwork (though this association was eliminated when controlling for the use of other motivation regulation strategies; Wolters, 1999). Note that the questionnaires used to measure



environmental control in these studies do not assess other kinds of control strategies, such as listening to soothing music or restructuring the activity, which have less to do with reducing opportunity costs and more to do with regulating the psychological or effort costs of the task (see below).

Another strategy for minimizing interference from attractive alternatives is to find a means of pursuing the focal goal that simultaneously satisfies a competing goal. An example of this “multifinality” or “two birds with one stone” strategy was discussed earlier in this chapter: a student who wants to spend Saturday night studying for an important exam, but who also wants to socialize with her peers, may choose to form a study group and spend the night studying *with* friends. In this case, the student reduces opportunity costs by getting her friends to pursue the same focal goal as her, as opposed to avoiding them (as in the previous example of environmental control). One reason that this may be a particularly effective type of strategy for regulating motivation is because, in addition to reducing opportunity costs, it can increase the utility or attainment value of the task. In our example, the student may be even more enthusiastic about studying than when there are no potential opportunity costs associated with the task (e.g., on a weeknight) because she gets to hang out with her friends. Although multifinality can be a particularly effective strategy for reducing the costs of an activity, it may be difficult in many cases to identify a behavior that adequately addresses two goals at the same time. Other strategies for regulating opportunity costs, such as multitasking, reprioritizing (including reappraising the value of the competing alternative; Leroy, Grégoire, Magen, Gross, & Mikolajczak, 2012), and linearizing (or sequencing the pursuit of both goals into a manageable order), are discussed in more detail by Hofer and Fries (this volume; see also Bembenutty, 2009).

### *Psychological Cost*

Strategies for reducing the psychological or emotional costs of engaging in a task vary greatly depending on the type of negative experience posing a threat to one’s motivation, as well as the perceived source of this experience. For instance, if a student decides that she feels too anxious and stressed to continue studying, she may attempt to calm herself down by engaging in relaxation techniques, such as deep breathing or progressive muscle relaxation (von der Embse, Barterian & Segool, 2013). If one of the reasons the student is anxious is because she thinks she may not be capable of doing well on the exam, she may also attempt to calm herself by recalling her strengths as a student and thinking about her past academic successes (i.e., efficacy self-talk; Corno, 1993; Wolters, 2003; see below for a more detailed discussion). In contrast, if the student feels she is unable to continue studying because she is too tired to focus (but not too anxious), she may decide to drink a cup of coffee or take a short nap. If she wants to stop studying because she perceives the material to be too dull or boring, she may instead use the kind of interest enhancement strategy discussed in the previous section on intrinsic motivation.

The last example is particularly interesting because it highlights the different roles that negative experiences can play within our model of motivation regulation. First, negative feelings such as boredom can function as costs that outweigh the positive value of the activity and make students less likely to continue engaging in it (i.e., as determinants of motivation). At the same time, these feelings can serve as indicators of motivational problems that the student must address (e.g., insufficient intrinsic motivation) if she hopes to continue engaging in the activity (i.e., metamotivational alert signals). Different negative feelings may signal different kinds of problems. For instance, in contrast to boredom, the feeling of indifference a student experiences while studying for an exam

may indicate to her that the material is unimportant or irrelevant (i.e., lacking in attainment value). As a result, she may remind herself of the reasons why it is important for her to get a good grade in the course (i.e., engage in performance self-talk). This type of process is analogous to the kind of bottom-up, metacognitive monitoring students engage in to regulate their information processing (Efklides, 2006, 2011). To illustrate, the negative metacognitive feelings that a student experiences while reading (e.g., feelings of confusion) may signal to her that she does not adequately understand the text and needs to implement a repair strategy, such as rereading. And, just as positive metacognitive feelings (e.g., feelings of insight or comprehension) indicate to the student that she has finally succeeded in understanding the text, positive metamotivation feelings (e.g., flow) may indicate to the student that she is now sufficiently engaged in the task.

Before moving on, we would like to point readers who are interested in better understanding the ways in which students regulate the psychological costs of a task, particularly the emotional costs, to the literature on emotion regulation (Gross, 2013), which is still gaining traction within the educational literature (Jacobs & Gross, 2014; Tyson, Linnenbrink-Garcia, & Hill, 2009). Readers may also find it helpful to review the related literature on strategies for coping with test anxiety (von der Embse, Barterian & Segool, 2013; Zeidner, 2007).

### *Effort Cost*

Perhaps the most obvious strategy for reducing the perceived effort costs of a task is to restructure it in a manner that makes it easier to complete. This could involve breaking the task into smaller, more manageable pieces (i.e., proximal goal setting; see below) or spacing it out over a longer period of time. However, at times (e.g., when writing a paper that is due the next morning), there may not be an obvious means of restructuring the task. In such cases, students may instead opt to engage in self-talk that is aimed at reducing the perceived level of effort required by the task (e.g., “this assignment is a lot easier than people made it out to be”) or enhancing their perceived capacity for effort (e.g., “I can study all night if need be”).

Although there are few (if any) studies examining self-talk that targets effort costs, recent research on students’ implicit theories of willpower (Job, Dweck, & Walton, 2010; Miller et al., 2012) suggest that this may be an effective strategy for enhancing motivation. In the study by Miller et al., participants in one condition, who rated their agreement with statements such as “Working on a strenuous mental task can make you feel tired such that you need a break before accomplishing a new task,” were led to believe that capacity for effort (or willpower) is a limited resource. Participants in the other condition, who rated their agreement with statements such as “Sometimes, it is energizing to be fully absorbed with a demanding task,” were led to believe that capacity for effort is an unlimited resource. The authors found that performance on a demanding executive function task improved more over the duration of the activity for participants in the unlimited resource condition than for participants in the limited resource condition.

Finally, it is worth noting that effort costs can also be addressed indirectly by using strategies that target other types of cost. For instance, if a task feels effortful to complete because the student is constantly being distracted by tempting alternatives or because she is having trouble concentrating due to anxiety, then she may choose to engage in one of the previously described strategies for regulating opportunity costs or psychological costs (respectively). This example highlights the ways in which the different types of cost are intertwined and may be difficult to separate in many cases.

### *Self-Efficacy (and Outcome Expectancies)*

In this section we consider self-efficacy and outcome expectancies together because there is very little research on outcomes expectancies in the context of motivation regulation (or in general for that matter). One strategy for increasing expectancies, which we briefly mentioned in the previous section, is proximal goal setting. By breaking a task into smaller, more manageable goals, students can make the task seem less effortful and challenging (i.e., reduce the perceived effort cost) and, in turn, make themselves feel more capable of completing it (i.e., increase their self-efficacy). Concerns have been raised about whether students actually use this strategy to deliberately regulate their motivation in academic contexts (Wolters, 2003); however, in recent studies by Schwinger and colleagues (Schwinger et al., 2009, 2012; Schwinger & Stiensmeier-Pelster, 2012), high school and college students reported using proximal goal setting as a motivation regulation strategy (e.g., “I break down the work load in small segments so I get the feeling that I can handle it more easily”) more often than some other strategies, such as mastery self-talk and interest enhancement.

Another strategy for enhancing self-efficacy and outcome expectancies is efficacy self-talk, which involves reassuring students that they are capable of completing the task, regardless of its value (e.g., “You can do this, you just need to stay focused”). Although there is some evidence that students use this kind of strategy within academic settings, there has been little educational research investigating the motivational effects of efficacy self-talk independent of the effects of other regulation strategies (Wolters, 2003). Much of the current research being conducted on efficacy self-talk comes from the sports psychology literature. Recent studies have shown that, when combined with other forms of performance-related self-talk, such as psych-up statements (“let’s go”), positive mood statements (“I feel good”), and effort statements (“give it all”), efficacy self-talk can increase the self-efficacy, self-confidence, and performance of athletes (Hatzigeorgiadis, Zourbanos, Galanis, & Theodorakis, 2011; Hatzigeorgiadis, Zourbanos, Goltsios, & Theodorakis, 2008; Hatzigeorgiadis, Zourbanos, Mpoupaki, & Theodorakis, 2009).

For a review of additional efficacy-enhancing strategies, such as attributional control and defensive pessimism, see Wolters (2003). But, before moving on, it is worth noting that just as metamotivational feelings may indicate low levels of attainment or intrinsic value (e.g., boredom), other feelings may indicate low levels of self-efficacy (e.g., insecurity, self-doubt) and thus prompt the use of efficacy-enhancing strategies. Research is needed on the roles that these different metamotivational feelings play in students’ self-regulation of motivation.

### *Regulatory Fit*

As we have seen, different types of motivation lead students to prefer different ways of engaging in a task or activity (e.g., promotion-focused individuals prefer eager processing strategies, while prevention-focused individuals prefer vigilant processing strategies). When students are able to engage in a task in a manner that fits with their preferences, their motivation is sustained and their engagement in the task is enhanced. In contrast, when they are not able to engage in this manner, their motivation is disrupted and their engagement decreases. For instance, in a study by Freitas and Higgins (2002), college student participants were induced to experience either promotion or prevention motivation (by having them write about their ideals or responsibilities; see above) and were then asked to complete a novel task that involved searching for four-sided objects that symbolized organic elements. Some of the participants in each motivation condition were instructed to approach the task in an eager manner (i.e., to eagerly find and circle “helpful” elements),

whereas others were told to approach the task in a vigilant manner (i.e., to be vigilant for and cross out “harmful” elements). The results of the study showed that the prevention-focused participants enjoyed the task more and were significantly more likely to repeat it when it was framed in terms of vigilance as opposed to eagerness. In contrast, the promotion-focused participants enjoyed the task (insignificantly) more and were marginally more likely to repeat it when it was framed in terms of eagerness rather than vigilance.

Given that regulatory fit leads to increased task engagement, the question is whether this component of motivation can be regulated. When students in the previous example did not experience regulatory fit, it was because they were instructed to approach the task in a manner that ran counter to their motivational tendency. This suggests that when they are free to approach a task in the manner of their choosing, they will tend to enter into a state of fit automatically (without needing to take any regulatory action). However, there are many tasks in which the goal is best pursued with a particular type of approach or strategy (we call this task-strategy fit). For instance, tasks with goals requiring creativity (e.g., brainstorming) are often performed best with an eager information processing strategy (Baas et al., 2011). Thus, if a prevention-focused student engages in brainstorming with her preferred mode of processing (i.e., vigilance), she may be unlikely to perform optimally (despite experiencing regulatory fit). Similarly, because proofreading tasks are perhaps best accomplished with a vigilant strategy, a promotion-focused student who engages in proofreading with her preferred mode of processing (i.e., eagerness) may also be unlikely to perform her best.

We therefore propose that students who shift themselves into a motivational orientation that fits the processing demands of a given task will tend to perform better than students who do not shift. For instance, when anticipating a brainstorming task, students may perform best to the extent that they induce in themselves a promotion focus that facilitates the adoption of an eager processing strategy. Likewise, when anticipating a proofreading task, students may perform optimally to the extent that they induce a prevention focus that facilitates the adoption of a vigilant processing strategy. Furthermore, although it is possible to adopt a vigilant strategy without having a prevention focus (and to adopt an eager strategy without having a promotion focus), this processing strategy will be carried out more effectively when it matches the student’s current orientation; i.e., when there is a regulatory fit in addition to a task-strategy fit (we call this combination task-motivation fit).

Although research on regulatory fit has already demonstrated that performance is optimized when individuals use strategies that “fit” both their motivational orientation and the processing demands of the task, we are currently investigating whether people have any sense of this and can take steps to regulate the quality (and not just the quantity) of their motivation. As part of this ongoing investigation, we have conducted a number of studies (Scholer & Miele, 2015) using a paradigm adapted from the emotion regulation literature (see Tamir & Ford, 2009). Participants in these studies are typically provided with a task that demands either eagerness or vigilance (e.g., “Your goal is to be as accurate as possible by making sure to avoid lurking errors and pitfalls”) and with a recall prompt that has been shown to induce either a promotion or prevention focus (e.g., “Please write about a time in the past when you felt you made progress toward being successful in life”) and are then asked to report how much they would prefer to complete this recall activity *before* doing the task and to indicate how successful they would expect to be at the task after completing the recall activity.

The results of these studies show that, on average, participants prefer to complete a promotion-inducing recall activity more when anticipating a task that demands eagerness than when anticipating a task that demands vigilance. In contrast, participants

prefer to complete a prevention-inducing recall activity more when anticipating a task that demands vigilance than when anticipating a task that demands eagerness. Furthermore, these preferences were found to be partly mediated by participants' expectancies for success on the various tasks. These findings suggest that college students are sensitive to the motivational demands of different types of tasks (e.g., they understand that some tasks require eagerness) and that they are aware of how certain behaviors (e.g., writing about their ideals) could help them to meet these demands. We are currently exploring whether students are able to translate their awareness into concrete regulatory behavior and, if so, what makes some students better at this than others.

Although our research on how students shift between types of motivation has focused on a single dimension of attainment value (promotion-prevention), we believe that it can be applied to other dimensions as well. As mentioned in the introduction, a student studying for an exam who believes that it is important to understand the material as deeply as possible may decide against using a self-consequating strategy (which targets utility value) because, at some level, she realizes that it may undermine her interest in the topic and result in relatively superficial processing. Instead, the student may choose to engage in mastery self-talk or interest enhancement, strategies that are likely to foster more autonomous forms of motivation. In doing so, it is possible that the match between her current motivational state and her higher-order mastery goal leads her to experience a type of regulatory fit (see Harackiewicz, Barron, & Elliot, 1998; Maddox & Markman, 2010).

## FUTURE DIRECTIONS

As we have seen, students can use numerous strategies to regulate their motivation. More is known about the prevalence and effectiveness of some of these strategies than others. Therefore, one direction for future research on motivation regulation is to more comprehensively map out the strategic terrain. We hope that by providing a framework for organizing motivation regulation strategies in terms of the specific components of motivation they target, our chapter can serve as a guide for this endeavor. However, as much as there is still to learn about how students exert strategic control over their own motivations, there is even more to learn about how they monitor their motivation and decide when it is important to exert such control. Understanding how students monitor their motivation is essential for determining why some strategies are used more often than others in particular situations (Wolters, 1998), as well as why some students (and not others) are especially likely to use certain strategies (Schwinger et al., 2012). Once a more complete understanding of both monitoring and control has been established, researchers can begin to design and test techniques and interventions that educators can use to foster motivation regulation skills in their students (without undertaking the ambitious or even impossible task of uniquely targeting the curriculum to each student's particular values and interests). By teaching metamotivational skills, educators will not only have more effective ways to sustain student motivation within their classrooms, but they will also better equip students for challenges outside the classroom.

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